Dixie Vegetation Keys
3/14/2013 RML, DLT

NOTE: These keys apply only to existing vegetation, not potential or historical vegetation.

R4 Key to Vegetation Formations
03/28/2008

This key does not apply to lands used for agriculture or urban/residential development. It applies only to natural and semi-natural vegetation dominated by vascular plants. Semi-natural vegetation includes planted vegetation that is not actively managed or cultivated. All cover values in *this key to formations* are absolute cover, not relative cover, for the life form. See Appendix A for a discussion of absolute versus relative cover. In this key tree cover includes both regeneration and overstory sized trees, so that young stands of trees are classified as forest.

1a	All vascular plants total < 1% canopy cover…….....	**Non-Vegetated (p.20)**
1b	All vascular plants total ≥ 1% canopy cover…….....	2
2a	All vascular plants total < 10% canopy cover……	**Sparse Vegetation**
2b	All vascular plants total ≥ 10% canopy cover……	3
3a	Trees total ≥ 10% canopy cover…….....	4
3b	Trees total < 10% canopy cover…….....	5
4a	Stand located above continuous forest line and trees stunted (< 5m tall) by harsh alpine growing conditions……..	**Shrubland Key (p.9)**
4b	Stand not above continuous forest line; trees not stunted……...	**Forest and Woodland Key (p.2)**
5a	Shrubs total ≥ 10% canopy cover……	**Shrubland Key (p.9)**
5b	Shrubs total < 10% canopy cover……...	6
6a	Herbaceous vascular plants total ≥ 10% canopy cover……	7
6b	Herbaceous vascular plants total < 10% canopy cover……	8
7a	Total cover of graminoids ≥ total cover of forbs……	**Grassland Key (p.12)**
7b	Total cover of graminoids < total cover of forbs……	**Forbland Key (p.17)**
8a	Trees total ≥ 5% canopy cover…….....	**Sparse Tree**
8b	Trees total < 5% canopy cover…….....	9
9a	Shrubs total ≥ 5% canopy cover……..	**Sparse Shrub**
9b	Shrubs total < 5% canopy cover……	10
10a	Herbaceous vascular plants total ≥ 5% canopy cover……..	**Sparse Herb**
10b	Herbaceous vascular plants total < 5% canopy cover……..	**Sparse Vegetation**

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Key to Forest and Woodland Dominance Types and DT Phases
2/5/2013 RML

Instructions:

1. Preferably, plots or polygons should be keyed out based on overstory canopy cover (trees forming the upper or uppermost canopy layer) by tree species.
2. Plots or polygons lacking such data or lacking an overstory layer should be keyed out using total cover by species.
3. If a plot or polygon does not key out using overstory cover, then it may be keyed using total tree cover.
4. If two trees are equally abundant, the species encountered first in the key is recorded as the most abundant.

			DT or DT Phase Code	Veg Type Map Unit	Veg Group
1a		Narrowleaf cottonwood is the most abundant tree species……	**POAN3 d.t.**	**RIPSH**	**R**
1b		Narrowleaf cottonwood not the most abundant tree species……	**2**		
	2a	Fremont cottonwood is the most abundant tree species…….....	**POFR2 d.t.**	**RIPSH**	**R**
	2b	Fremont cottonwood is not the most abundant tree species……..	**3**		
3a		Water birch is the most abundant tree species……..	**BEOC2 d.t.**	**RIPSH**	**R**
3b		Water birch is not the most abundant tree species……..	**4**		
	4a	Velvet ash is the most abundant tree species…….……	**FRVE2 d.t.**	**RIPSH**	**R**
	4b	Velvet ash is not the most abundant tree species…….……..	**5**		
5a		Russian olive is the most abundant tree species…….……	**ELAN d.t**	**RIPSH**	**R**
5b		Russian olive is not the most abundant tree species…….……	**6**		
	6a	Salt cedar species are the most abundant tree species……	**TAMIR2 d.t.**	**RIPSH**	**R**
	6b	Salt cedar species are not the most abundant tree species……	**7**		
7a		Ponderosa Pine is the most abundant tree species.....	**PIPO d.t. - go to 8**		
7b		Ponderosa Pine is not the most abundant tree species.....	**15**		
	8a	Ponderosa Pine ≥ 75% relative canopy cover.....	**PIPO-PIPO d.t.**	**PIPO**	**C**
	8b	Ponderosa Pine < 75% relative canopy cover.....	**9**		
9a		Quaking aspen is the second most abundant tree species; it and Ponderosa Pine ≥ 65% relative canopy cover.....	**PIPO-POTR5 d.t.**		**C**

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			DT or DT Phase Code	Veg Type Map Unit	Veg Group
9b		Quaking aspen is not the second most abundant tree species and/or it and ponderosa pine total < 65% relative canopy cover……	**10**		
	10a	Douglas-fir is the second most abundant tree species; it and Ponderosa Pine ≥ 65% relative canopy cover.....	**PIPO-PSME d.t.**		**C**
	10b	Douglas-fir is not the second most abundant tree species and/or it and ponderosa pine total < 65% relative canopy cover……	**11**		
11a		White fir is the second most abundant tree species; it and ponderosa pine ≥ 65% relative canopy cover.....	**PIPO-ABCO d.t.**		**C**
11b		White fir is not the second most abundant tree species and/or it and ponderosa pine total < 65% relative canopy cover……	**12**		
	12a	Another timber species is the second most abundant species; it and ponderosa pine ≥ 65% relative canopy cover……	**PIPO mix d.t.**		**C**
	12b	Another timber species is not the second most abundant species….	**13**		
13a		Rocky Mountain juniper is the second most abundant tree species; it and ponderosa pine total ≥ 65% relative canopy cover……	**PIPO-JUSC2 d.t.**		**C**
13b		Rocky Mountain juniper is not the second most abundant tree species and/or it and ponderosa pine total < 65% relative canopy cover…….....	**14**		
	14a	Another woodland species is the second most abundant tree species; it and ponderosa pine total ≥ 65% relative canopy cover……	**PIPO-WD mix d.t.**		**C**
	14b	A woodland tree species is not the second most abundant species	**other PIPO d.t.**		**C**
15a		Quaking aspen is the most abundant tree species.....	**POTR5 d.t. – go to 16**		
15b		Quaking aspen is not the most abundant tree species.....	**24**		
	16a	Quaking aspen ≥ 75% relative canopy cover……	**POTR5-POTR5 d.t.**	**AS**	**D**
	16b	Quaking aspen < 75% relative canopy cover……	**17**		
17a		Ponderosa pine is the second most abundant tree species; it and quaking aspen ≥ 65% relative canopy cover.....	**POTR5-PIPO d.t.**		**D**
17b		Ponderosa pine is not the second most abundant tree species and/or it and quaking aspen total < 65% relative canopy cover…….	**18**		

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			DT or DT Phase Code	Veg Type Map Unit	Veg Group
	18a	Douglas-fir is the second most abundant tree species; it and quaking aspen ≥ 65% relative canopy cover.....	**POTR5-PSME d.t.**		**D**
	18b	Douglas-fir is not the second most abundant tree species and/or it and quaking aspen total < 65% relative canopy cover…….	**19**		
19a		White fir is the second most abundant tree species; it and quaking aspen ≥ 65% relative canopy cover.....	**POTR5-ABCO d.t.**		**D**
19b		White fir is not the second most abundant tree species and/or it and quaking aspen total < 65% relative canopy cover…….	**20**		
	20a	Engelmann spruce, subalpine fir and quaking aspen ≥ 65% relative canopy cover…….....	**POTR5 - PIEN/ABLA d.t.**		**D**
	20b	Engelmann spruce and/or subalpine fir are not the second abundant tree species and/or it and quaking aspen total < 65% relative canopy cover…….	**21**		
21a		Blue spruce is the second most abundant tree species; it and quaking aspen ≥ 65% relative canopy cover.....	**POTR5-PIPU d.t.**		**D**
21b		Blue spruce is not the second most abundant tree species and/or it and quaking aspen total < 65% relative canopy cover…….	**22**		
	22a	Another timber species is the second most abundant species; it and quaking aspen ≥ 65% relative canopy cover…….....	**POTR5 mix d.t.**		**D**
	22b	Another timber species is not the second most abundant species	**23**		
23a		A woodland species is the second most abundant tree species; it and quaking aspen total ≥ 65% relative canopy cover……...	**POTR5 -WD d.t.**		**D**
23b		A woodland species is not the second most abundant tree species……...	**other POTR5 d.t.**		**D**
	24a	Douglas-fir is the most abundant tree species.....	**PSME d.t. – go to 25**		**C**
	24b	Douglas-fir is not the most abundant tree species.....	**33**		
25a		Douglas-fir ≥ 75% relative canopy cover…….....	**PSME-PSME d.t**		**C**
25b		Douglas-fir < 75% relative cover cover…….....	**26**		
	26a	Quaking aspen is the second most abundant tree species; it and Douglas-fir ≥ 65% relative canopy cover…….....	**PSME-POTR5 d.t.**		**C**

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			DT or DT Phase Code	Veg Type Map Unit	Veg Group
	26b	Quaking aspen is not the second most abundant tree species and/or it and douglas-fir total < 65% relative canopy cover……..	**27**		
27a		Ponderosa pine is the second most abundant tree species; it and Douglas-fir ≥ 65% relative canopy cover.....	**PSME-PIPO d.t.**		**C**
27b		Ponderosa pine is not the second most abundant tree species and/or it and Douglas-fir total < 65% relative canopy cover……	**28**		
	28a	White fir is the second most abundant tree species; it and Douglas-fir ≥ 65% relative canopy cover.....	**PSME-ABCO d.t.**		**C**
	28b	White fir is not the second most abundant tree species and/or it and Douglas-fir total < 65% relative canopy cover……	**29**		
29a		Blue spruce is the second most abundant tree species; it and Douglas-fir ≥ 65% relative canopy cover.....	**PSME-PIPU d.t.**		**C**
29b		Blue spruce is not the second most abundant tree species and/or it and Douglas-fir total < 65% relative canopy cover……	**30**		
	30a	Engelmann spruce, subalpine fir and Douglas-fir ≥ 65% relative canopy cover.....	**PSME-PIEN/ABLA d.t.**		**C**
	30b	Engelmann spruce and/or subalpine fir are not the second abundant tree species and/or they and Douglas-fir total < 65% relative canopy cover……..	**31**		
31a		Another timber species is the second most abundant species; it and Douglas-fir ≥ 65% relative canopy cover……..	**PSME-Mix d.t.**		**C**
31b		Another timber species is not the second most abundant species…..	**32**		
	32a	A woodland species is the second most abundant tree species; it and Douglas-fir total ≥ 65% relative canopy cover……	**PSME-WDmix d.t.**		**C**
	32b	A woodland species is not the second most abundant tree species...	**other PSME d.t.**		**C**
33a		White fir is the most abundant tree species.....	**ABCO d.t. - go to 34**		
33b		White fir is not the most abundant tree species.....	**42**		
	34a	White fir ≥ 75% relative canopy cover.....	**ABCO-ABCO d.t**		**C**
	34b	White fir < 75% relative cover cover.....	**35**		
35a		Quaking aspen is the second most abundant tree species; it and white fir ≥ 65% relative canopy cover.....	**ABCO-POTR5 d.t.**		**C**

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			DT or DT Phase Code	Veg Type Map Unit	Veg Group
35b		Quaking aspen is not the second most abundant tree species and/or it and white fir total < 65% relative canopy cover……	**36**		
	36a	Ponderosa pine is the second most abundant tree species; it and white fir ≥ 65% relative canopy cover.....	**ABCO-PIPO d.t.**		**C**
	36b	Ponderosa pine is not the second most abundant tree species and/or it and white fir total < 65% relative canopy cover……..	**37**		
37a		Douglas-fir is the second most abundant tree species; it and white fir ≥ 65% relative canopy cover.....	**ABCO-PSME d.t.**		**C**
37b		Douglas-fir is not the second most abundant tree species and/or it and Douglas-fir total < 65% relative canopy cover…….	**38**		
	38a	Blue spruce is the second most abundant tree species; it and white fir ≥ 65% relative canopy cover.....	**ABCO-PIPU d.t.**		**C**
	38b	Blue spruce is not the second most abundant tree species and/or it and white fir total < 65% relative canopy cover……..	**39**		
39a		Engelmann spruce, subalpine fir and/or white fir ≥ 65% relative canopy cover.....	**ABCO-PIEN/ABLA d.t.**		**C**
39b		Engelmann spruce and/or subalpine fir are not the second abundant tree species and/or it and white fir total < 65% relative canopy cover	**40**		
	40a	Another timber species is the second most abundant tree species; it and white fir ≥ 65% relative canopy cover…….	**ABCO Mix d.t.**		**C**
	40b	Another timber species is not the second most abundant tree species……..	**41**		
41a		A woodland species is the second most abundant tree species; it and white fir total ≥ 65% relative canopy cover……..	**ABCO -WD d.t.**		**C**
41b		A woodland species is not the second most abundant tree species...	**other ABCO d.t.**		**C**
	42a	Blue spruce is the most abundant tree species.....	**PIPU d.t. go to 43**		
	42b	Blue spruce is not the most abundant tree species.....	**49**		
43a		Blue spruce ≥ 75% relative canopy cover.....	**PIPU-PUPU d.t**		**C**
43b		Blue spruce < 75% relative cover cover.....	**44**		
	44a	Douglas-fir is the second most abundant tree species; it and blue spruce ≥ 65% relative canopy cover.....	**PIPU-PSME d.t.**		**C**

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			DT or DT Phase Code	Veg Type Map Unit	Veg Group
	44b	Douglas-fir is not the second most abundant tree species and/or it and blue spruce total < 65% relative canopy cover…….	**45**		
45a		White fir is the second most abundant tree species; it and blue spruce ≥ 65% relative canopy cover.....	**PIPU-ABCO d.t.**		**C**
45b		White fir is not the second most abundant tree species and/or it and blue spruce total < 65% relative canopy cover…….	**46**		
	46a	Engelmann spruce, subalpine fir and blue spruce ≥ 65% relative canopy cover.....	**PIPU-PIEN/ABLA d.t.**	**SF**	**C**
	46b	Engelmann spruce and/or subalpine fir are not the second abundant tree species and/or it and blue spruce total < 65% relative canopy cover……...	**47**		
47a		Another timber species is the second most abundant tree species; it and blue spruce ≥ 65% relative canopy cover…….	**PIPU Mix d.t.**		**C**
47b		Another timber species is not the second most abundant tree species…….	**48**		
	48a	A woodland species is the second most abundant tree species; it and blue spruce total ≥ 65% relative canopy cover…….	**PIPU-WD d.t.**		**C**
	48b	A woodland species is not the second most abundant tree species…….	**other PIPU d.t.**		**C**
49a		Engelmann spruce is the most abundant tree species.....	**PIEN d.t. - go to 50**		
49b		Engelmann spruce is not the most abundant tree species.....	**58**		
	50a	Engelmann spruce ≥ 75% relative canopy cover…….....	**PIEN-PIEN d.t.**	**SF**	**C**
	50b	Engelmann spruce < 75% relative cover cover.....	**51**		
51a		Quaking aspen is the second most abundant tree species; it and Engelmann spruce ≥ 65% relative canopy cover…….....	**PIEN-POTR5 d.t.**		**C**
51b		Quaking aspen is not the second most abundant tree species and/or it and Engelmann spruce total < 65% relative canopy cover……	**52**		
	52a	Douglas-fir is the second most abundant tree species; it and Engelmann spruce ≥ 65% relative canopy cover.....	**PIEN-PSME d.t.**		**C**
	52b	Douglas-fir is not the second most abundant tree species and/or it and white fir total < 65% relative canopy cover……...	**53**		

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			DT or DT Phase Code	Veg Type Map Unit	Veg Group
53a		White fir is the second most abundant tree species; it and Engelmann spruce ≥ 65% relative canopy cover…….....	**PIEN-ABCO d.t.**		**C**
53b		White fir is not the second most abundant tree species and/or it and Engelmann spruce total < 65% relative canopy cover……	**54**		
	54a	Subalpine fir is the second most abundant tree species; it and Engelmann spruce ≥ 65% relative canopy cover.....	**PIEN-ABLA d.t.**	**SF**	**C**
	54b	Subalpine fir is not the second most abundant tree species and/or it and Engelmann spruce total < 65% relative canopy cover……	**55**		
55a		Blue spruce is the second most abundant tree species; it and Engelmann spruce ≥ 65% relative canopy cover…….....	**PIEN-PIPU d.t.**	**SF**	**C**
55b		Blue spruce is not the second most abundant tree species and/or it and Engelmann spruce total < 65% relative canopy cover……	**56**		
	56a	Another timber species is the second most abundant tree species; it and Engelmann spruce ≥ 65% relative canopy cover…….....	**PIEN mix d.t.**		**C**
	56b	Another timber species is not the second most abundant tree species……	**57**		
57a		A woodland species is the second most abundant tree species; it and Engelmann spruce total ≥ 65% relative canopy cover…….....	**PIEN-WD d.t.**		**C**
57b		A woodland species is not the second most abundant tree species……	**other PIEN d.t.**		**C**
	58a	Subalpine is the most abundant tree species.....	**ABLA d.t.** **- go to 59**		
	58b	Subalpine fir is not the most abundant tree species.....	**69**		
59a		Subalpine fir ≥ 75% relative canopy cover.....	**ABLA-ABLA d.t.**	**SF**	**C**
59b		Subalpine fir < 75% relative cover cover.....	**60**		
	60a	Quaking aspen is the second most abundant tree species; it and Subalpine fir ≥ 65% relative canopy cover.....	**ABLA-POTR5 d.t.**		**C**
	60b	Quaking aspen is not the second most abundant tree species and/or it and subalpine fir total < 65% relative canopy cover……	**61**		
61a		Douglas-fir is the second most abundant tree species; it and subalpine fir ≥ 65% relative canopy cover……	**ABLA-PSME d.t.**		**C**
61b		Douglas-fir is not the second most abundant tree species and/or it and subalpine fir total < 65% relative canopy cover……	**62**		

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			DT or DT Phase Code	Veg Type Map Unit	Veg Group
	62a	White fir is the second most abundant tree species; it and subalpine fir ≥ 65% relative canopy cover.....	**ABLA-ABCO d.t.**		**C**
	62b	White fir is not the second most abundant tree species and/or it and subalpine fir total < 65% relative canopy cover……...	**63**		
63a		Engelmann spruce is the second most abundant tree species; it and subalpine fir ≥ 65% relative canopy cover…….....	**ABLA-PIEN d.t.**	**SF**	**C**
63b		Engelmann spruce is not the second most abundant tree species and/or it and subalpine fir total < 65% relative canopy cover…….	**64**		
	64a	Blue spruce is the second most abundant tree species; it and subalpine fir ≥ 65% relative canopy cover…….....	**ABLA-PIPU d.t**	**SF**	**C**
	64b	Blue spruce is not the second most abundant tree species and/or it and subalpine fir total < 65% relative canopy cover…….	**65**		
65a		Another timber species is the second most abundant tree species; it and subalpine fir ≥ 65% relative canopy cover…….	**ABLA mix d.t.**	**SF**	**C**
65b		Another timber species is not the second most abundant tree species…….....	**66**		
	66a	A woodland species is the second most abundant tree species; it and Subalpine fir total ≥ 65% relative canopy cover……...	**ABLA-WD d.t.**		**C**
	66b	A woodland species is not the second most abundant tree species…	**other ABLA d.t.**		**C**
69a		Curlleaf mountain mahogany is the most abundant woodland tree species……	**CELE3-CELE3d.t.**		**W**
69b		Curlleaf mountain mahogany is not the most abundant woodland tree species……	**70**		
	70a	Rocky Mountain juniper is the most abundant woodland tree species……	**JUSC2 d.t.** **- Go to 71**		
	70b	Rocky Mountain juniper is not the most abundant woodland tree species……	**77**		
71a		Rocky mountain juniper ≥ 75% relative canopy cover.....	**JUSC2-JUSC2d.t.**		**W**
71b		Rocky mountain juniper < 75% relative cover cover.....	**72**		
	72a	Ponderosa pine is the second most abundant tree species; it and Rocky Mountain juniper ≥ 65% relative canopy cover…….....	**JUSC2-PIPO d.t.**		**W**

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			DT or DT Phase Code	Veg Type Map Unit	Veg Group
	72b	Ponderosa pine is not the second most abundant tree species and/or it and Rocky Mountain juniper total < 65% relative canopy cover……	**73**		
73a		Another timber species is the second most abundant tree species; it and Rocky Mountain juniper ≥ 65% relative canopy cover……	**JUSC2 mix**		**W**
73b		Another timber species is not the second most abundant tree species……	**74**		
	74a	Utah Juniper, Twoneedle pinyon and/or singleleaf pinyon species is/are the second most abundant tree species……	**JUSC2/Pinyon-Juniper d.t.**	**PJ**	**W**
	74b	Utah Juniper, Twoneedle pinyon and/or singleleaf pinyon species is not the second most abundant tree species……	**75**		
75a		Another woodland species is the second most abundant tree species……	**JUSC2-Wdmix**		**W**
75b		A woodland species is not the second most abundant tree species…	**other JUSC2 d.t.**		**W**
	76a	Utah Juniper, Two needle pinyon and/or singleleaf pinyon species is the most abundant woodland tree species ……..	**Pinyon-Juniper d.t. - go to 77**	**PJ**	**W**
	76b	Utah Juniper, Two needle pinyon and/or singleleaf pinyon species is not the most abundant woodland tree species ……..	**77**		
77a		Gambel oak is the most abundant woodland tree species ……..	**QUGA d.t. - Go to 74**		**W**
77b		Gambel oak is not the most abundant woodland tree species……..	**79**		
	78a	Other d.t.s for Gambel Oak?			
	78b				
79a		Bigtooth Maple is the most abundant woodland tree species……..	**ACGR3 d.t.**		**W**
79b		Bigtooth Maple is not the most abundant woodland tree species…….	**80**		
	80a	Singleleaf ash is the most abundant woodland tree species……	**FRAN2**		**W**
	80b	Singleleaf ash is not the most abundant woodland tree species……..	**Undefined**		

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DRAFT Key to Shrubland Dominance Types
3/29/2012 RML

Instructions:

Plots or polygons should be keyed out based on total cover by species. This key is divided into riparian, alpine, and upland sections. First identify the physical setting of the plot, stand, or polygon using the key below.

For the purposes of this key, a riparian setting is defined as an area (typically transitional between aquatic and terrestrial ecosystems) identified by soil characteristics associated with at least seasonally high water tables, distinctive vegetation that requires or tolerates free or unbound water (Manning and Padgett 1995), proximity to a stream or lake, and/or topographic position (e.g. valley bottom). The alpine setting includes the area above the upper limit of continuous forest. Above this limit trees occur only in scattered patches and become increasingly stunted at higher elevations (Arno and Hammerly 1984). In this key the alpine setting takes precedence over the riparian setting. The upland setting includes non-riparian areas below the continuous forest line.

It is likely that some dominance types occur in more than one of these settings. If your plot does not key out successfully in one setting, then try another setting. For example, basin big sagebrush is in the upland key but may occur in degraded riparian areas with downcut streams.

Key to Physical Habitat Setting

Key Leads:

1a Stand is located in an alpine setting above the upper elevation limit of continuous forest…… **Go to Alpine Key (p.9) (Veg. Type MU = ALP)**

1b Stand is located below the upper elevation limit of continuous forest…… **2**

2a Stand is located in a riparian setting as indicated by proximity to a stream or lake, topographic position, plant species that require or tolerate free or unbound water, and/or soil properties associated with seasonally high water tables…… **Go to Riparian Key (p.10)**

2b Stand not located in a riparian setting as described above…… **Go to Upland Key (p.11)**

Key to Alpine Shrubland Dominance Types

Instructions:

1. Codes for dominance type and vegetation type map unit can be found using Table 1. Find the name of the most abundant shrub in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
2. When two or more shrub species are equal in abundance, the species listed first in Table 1 is used to assign the dominance type and vegetation type map unit.
3. If the most abundant shrub species is not listed in Table 1, then record the dominance type as UNKNOWN.

Table 1. Most Abundant Alpine Shrub and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Shrub (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Picea engelmannii* krummholz	Engelmann spruce	PIEN-K	**ALP**	**A**
2	*Abies lasiocarpa* krummholz	subalpine fir	ABLA-K	**ALP**	**A**
3	*Ribes montigenum*	gooseberry currant	RIMO2-A	**ALP**	**A**
7	**Species not listed above**		Undefined	**ALP**	**A**

Key to Riparian Shrubland Dominance Types

Instructions:

1. Plots or polygons should be keyed out based on total cover by species.
2. Codes for dominance type and vegetation type map unit can be found using Table 2a. Find the name of the most abundant shrub in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
3. When two or more shrub species are equal in abundance, the species listed first in Table 2 is used to assign the dominance type and vegetation type map unit.
4. If the most abundant shrub species is not listed in Table 2a, then record the dominance type as Undefined.

Table 2a. Most Abundant Riparian Shrub and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Shrub (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Salix boothii*	Booth's willow	SABO2	RIPSH	**R**
2	*Salix drummondiana*	Drummond's willow	SADR	RIPSH	**R**
3	*Salix geyeriana*	Geyer's willow	SAGE2	RIPSH	**R**
4	*Salix exigua*	narrowleaf willow	SAEX	RIPSH	**R**
5	*Salix lucida ssp. lasiandra*	Pacific willow	SALUL	RIPSH	**R**
6	*Salix bebbiana*	Bebb willow	SABE2	RIPSH	**R**
7	*Salix planifolia*	diamondleaf willow	SAPL2	RIPSH	**R**
8	*Salix eriocephala*	Missouri River willow	SAER	RIPSH	**R**
9	*Salix arizonica*	Arizona willow	SAAR14	RIPSH	**R**
10	*Salix scouleriana*	Scouler's willow	SASC-R	RIPSH	**R**
11	*Ribes inerme*	whitestem gooseberry	RIIN2	RIPSH	**R**
12	*Cornus sericea*	redosier dogwood	COSE16	RIPSH	**R**
13	*Rosa woodsii*	Woods' rose	ROWO-R	RIPSH	**R**
14	*Rhus trilobata*	skunkbush sumac	RHTR-R	RIPSH	**R**
15	*Ribes aureum*	golden currant	RIAU	RIPSH	**R**
16	*Dasiphora fruticosa*	shrubby cinquefoil	DAFR6-R	RIPSH	**R**
17	*Artemisia cana ssp. viscidula*	mountain silver sagebrush	ARCA13-R	RIPSH	**R**
18	*Ribes montigenum*	gooseberry currant	RIMO2-R	RIPSH	**R**
19	*Rhus glabra*	smooth sumac	RHGL	RIPSH	**R**
20	*Lonicera involucrata*	twinberry honeysuckle	LOIN5	RIPSH	**R**
21	*Sambucus nigra ssp. cerulea*	blue elderberry	SANIC5-R	RIPSH	**R**
22	*Sambucus racemosa*	red elderberry	SARA2-R	RIPSH	**R**
23	*Prunus virginiana*	chokecherry	PRVI-R	RIPSH	**R**
24	*Rubus idaeus*	American red raspberry	RUID-R	RIPSH	**R**
25	*Robinia neomexicana*	New Mexico locust	RONE-R	RIPSH	**R**
26	**Species not listed above**		Undefined	RIPSH	**R**

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Key to Upland Shrubland Dominance Types

Instructions:

1. Plots or polygons should be keyed out based on total cover by species.
2. Codes for dominance type and vegetation type map unit can be found using Table 2b. Find the name of the most abundant shrub in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
3. When two or more shrub species are equal in abundance, the species listed first in Table 2 is used to assign the dominance type and vegetation type map unit.
4. If the most abundant shrub species is not listed in Table 2b, then record the dominance type as Undefined.

Table 2b. Most Abundant Upland Shrub and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Shrub (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Artemisia cana ssp. viscidula*	mountain silver sagebrush	ARCA13-U	**SSB**	**S**
2	*Sambucus racemosa*	red elderberry	SARA2-U	**GMSH**	**S**
3	*Sambucus nigra ssp. cerulea*	blue elderberry	SANIC5-U	**GMSH**	**S**
4	*Salix scouleriana*	Scouler's willow	SASC-U	**GMSH**	**S**
5	*Robinia neomexicana*	New Mexico locust	RONE-U	**GMSH**	**S**
6	*Ribes montigenum*	gooseberry currant	RIMO2-U	**GMSH**	**S**
7	*Rhus trilobata*	skunkbush sumac	RHTR-U	**GMSH**	**S**
8	*Mahonia repens*	creeping barberry	MARE11	**GMSH**	**S**
9	*Dasiphora fruticosa*	shrubby cinquefoil	DAFRF-U	**GMSH**	**S**
10	*Rubus idaeus*	American red raspberry	RUID-U	**GMSH**	**S**
11	*Shepherdia rotundifolia*	roundleaf buffaloberry	SHRO	**GMSH**	**S**
12	*Juniperus communis*	common juniper	JUCO6	**GMSH**	**S**
13	*Holodiscus dumosus*	rockspirea	HODU	**GMSH**	**S**
14	*Amelanchier alnifolia*	Saskatoon serviceberry	AMAL2	**GMSH**	**S**
15	*Amelanchier utahensis*	Utah serviceberry	AMUT	**GMSH**	**S**
16	*Prunus virginiana*	chokecherry	PRVI	**GMSH**	**S**
17	Rosa woodsii	Woods' rose	ROWO	**GMSH**	**S**
18	*Purshia mexicana*	Mexican cliffrose	PUME	**GMSH**	**S**
19	*Symphoricarpos oreophilus*	mountain snowberry	SYOR2	**GMSH**	**S**
20	*Purshia tridentata*	antelope bitterbrush	PUTR2	**GMSH**	**S**
21	*Arctostaphylos patula*	greenleaf manzanita	ARPA6	**GMSH**	**S**
22	*Prunus fasciculata*	desert almond	PRFA	**GMSH**	**S**
23	*Quercus turbinella*	Sonoran scrub oak	QUTU2	**GMSH**	**S**
24	*Quercus X pauciloba*	few-lobe oak	QUPA4	**GMSH**	**S**
25	*Artemisia tridentata ssp. vaseyana*	mountain big sagebrush	ARTRV	**MSB**	**S**
26	*Artemisia tridentata ssp. wyomingensis*	Wyoming big sagebrush	ARTRW8	**WSB**	**S**
27	*Artemisia tridentata ssp. tridentata*	basin big sagebrush	ARTRT	**BBSB**	**S**
28	*Artemisia nova*	black sagebrush	ARNO4	**BSB**	**S**
29	*Artemisia pygmaea*	pygmy sagebrush	ARPY2	**BSB**	**S**
30	*Arctostaphylos pungens*	pointleaf manzanita	ARPU5	**CHAP**	**S**
31	*Ceanothus greggii*	desert ceanothus	CEGR	**CHAP**	**S**
32	*Cercocarpus intricatus*	littleleaf mountain mahogany	CEIN7	**CHAP**	**S**
33	*Garrya flavescens*	ashy silktassel	GAFL2	**CHAP**	**S**
34	*Ceanothus martinii*	Martin's ceanothus	CEMA2	**ESCA**	**S**
35	*Atriplex canescens*	fourwing saltbush	ATCA2	**SALT**	**S**
36	*Atriplex confertifolia*	shadscale saltbush	ATCO	**SALT**	**S**
37	*Sarcobatus vermiculatus*	greasewood	SAVE4	**SALT**	**S**
38	*Artemisia filifolia*	sand sagebrush	ARFI2	**SDSH**	**S**

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39	*Yucca angustissima*	narrowleaf yucca	YUAN2	**SDSH**	**S**
40	*Ephedra fasciculata*	rough jointfir	EPAS	**WDSH**	**S**
41	*Ephedra torreyana*	Torrey's jointfir	EPTO	**WDSH**	**S**
42	*Chilopsis linearis*	desert willow	CHLI2	**WDSH**	**S**
43	*Eriodictyon angustifolium*	narrowleaf yerba santa	ERAN2	**WDSH**	**S**
44	*Eriogonum fasciculatum*	Eastern Mojave buckwheat	ERFA2	**WDSH**	**S**
45	*Agave utahensis*	Utah agave	AGUT	**WDSH**	**S**
46	*Glossopetalon spinescens*	spiny greasebush	GLSP	**WDSH**	**S**
47	*Coleogyne ramosissima*	blackbrush	CORA	**WDSH**	**S**
48	*Larrea tridentata*	creosote bush	LATR2	**WDSH**	**S**
49	*Psorothamnus fremontii*	Fremont's dalea	PSFR	**WDSH**	**S**
50	*Ambrosia dumosa*	burrobush	AMDU2	**WDSH**	**S**
51	*Salvia dorrii*	purple sage	SADO4	**WDSH**	**S**
52					
53	*Peraphyllum ramosissimum*	wild crab apple	PERA4	**Table X?**	**S**
54	*Mahonia fremontii*	Fremont's mahonia	MAFR3	**TBD**	**S**
55	*Gutierrezia sarothrae*	broom snakeweed	GUSA2	**TBD**	**S**
56	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	CHVI8	**TBD**	**S**
57	*Chrysothamnus vaseyi*	Vasey's rabbitbrush	CHVA2	**TBD**	**S**
58	*Ericameria parryi*	Parry's rabbitbrush	ERPA30	**TBD**	**S**
59	*Chrysothamnus depressus*	longflower rabbitbrush	CHDE2	**TBD**	**S**
60	*Ericameria nauseosa*	rubber rabbitbrush	ERNA10	**TBD**	**S**
61	*Tetradymia canescens*	spineless horsebrush	TECA2	**TBD**	**S**
62	*Eriogonum microthecum*	slender buckwheat	ERMI4	**TBD**	**S**
63	*Krascheninnikovia lanata*	winterfat	KRLA2	**TBD**	**S**
64	*Chrysothamnus greenei*	Greene's rabbitbrush	CHGR6	**TBD**	**S**
65	*Cercocarpus montanus*	alderleaf mountain mahogany	CEMO2	**TBD**	**S**
66	*Ceanothus fendleri*	Fendler's ceanothus	CEFE	**TBD**	**S**
67	*Ephedra viridis*	mormon tea	EPVI	**TBD**	**S**
68	*Ephedra nevadensis*	Nevada jointfir	EPNE	**TBD**	**S**
69	*Ceanothus martinii*	Martin's ceanothus	CEMA2	**TBD**	**S**
70	*Yucca baccata*	banana yucca	YUBA	**TBD**	**S**
	Species not listed above		Undefined		**S**

TBD = To be determined

Based on extent (>1% combined) sand, salt and warm desert should be combined

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DRAFT Key to Grassland Dominance Types
7/13/2012 RML, DLT

Instructions:

Plots or polygons should be keyed out based on total cover by species. This key is divided into riparian, alpine, and upland sections. First identify the physical setting of the plot, stand, or polygon using the key below.

For the purposes of this key, a riparian setting is defined as an area (typically transitional between aquatic and terrestrial ecosystems) identified by soil characteristics associated with at least seasonally high water tables, distinctive vegetation that requires or tolerates free or unbound water (Manning and Padgett 1995), proximity to a stream or lake, and/or topographic position (e.g. valley bottom). The alpine setting includes the area above the upper limit of continuous forest. Above this limit trees occur only in scattered patches and become increasingly stunted at higher elevations (Arno and Hammerly 1984). In this key the alpine setting takes precedence over the riparian setting. The upland setting includes non-riparian areas below the continuous forest line.

It is likely that some dominance types occur in more than one of these settings. If your plot does not key out successfully in one setting, then try another setting. For example, basin big sagebrush is in the upland key but may occur in degraded riparian areas with downcut streams.

Key to Physical Habitat Setting

Key Leads:

1a Stand is located in an alpine setting above the upper elevation limit of continuous forest…… **Go to Alpine Key (p.13) (Veg. Type MU = ALPH)**

1b Stand is located below the upper elevation limit of continuous forest…….. **2**

2a Stand is located in a riparian setting as indicated by proximity to a stream or lake, topographic position, plant species that require or tolerate free or unbound water, and/or soil properties associated with seasonally high water tables…… **Go to Riparian Key (p.14)**

2b Stand not located in a riparian setting as described above…… **Go to Upland Key (p.15)**

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Key to Alpine Grassland Dominance Types

Instructions:

1. Codes for dominance type and vegetation type map unit can be found using Table 3. Find the name of the most abundant graminoid in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
2. When two or more graminoid species are equal in abundance, the species listed first in Table 3 is used to assign the dominance type and vegetation type map unit.
3. If the most abundant graminoid species is not listed in Table 3, then record the dominance type as Undefined.

Table 3. Most Abundant Alpine Graminoid and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Graminoid (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Deschampsia cespitosa*	tufted hairgrass	DECE-A	**ALPH**	**A**
2	*Carex elynoides*	blackroot sedge	CAEL3-A	**ALPH**	**A**
3	*Poa glauca var. glauca*	glaucous bluegrass	POGLG-A	**ALPH**	**A**
4	*Trisetum spicatum*	spike trisetum	TRSP2-A	**ALPH**	**A**
5	*Festuca brachyphylla*	alpine fescue	FEBR-A	**ALPH**	**A**
6	*Poa fendleriana*	muttongrass	POFE-A	**ALPH**	**A**
7	*Danthonia intermedia*	timber oatgrass	DAIN-A	**ALPH**	**A**
12	**Species not listed above**		Undefined	**ALPH**	**A**

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Key to Riparian Grassland Dominance Types

Instructions:

1. Codes for dominance type and vegetation type map unit can be found using Table 4. Find the name of the most abundant graminoid in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
2. When two or more graminoid species are equal in abundance, the species listed first in Table 4 is used to assign the dominance type and vegetation type map unit.
3. If the most abundant graminoid species is not listed in Table 3, then record the dominance type as Undefined.

Table 4. Most Abundant Riparian Graminoid and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Graminoid (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Schedonorus pratensis*	meadow fescue	SCPR4	**RIPHB**	**R**
2	*Eleocharis acicularis*	needle spikerush	ELAC	**RIPHB**	**R**
3	*Eleocharis palustris*	common spikerush	ELPA3	**RIPHB**	**R**
4	*Eleocharis parishii*	Parish's spikerush	ELPA4	**RIPHB**	**R**
5	*Carex aquatilis*	water sedge	CAAQ	**RIPHB**	**R**
6	*Carex utriculata*	Northwest Territory sedge	CAUT	**RIPHB**	**R**
7	*Carex nebrascensis*	Nebraska sedge	CANE2	**RIPHB**	**R**
8	*Deschampsia cespitosa*	tufted hairgrass	DECE-R	**RIPHB**	**R**
9	*Carex microptera*	smallwing sedge	CAMI7-R	**RIPHB**	**R**
10	*Carex praegracilis*	clustered field sedge	CAPR5-R	**RIPHB**	**R**
11	*Carex haydeniana*	cloud sedge	CAHA6	**RIPHB**	**R**
12	*Glyceria striata*	fowl mannagrass	GLST	**RIPHB**	**R**
13	*Carex pellita*	woolly sedge	CAPE42	**RIPHB**	**R**
14	*Distichlis spicata*	inland saltgrass	DISP	**RIPHB**	**R**
15	*Muhlenbergia asperifolia*	scratchgrass	MUAS	**RIPHB**	**R**
16	*Phalaris arundinacea*	reed canarygrass	PHAR3	**RIPHB**	**R**
17	*Phragmites australis*	common reed	PHAU7	**RIPHB**	**R**
18	*Carex douglasii*	Douglas' sedge	CADO2	**RIPHB**	**R**
19	*Agrostis stolonifera*	creeping bentgrass	AGST2	**RIPHB**	**R**
20	*Agrostis variablis*	mountain bentgrass	AGVA	**RIPHB**	**R**
21	*Juncus arcticus ssp. litoralis*	mountain rush (baltic)	JUAR2-R	**RIPHB**	**R**
22	*Juncus longistylis*	longstyle rush	JULO	**RIPHB**	**R**
23	*Juncus drummondii*	Drummond's rush	JUDR	**RIPHB**	**R**
24	*Juncus nevadensis*	Sierra rush	JUNE	**RIPHB**	**R**
25	*Poa pratensis*	Kentucky bluegrass	POPR-R	**RIPHB**	**R**
40	**Species not listed above**		Undefined	**RIPHB**	**R**

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Key to Upland Grassland Dominance Types

Instructions:

1. Codes for dominance type and vegetation type map unit can be found using Table 4. Find the name of the most abundant graminoid in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
2. When two or more graminoid species are equal in abundance, the species listed first in Table 4 is used to assign the dominance type and vegetation type map unit.
3. If the most abundant graminoid species is not listed in Table 5, then record the dominance type as UNKNOWN.
4. Use Table 5A below to assign plots dominated by a native species to a map unit.

Table 5. Most Abundant Upland Graminoid and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Graminoid (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Carex elynoides*	blackroot sedge	**CAEL3-U**	**MTHB**	**H**
2	*Carex rossii*	Ross' sedge	**CARO5**	**MTHB**	**H**
3	*Danthonia intermedia*	timber oatgrass	**DAIN-U**	**MTHB**	**H**
4	*Carex praegracilis*	clustered field sedge	**CAPR5**	**MTHB**	**H**
5	*Juncus arcticus ssp. litoralis*	mountain rush (baltic)	**JUAR2-U**	**MTHB**	**H**
6	*Festuca idahoensis*	Idaho fescue	**FEIDI2**	**MTHB**	**H**
7	*Pseudoroegneria spicata*	bluebunch wheatgrass	**PSSP6**	**MTHB**	**H**
8	*Poa glauca var. glauca*	glaucous bluegrass	**POGLG-U**	**MTHB**	**H**
9	*Trisetum spicatum*	spike trisetum	**TRSP2-U**	**MTHB**	**H**
10	*Poa fendleriana*	muttongrass	**POFE-U**	**MTHB**	**H**
11	*Hesperostipa comata*	needle and thread	**HECO26**	**MTHB**	**H**
12	*Phleum alpinum*	alpine timothy	**PHAL2**	**MTHB**	**H**
13	*Carex subnigricans*	nearlyblack sedge	**CASU7**	**MTHB**	**H**
14	*Festuca brachyphylla*	alpine fescue	**FEBR-U**	**MTHB**	**H**
15	*Festuca thurberi*	Thurber's fescue	**FETH**	**MTHB**	**H**
16	*Poa secunda ssp. juncifolia*	big bluegrass	**POSEJ**	**MTHB**	**H**
17	*Hordeum brachyantherum*	meadow barley	**HOBR2**	**MTHB**	**H**
18	*Bromus marginatus*	mountain brome	**BRMA4**	**MTHB**	**H**
20	*Leymus salinus ssp. salinus*	saline wildrye	**LESAS**	**MTHB**	**H**
21	*Blepharoneuron tricholepis*	pine dropseed	**BLTR**	**MTHB**	**H**
22	*Dactylis glomerata*	orchardgrass	**DAGL**	**MTHB**	**H**
23	*Elymus glaucus*	blue wildrye	**ELGL**	**MTHB**	**H**
24	*Poa secunda ssp. secunda*	Sandberg bluegrass	**POSES6**	**MTHB**	**H**
25	*Elymus trachycaulus*	slender wheatgrass	**ELTR7**	**MTHB**	**H**
26	*Poa secunda*	Sandberg bluegrass	**POSE**	**TABLE 5A**	**H**
28	*Leymus cinereus*	basin wildrye	**LECI4**	**MTHB**	**H**
29	*Koeleria macrantha*	prairie Junegrass	**KOMA**	**MTHB**	**H**
30	*Pascopyrum smithii*	western wheatgrass	**PASM**	**MTHB**	**H**
31	*Achnatherum nelsonii*	Columbia needlegrass	**ACNE9**	**MTHB**	**H**
32	*Elymus lanceolatus*	thickspike wheatgrass	**ELLA3**	**MTHB**	**H**
33	*Carex obtusata*	obtuse sedge	**CAOB4**	**MTHB**	**H**
34	*Carex duriuscula*	needleleaf sedge	**CADU6**	**MTHB**	**H**
35	*Carex occidentalis*	western sedge	**CAOC2**	**MTHB**	**H**
36	*Carex phaeocephala*	dunhead sedge	**CAPH2**	**MTHB**	**H**
37	*Muhlenbergia richardsonis*	mat muhly	**MURI**	**MTHB**	**H**
38	*Bromus anomalus*	nodding brome	**BRAN**	**TABLE 5A**	**H**
39	*Phleum pratense*	timothy	**PHPR3**	**TABLE 5A**	**H**
40	*Poa pratensis*	Kentucky bluegrass	**POPR**	**TABLE 5A**	**H**
41	*Muhlenbergia montana*	mountain muhly	**MUMO**	**TABLE 5A**	**H**
42	*Festuca ovina*	sheep fescue	**FEOV**	**TABLE 5A**	**H**
43	*Elymus scribneri*	spreading wheatgrass	**ELSC4**	**TABLE 5A**	**H**

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44	*Achnatherum lettermanii*	Letterman's needlegrass	**ACLE9**	**TABLE 5A**	**H**
45	*Piptatheropsis micrantha*	littleseed ricegrass	**PIMI**	**FDHB**	**H**
46	*Aristida purpurea*	purple threeawn	**ARPU9**	**FDHB**	**H**
47	*Poa bulbosa*	bulbous bluegrass	**POBU**	**FDHB**	**H**
48	*Achnatherum hymenoides*	Indian ricegrass	**ACHY**	**FDHB**	**H**
49	*Elymus elymoides*	squirreltail	**ELEL5**	**FDHB**	**H**
50	*Bouteloua gracilis*	blue grama	**BOGR2**	**FDHB**	**H**
51	*Muhlenbergia pungens*	sandhill muhly	**MUPU2**	**FDHB**	**H**
52	*Pleuraphis jamesii*	James' galleta	**PLJA**	**FDHB**	**H**
53	*Sporobolus cryptandrus*	sand dropseed	**SPCR**	**FDHB**	**H**
54	*Vulpia octoflora*	sixweeks fescue	**VUOCO**	**FDHB**	**H**
55	*Bromus inermis*	smooth brome	**BRIN2**	**SEHB**	**H**
56	*Agropyron cristatum*	crested wheatgrass	**AGCR**	**SEHB**	**H**
57	*Thinopyrum intermedium*	intermediate wheatgrass	**THIN6**	**SEHB**	**H**
58	*Secale cereale*	cereal rye	**SECE**	**SEHB**	**H**
59	*Psathyrostachys juncea*	Russian wildrye	**PSJU3**	**SEHB**	**H**
60	*Bromus tectorum*	cheatgrass	**BRTE**	**ANHB**	**H**
61	*Bromus rubens*	red brome	**BRRU2**	**ANHB**	**H**
30	**Species not listed above**		**Undefined**		**H**

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Key to Herbaceous Upland Map Units

Instructions:

1. Determine the elevation and the setting of the plot.
2. Use Table 5A to assign the map unit.

Table 5A. Upland Herbaceous Map Based on Elevation and G.A.

Elevation	Herbaceous
≥ 9,800	Alpine and Upper Subalpine (Alpine Key)
6,000 – 10,800	Montane - inclusive of moist to dry Meadows
< 6,000	Foothills, Semi-Desert and Desert

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DRAFT Key to Forbland Dominance Types
7/13/2012 RML, DLT

Instructions:

Plots or polygons should be keyed out based on total cover by species. This key is divided into riparian, alpine, and upland sections. First identify the physical setting of the plot, stand, or polygon using the key below.

For the purposes of this key, a riparian setting is defined as an area (typically transitional between aquatic and terrestrial ecosystems) identified by soil characteristics associated with at least seasonally high water tables, distinctive vegetation that requires or tolerates free or unbound water (Manning and Padgett 1995), proximity to a stream or lake, and/or topographic position (e.g. valley bottom). The alpine setting includes the area above the upper limit of continuous forest. Above this limit trees occur only in scattered patches and become increasingly stunted at higher elevations (Arno and Hammerly 1984). In this key the alpine setting takes precedence over the riparian setting. The upland setting includes non-riparian areas below the continuous forest line.

It is likely that some dominance types occur in more than one of these settings. If your plot does not key out successfully in one setting, then try another setting. For example, basin big sagebrush is in the upland key but may occur in degraded riparian areas with downcut streams.

Key to Physical Habitat Setting

Key Leads:

1a	Stand is located in an alpine setting above the upper elevation limit of continuous forest……	**Go to Alpine Key (p.17) (Veg. Type MU = ALPH)**
1b	Stand is located below the upper elevation limit of continuous forest……	**2**
2a	Stand is located in a riparian setting as indicated by proximity to a stream or lake, topographic position, plant species that require or tolerate free or unbound water, and/or soil properties associated with seasonally high water tables……	**Go to Riparian Key (p.17)**
2b	Stand not located in a riparian setting as described above……	**Go to Upland Key (p.18)**

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Key to Alpine Forbland Dominance Types

Instructions:

1. Codes for dominance type and vegetation type map unit can be found using Table 6. Find the name of the most abundant forb in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
2. When two or more forb species are equal in abundance, the species listed first in Table 6 is used to assign the dominance type and vegetation type map unit.
3. If the most abundant forb species is not listed in Table 6, then record the dominance type as UNKNOWN.

Table 6. Most Abundant Alpine Forb and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Forb (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Caltha leptosepala*	white marsh marigold	CALE4-A	Alpine	**A**
2	*Selaginella watsonii*	Watson's spikemoss	SEWA2	Alpine	**A**
3	*Sibbaldia procumbens*	creeping sibbaldia	SIPR	Alpine	**A**
4	*Trifolium longipes*	longstalk clover	TRLO-A	Alpine	**A**
5	*Geum rossii*	Ross' avens	GERO2	Alpine	**A**
6	*Antennaria microphylla*	littleleaf pussytoes	ANMI3-A	Alpine	**A**
7	*Antennaria rosulata*	Kaibab pussytoes	ANRO3-A	Alpine	**A**
8	*Astragalus miser*	timber milkvetch	ASMI9-A	Alpine	**A**
9	*Erigeron compositus*	cutleaf daisy	ERCO4-A	Alpine	**A**
10	*Erigeron ursinus*	Bear River fleabane	ERUR2-A	Alpine	**A**
11	*Penstemon procerus*	littleflower penstemon	PEPR2-A	Alpine	**A**
12	*Oxytropis oreophila*	mountain oxytrope	OXOR2-A	Alpine	**A**
13	*Solidago multiradiata*	Rocky Mountain goldenrod	SOMU-A	Alpine	**A**
14	*Monardella odoratissima*	mountain monardella	MOOD-A	Alpine	**A**
15	*Potentilla hippiana*	woolly cinquefoil	POHI6-A	Alpine	**A**
16	*Potentilla diversifolia*	varileaf cinquefoil	PODI2-A	Alpine	**A**
17	*Potentilla gracilis*	slender cinquefoil	POGR9-A	Alpine	**A**
18	*Symphyotrichum ascendens*	western aster	SYAS3-A	Alpine	**A**
19	*Taraxacum officinale*	common dandelion	TAOF-A	Alpine	**A**
20	*Achillea millefolium*	common yarrow	ACMI2-A	Alpine	**A**
21	**Undefined**			**ALP**	**A**

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Key to Riparian Forbland Dominance Types

Instructions:

1. Codes for dominance type and vegetation type map unit can be found using Table 6. Find the name of the most abundant forb in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
2. When two or more forb species are equal in abundance, the species listed first in Table 6 is used to assign the dominance type and vegetation type map unit.
3. If the most abundant forb species is not listed in Table 7, then record the dominance type as UNKNOWN.

Table 7. Most Abundant Riparian Forb and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Forb (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Caltha leptosepala*	white marsh marigold	CALE4-R	**RIPHB**	**R**
2	*Typha domingensis*	southern cattail	TYDO	**RIPHB**	**R**
3	*Nasturtium officinale*	watercress	NAOF	**RIPHB**	**R**
4	*Mertensia arizonica*	aspen bluebells	MEAR6-R	**RIPHB**	**R**
5	*Barbarea orthoceras*	American yellowrocket	BAOR	**RIPHB**	**R**
6	*Athyrium filix-femina*	common ladyfern	ATFI	**RIPHB**	**R**
7	*Thermopsis montana*	mountain goldenbanner	THMO6	**RIPHB**	**R**
8	*Veronica americana*	American speedwell	VEAM2	**RIPHB**	**R**
9	*Veronica anagallis-aquatica*	water speedwell	VEAN2	**RIPHB**	**R**
10	*Astragalus agrestis*	purple milkvetch	ASAG2-R	**RIPHB**	**R**
11	*Brickellia californica*	California brickellbush	BRCA3 -R	**RIPHB**	**R**
12	*Cirsium scariosum*	meadow thistle	CISC2-R	**RIPHB**	**R**
13	*Clematis ligusticifolia*	western white clematis	CLLI2	**RIPHB**	**R**
14	*Eurybia glauca*	gray aster	EUGL19-R	**RIPHB**	**R**
15	*Lathyrus lanszwertii*	Nevada pea	LALA3-R	**RIPHB**	**R**
16	*Ligusticum porteri*	Porter's licorice-root	LIPO-R	**RIPHB**	**R**
17	*Osmorhiza depauperata*	bluntseed sweetroot	OSDE-R	**RIPHB**	**R**
18	*Pyrrocoma lanceolata var. lanceolata*	lanceleaf goldenweed	PYLAL-R	**RIPHB**	**R**
19	*Solidago velutina*	threenerve goldenrod	SOVE6-R	**RIPHB**	**R**
20	*Vicia americana*	American vetch	VIAM-R	**RIPHB**	**R**
21	*Rudbeckia montana*	montane coneflower	RUMO9-R	**RIPHB**	**R**
22	*Equisetum arvense*	field horsetail	EQAR-R	**RIPHB**	**R**
23	*Symphyotrichum ascendens*	western aster	SYAS3-R	**RIPHB**	**R**
24	*Symphyotrichum eatonii*	Eaton's aster	SYEA2-R	**RIPHB**	**R**
25	*Trifolium longipes*	longstalk clover	TRLO-R	**RIPHB**	**R**
26	*Trifolium repens*	white clover	TRRE3-R	**RIPHB**	**R**
27	*Descurainia incana*	mountain tansymustard	DEIN5-R	**RIPHB**	**R**
28	*Erigeron ursinus*	Bear River fleabane	ERUR2-R	**RIPHB**	**R**
29	*Melilotus officinalis*	sweetclover	MEOF	**RIPHB**	**R**
30	*Potentilla gracilis*	slender cinquefoil	POGR9-R	**RIPHB**	**R**
31	*Taraxacum officinale*	common dandelion	TAOF-R	**RIPHB**	**R**
32	*Veratrum californicum*	California false hellebore	VECA2	**RIPHB**	**R**
33	**Species not listed above**		Undefined	**RIPHB**	**R**

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Key to Upland Forbland Dominance Types

Instructions:

1. Codes for dominance type and vegetation type map unit can be found using Table 8. Find the name of the most abundant forb in column 2 and move to column 3 for the dominance type code, column 4 for the vegetation type map unit code, and column 5 for the vegetation map group code.
2. When two or more forb species are equal in abundance, the species listed first in Table 8 is used to assign the dominance type and vegetation type map unit.
3. If the most abundant forb species is not listed in Table 8, then record the dominance type as UNKNOWN.
4. Use Table 5A above to assign plots dominated by a native species to a map unit.

Table 8. Most Abundant Upland Forb and Indicated Dominance Type and Veg. Type Map Unit.

(1) Rank	(2) Most Abundant Forb (Dominance Type)		(3) Dom. Type Code	(4) Veg Type Map Unit	(5) Veg Group
1	*Caltha leptosepala*	white marsh marigold	CALE4-U	**MTHB**	**H**
2	*Delphinium barbeyi*	subalpine larkspur	DEBA2	**MTHB**	**H**
3	*Balsamorhiza sagittata*	arrowleaf balsamroot	BASA3	**MTHB**	**H**
4	*Mertensia arizonica*	aspen bluebells	MEAR6-U	**MTHB**	**H**
5	*Astragalus agrestis*	purple milkvetch	ASAG2-U	**MTHB**	**H**
6	*Lupinus argenteus*	silvery lupine	LUAR3	**MTHB**	**H**
7	*Brickellia californica*	California brickellbush	BRCA3-U	**MTHB**	**H**
8	*Lupinus sericeus*	Donner Lake lupine	LUSE2	**MTHB**	**H**
9	*Achillea millefolium*	common yarrow	ACMI2	**MTHB**	**H**
10	*Cirsium scariosum*	meadow thistle	CISC2-U	**MTHB**	**H**
11	*Antennaria microphylla*	littleleaf pussytoes	ANMI3-U	**MTHB**	**H**
12	*Eurybia glauca*	gray aster	EUGL19-U	**MTHB**	**H**
13	*Antennaria rosulata*	Kaibab pussytoes	ANRO3-U	**MTHB**	**H**
14	*Petrophytum caespitosum*	mat rockspirea	PECA12	**MTHB**	**H**
15	*Hymenoxys hoopesii*	owl's-claws	HYHO-U	**MTHB**	**H**
16	*Astragalus miser*	timber milkvetch	ASMI9-U	**MTHB**	**H**
17	*Epilobium brachycarpum*	tall annual willowherb	EPBR3	**MTHB**	**H**
18	*Lathyrus lanszwertii*	Nevada pea	LALA3-U	**MTHB**	**H**
19	*Erigeron compositus*	cutleaf daisy	ERCO4-U	**MTHB**	**H**
20	*Ligusticum porteri*	Porter's licorice-root	LIPO-U	**MTHB**	**H**
21	*Erigeron ursinus*	Bear River fleabane	ERUR2-U	**MTHB**	**H**
22	*Osmorhiza depauperata*	bluntseed sweetroot	OSDE-U	**MTHB**	**H**
23	*Penstemon procerus*	littleflower penstemon	PEPR2-U	**MTHB**	**H**
24	*Pyrrocoma lanceolata var. lanceolata*	lanceleaf goldenweed	PYLAL-U	**MTHB**	**H**
25	*Oxytropis oreophila*	mountain oxytrope	OXOR2-U	**MTHB**	**H**
26	*Vicia americana*	American vetch	VIAM-U	**MTHB**	**H**
27	*Equisetum arvense*	field horsetail	EQAR-U	**MTHB**	**H**
28	*Solidago multiradiata*	Rocky Mountain goldenrod	SOMU-U	**MTHB**	**H**
29	*Rudbeckia montana*	montane coneflower	RUMO9-U	**MTHB**	**H**
30	*Monardella odoratissima*	mountain monardella	MOOD-U	**MTHB**	**H**
31	*Symphyotrichum ascendens*	western aster	SYAS3-U	**MTHB**	**H**
32	*Potentilla hippiana*	woolly cinquefoil	POHI6-U	**MTHB**	**H**
33	*Symphyotrichum eatonii*	Eaton's aster	SYEA2-U	**MTHB**	**H**
34	*Potentilla diversifolia*	varileaf cinquefoil	PODI2-U	**MTHB**	**H**
35	*Machaeranthera bigelovii var. commixta*	Bigelow's tansyaster	MABIC	**MTHB**	**H**
36	*Penstemon rydbergii*	Rydberg's penstemon	PERY	**MTHB**	**H**
37	*Phlox pulvinata*	cushion phlox	PHPU5	**MTHB**	**H**
38	*Trifolium longipes*	longstalk clover	TRLO-U	**MTHB**	**H**
39	*Trifolium repens*	white clover	TRRE3-U	**MTHB**	**H**
40	*Descurainia incana*	mountain tansymustard	DEIN5-U	**MTHB**	**H**

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41	*Potentilla gracilis*	slender cinquefoil	POGR9-U	**MTHB**	**H**
42	*Taraxacum officinale*	common dandelion	TAOF-U	**MTHB**	**H**
43	*Collinsia parviflora*	maiden blue eyed Mary	COPA3	**MTHB**	**H**
44	*Erigeron speciosus*	aspen fleabane	ERSP4	**MTHB**	**H**
45	*Solidago velutina*	threenerve goldenrod	SOVE6-U	**MTHB**	**H**
46	*Artemisia dracunculus*	tarragon	ARDR4	**MTHB**	**H**
47	*Astragalus argophyllus*	silverleaf milkvetch	ASAR4	**MTHB**	**H**
48	*Astragalus tenellus*	looseflower milkvetch	ASTE5	**MTHB**	**H**
49	*Atriplex saccaria*	sack saltbush	ATSA	**MTHB**	**H**
50	*Onobrychis viciifolia*	sainfoin	ONVI	**MTHB**	**H**
51	*Carduus nutans*	nodding plumeless thistle	CANU4	**MTHB**	**H**
52	*Salsola tragus*	prickly Russian thistle	SATR12	**MTHB**	**H**
53	*Chenopodium atrovirens*	pinyon goosefoot	CHAT	**MTHB**	**H**
54	*Delphinium nuttallianum*	twolobe larkspur	DENU2	**MTHB**	**H**
55	*Erigeron flagellaris*	trailing fleabane	ERFL	**MTHB**	**H**
56	*Erigeron pumilus*	shaggy fleabane	ERPU2	**MTHB**	**H**
57	*Eriogonum corymbosum*	crispleaf buckwheat	ERCO14	**MTHB**	**H**
58	*Hedysarum boreale*	Utah sweetvetch	HEBO	**MTHB**	**H**
59	*Heliomeris multiflora var. multiflora*	showy goldeneye	HEMUM	**MTHB**	**H**
60	*Hymenoxys richardsonii*	pingue rubberweed	HYRI	**MTHB**	**H**
61	*Ivesia kingii*	King's mousetail	IVKI	**MTHB**	**H**
62	*Leucocrinum montanum*	common starlily	LEMO4	**MTHB**	**H**
63	*Lewisia rediviva*	bitter root	LERE7	**MTHB**	**H**
64	*Paronychia sessiliflora*	creeping nailwort	PASE	**MTHB**	**H**
65	*Penstemon linarioides*	toadflax penstemon	PELI2	**MTHB**	**H**
66	*Penstemon pachyphyllus*	thickleaf beardtongue	PEPA6	**MTHB**	**H**
67	*Penstemon watsonii*	Watson's penstemon	PEWA	**MTHB**	**H**
68	*Petradoria pumila*	rock goldenrod	PEPU7	**MTHB**	**H**
69	*Pleiacanthus spinosus*	thorn skeletonweed	PLSP7	**MTHB**	**H**
70	*Senecio integerrimus*	lambstongue ragwort	SEIN2	**MTHB**	**H**
71	*Stenotus armerioides var. armerioides*	thrift mock goldenweed	STARA	**MTHB**	**H**
72	*Tetraneuris acaulis var. acaulis*	stemless four-nerve daisy	TEACA2	**MTHB**	**H**
73	*Trifolium kingii ssp. macilentum*	King's clover	TRKIM	**MTHB**	**H**
74	*Astragalus zionis*	Zion milkvetch	ASZI	**MTHB**	**H**
75	*Cardaria draba*	whitetop	CADR	**MTHB**	**H**
76	*Cirsium wheeleri*	Wheeler's thistle	CIWH	**MTHB**	**H**
77	*Erigeron divergens*	spreading fleabane	ERDI4	**MTHB**	**H**
78	*Linum perenne*	blue flax	LIPE2	**MTHB**	**H**
79	*Lotus humistratus*	foothill deervetch	LOHU2	**MTHB**	**H**
80	*Medicago sativa*	alfalfa	MESA	**MTHB**	**H**
81	*Packera multilobata*	lobeleaf groundsel	PAMU11	**MTHB**	**H**
82	*Phlox austromontana*	mountain phlox	PHAU3	**MTHB**	**H**
83	*Cryptantha fulvocanescens*	tawny cryptantha	CRFU	**MTHB**	**H**
84	*Penstemon pinorum*	Pine Valley penstemon	PEPI4	**MTHB**	**H**
85	*Xylorhiza confertifolia*	Henrieville woodyaster	XYCO3	**MTHB**	**H**
86	*Ericameria zionis*	subalpine goldenbush	ERZI2	**MTHB**	**H**
87	*Eriogonum aretioides*	Red Canyon buckwheat	ERAR8	**MTHB**	**H**
88	*Gentianella tortuosa*	Cathedral Bluff dwarf gentian	GETO	**MTHB**	**H**
89	*Ivesia sabulosa*	Intermountain mousetail	IVSA	**MTHB**	**H**
90	*Lomatium minimum*	little desertparsley	LOMI2	**MTHB**	**H**
91	*Senecio atratus*	tall blacktip ragwort	SEAT	**MTHB**	**H**
92	*Artemisia campestris*	field sagewort	ARCA12	**FDHB**	**H**
93	*Astragalus lonchocarpus*	rushy milkvetch	ASLO3	**FDHB**	**H**
94	*Astragalus subcinereus*	Silver's milkvetch	ASSU6	**FDHB**	**H**

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95	*Erigeron religiosus*	Clear Creek fleabane	ERRE7	**FDHB**	**H**
96	*Hymenopappus filifolius*	fineleaf hymenopappus	HYFI	**FDHB**	**H**
97	*Lactuca serriola*	prickly lettuce	LASE	**FDHB**	**H**
98	*Lappula occidentalis*	flatspine stickseed	LAOC3	**FDHB**	**H**
99	*Machaeranthera canescens*	hoary tansyaster	MACA2	**FDHB**	**H**
100	*Oenothera pallida*	pale evening primrose	OEPA	**FDHB**	**H**
101	*Penstemon ophianthus*	coiled anther penstemon	PEOP	**FDHB**	**H**
102	*Senecio flaccidus var. douglasii*	Douglas' ragwort	SEFLD	**FDHB**	**H**
103	*Stanleya pinnata*	desert princesplume	STPI	**FDHB**	**H**
104	*Lepidium fremontii*	desert pepperweed	LEFR2	**FDHB**	**H**
105	*Nicotiana attenuata*	coyote tobacco	NIAT	**FDHB**	**H**
106	*Sisymbrium altissimum*	tall tumblemustard	SIAL2	**ANHB**	**H**
107	*Halogeton glomeratus*	saltlover	HAGL	**ANHB**	**H**
108	*Chorispora tenella*	crossflower	CHTE2	**ANHB**	**H**
109	*Onopordum acanthium*	Scotch cottonthistle	ONAC	**ANHB**	**H**
110	*Ceratocephala testiculata (Ranunculus testiculatus)*	curveseed butterwort	CETE5	**ANHB**	**H**
111	*Cryptantha gracilis*	narrowstem cryptantha	CRGR3	**ANHB**	**H**
112	*Descurainia pinnata*	western tansymustard	DEPI	**ANHB**	**H**
113	*Erodium cicutarium*	redstem stork's bill	ERCI6	**ANHB**	**H**
114	*Microsteris gracilis*	slender phlox	MIGR	**ANHB**	**H**
115	**Species not listed above**		Undefined		**R**

Key to Non-Vegetated Land Cover and Land Use Types
05/11/2010 DLT

		Veg. Group
1a. Area is currently used for agricultural activity (e.g. a fallow field).	**Agriculture (AGR)**	**N**
1b. Area is not currently used for agricultural activity 2		
2a. Area is currently developed for urban, residential, administrative use	**Developed (DEV)**	**N**
2b. Area is not currently developed for urban, residential, administrative use 3		
3a. Area is dominated by open water or a confined water coarse	**Water (WA)**	**N**
3b. Area is not dominated by open water or a confined water coarse 4		
4a. Area is dominated by unburned barren land (e.g. bare ground, bedbrock, scree/tallus, mines/talings)	**Barren/Rock (BR)**	**N**
4b. Area is not dominated by unburned barren land 5		
5. Area not as above.	**Undefined**	

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Appendix A. Absolute and Relative Cover

Absolute cover of a plant species is the proportion of a plot's area included in the perpendicular downward projection of the species. These are the values recorded when sampling a vegetation plot. Relative cover of a species is the proportion it comprises of the total plant cover on the plot (or the proportion of a layer's cover). Relative cover values must be calculated from absolute cover values. For example, we estimate overstory canopy cover on a plot as follows: lodgepole pine 42%, Engelmann spruce 21%, and subalpine fir 7%. These values are the absolute cover of each species. The relative cover of each species is calculated by dividing each absolute cover value by their total (70%) as follows:

	Absolute Cover	Calculation	Relative Cover
Lodgepole pine	42%	100 x 42 / 70 =	60%
Engelmann spruce	21%	100 x 21 /70 =	30%
Subalpine fir	7%	100 x 7 /70 =	10%
Total of values	70%		100%

We calculate relative cover of 60% for lodgepole pine. This means that lodgepole pine makes up 60% of the overstory tree canopy cover on the plot. Relative cover always adds up to 100%, but absolute cover does not. Because plant canopies can overlap each other, absolute cover values can add up to more than 100%. In our example, the total of the absolute cover values is 70, but this does not mean that overstory trees cover 70% of the plot. Overstory tree cover would be 70% if there were no overlap between the crowns of the three species, but only 42% with maximum overlap. The actual overstory cover must be determined when sampling the plot if the information is desired, but the sum of the species cover values is used to calculate relative cover.

If the absolute cover values in our example were all halved or all doubled, the relative cover of each species would not change even though overstory tree cover would be very different. Halving the absolute values would mean overstory cover would be between 21 and 35%, depending on the amount of overlap. Doubling the values would mean overstory cover could range from 84 to 100% (not 140%). Each of these scenarios would be very different from the original example in terms of wildlife habitat value, fuel conditions, fire behavior, and silvicultural options; but the relative cover of the tree species would be exactly the same. We should also note that they also could vary widely in spectral signature. The key point here is that relative cover values by themselves provide limited ecological information and may be of little value to resource managers. Relative cover can be derived from absolute cover, but absolute cover cannot be derived from relative cover values. This is why absolute cover is recorded in the field.

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Appendix B. Vegetation Group and Vegetation Type Map Unit Codes

Vegetation Group Map Unit	Code
Conifer Forest	C
Deciduous Forest	D
Woodland	W
Shrubland	S
Herbaceous	H
Riparian	R
Alpine	A
Non-Vegetated	N

Vegetation Type Map Unit	Code
Alpine	
Alpine Vegetation and Subalpine Herbaceous (in part) (<10,800 feet) – *inclusive of alpine shrubs*	ALP
Riparian	
Riparian Shrublands/Deciduous Tree (Stream & Meadow- Wet)	RIPSH
Riparian Herbaceous (Stream & Meadow – Wet)	RIPHB
Herbaceous	
Montane Herbaceous – inclusive of moist to dry meadows	MTHB
Foothills, Semi-Desert and Desert Herbaceous	FDHB
Reseeded Herbaceous	SEHB
Annual Herbaceous	ANHB
Shrubland	
Silver Sagebrush	SSB
Gamble Oak/Mixed Shrublands (Mountain Brush)	GMSH
Mountain Big Sagebrush	MSB
Wyoming Big Sagebrush	WSB
Basin Big Sagebrush	BBSB
Black Sagebrush	BSB
Chaparral – as defined by Dixie Functional Group	CHAP
Salt Desert Shrub	SALT
Forest and Woodland	
Ponderosa Pine	PP
Quaking aspen	AS
Douglas fir	DF
White fir	WF
Blue Spruce	BS
Engelmann spruce	ES
Subalpine fir	SF
Curlleaf mountain mahogany	MM
Pinyon/Juniper	PJ

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