CHAPTER VII
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VII. APPENDICES AND REFERENCES CITED

Appendix 1: Description of Vegetation Databases

Vegetation data for the Desolation ecosystem analysis was stored in three different databases. This document serves as a data dictionary for the existing vegetation, historical vegetation, and potential natural vegetation databases, as described below:

- Interpretation of aerial photography acquired in 1995, 1996, and 1997 was used to characterize existing (current) conditions. The 1996 and 1997 photography was obtained after cessation of the Bull and Summit wildfires in order to characterize post-fire conditions. The database name is: **97veg**.
- Interpretation of late-1930s and early-1940s photography was used to characterize historical conditions. The database name is: **39veg**.
- The potential natural vegetation was determined for each polygon in the analysis area (based on the pre-fire polygons). Plant associations were derived from a variety of sources, including field surveys completed by a professional ecologist under contract to the Forest Service (Ayn Shlisky), sensitive plant surveys and personal knowledge of the analysis area by the Forest Botanist (Karl Urban), and historical stand examinations. The database name is: **Plantass**.

Note: Although delineation of existing and historical conditions were not made by the same interpreters, both efforts used the same coding scheme and database structure.

Site Number (**Site** is the database field name**)**: Polygons were numbered consecutively, starting at the northwest corner of the analysis area (near Dale work center) and proceeding southerly to the southeast corner by Sunrise Butte. [Note: polygon numbering was not consecutive for the **97veg** database after new polygons for the Summit and Bull fires were merged with existing (pre-fire) polygons.]

Total Area (TotArea): Total acreage within the polygon boundary; calculated using Arc/Info.

Private Area (PvtArea): Acreage within the polygon that is not owned/administered by the Umatilla National Forest; calculated using Arc/Info.

Data Source (Sour): Provides the data source for each record, as described below. [Note: this field was not used with the historical database since all of its data was derived from one source.]

Code	Description
KU	Ecoclass codes assigned by Karl Urban (pertains to plant association database only)
PI	Photo Interpretation
SE	Stand Examination
WT	Walk Through/Field Reconnaissance

Subwatershed (SWS): Provides the predominant subwatershed for each polygon. Derived by overlaying the subwatershed layer with both the historical and existing vegetation polygon layers, and then determining which subwatershed occupies the majority of each polygon.

Subwatershed Group (Group): This derived field was based on data in the *Subwatershed* field. It was used for the HRV analyses. Each polygon in the **39veg** and **97veg** databases was assigned to one of two subwatershed groups, as described below:

Code	Description
Low	Subwatersheds occurring in the lower portion of the watershed (36A, 36B, 36C, 36D)

Upp	Subwatersheds occurring in the upper part of the watershed (36E, 36F, 36G, 36H, 36I)

Photo Number (Photo#): Number of the aerial photograph on which the polygon was delineated. Photo number consists of the roll number and the print number, separated by a dash (–) or a space.

Elevation (Elev): Mean elevation of the polygon; calculated by Arc/Info after gridding the polygon into 30-meter square pixels. Value is an average of the pixels within a polygon.

Slope Percent (SlpPct): Mean slope percent of the polygon; calculated by Arc/Info after gridding the polygon into 30-meter square pixels. Value is an average of the pixels within a polygon.

Aspect (Asp): Mean aspect of the polygon; calculated by Arc/Info after gridding the polygon into 30-meter square pixels. Value is an average of the azimuth calculations, in degrees, for the pixels within a polygon. The azimuth (degree) value was converted to a compass direction using this relationship:

Code	Description
LE	Level (sites with no aspect; slope percents <5%)
NO	North (azimuths >338° and ≤23°)
NE	Northeast (azimuths >23° and ≤68°)
EA	East (azimuths >68° and ≤113°)
SE	Southeast (azimuths >113° and ≤158°)
SO	South (azimuths >158° and ≤203°)
SW	Southwest (azimuths >203° and ≤248°)
WE	West (azimuths >248° and ≤293°)
NW	Northwest (azimuths >293° and ≤338°)

Seral Status (Seral): This derived field was based on data in the *plant association group* and *cover type* fields. It was used for the stand density analyses. Each polygon in the **39veg** and **97veg** databases was assigned to one of three seral status categories (see Hall and others 1995), as described below:

Code	Description
ES	Early Seral status
MS	Mid Seral status
LS	Late Seral status

Plant Association Group (PAG): Assigned by generating a new thematic map from the **Plantass** database, and then overlaying the resulting PAGs with the existing (**97veg**) and historical (**39veg**) polygon layers. Refer to Powell (1998) for a description of how plant associations were combined into PAGs.

Code	Description
Cold Dry UF	Cold Dry Upland Forest PAG
Cold Moist US	Cold Moist Upland Shrubland PAG
Cold Wet HSM RF	Cold Wet High Soil Moisture Riparian Forest PAG
Cold Wet HSM RH	Cold Wet High Soil Moisture Riparian Herbland PAG
Cold Wet MSM RF	Cold Wet Moderate Soil Moisture Riparian Forest PAG
Cold Wet MSM RH	Cold Wet Moderate Soil Moisture Riparian Herbland PAG
Cool Dry UF	Cool Dry Upland Forest PAG
Cool Moist UF	Cool Moist Upland Forest PAG
Hot Dry UF	Hot Dry Upland Forest PAG
Hot Dry UG	Hot Dry Upland Grassland PAG
Hot Dry US	Hot Dry Upland Shrubland PAG
Hot Moist UW	Hot Moist Upland Woodland PAG
Rock	Rock (talus, outcrop, etc.) PAG
Warm Dry UF	Warm Dry Upland Forest PAG

Code	Description
Warm Moist UF	Warm Moist Upland Forest PAG
Warm Moist UG	Warm Moist Upland Grassland PAG
Warm Wet MSM RH	Warm Wet Moderate Soil Moisture Riparian Herbland PAG
Water Lake	Water (lakes) PAG

Potential Vegetation Group (PVG): Assigned by generating a new thematic map from the **Plantass** database, and then overlaying the resulting PVGs with the existing (**97veg**) and historical (**39veg**) polygon layers. Refer to Powell (1998) for a description of how the PAGs were combined into PVGs.

Code	Description
Cold UF	Cold Upland Forest PVG
Cold US	Cold Upland Shrubland PVG
Dry UF	Dry Upland Forest PVG
Dry UG	Dry Upland Grassland PVG
Dry US	Dry Upland Shrubland PVG
High SM RH	High Soil Moisture Riparian Herbland PVG
Mod SM RH	Moderate Soil Moisture Riparian Herbland PVG
Moist UF	Moist Upland Forest PVG
Moist UG	Moist Upland Grassland PVG
Moist UW	Moist Upland Woodland PVG
Rock	Rock PVG
Water	Water PVG
Wet RF	Wet Riparian Forest PVG

Plant Association (Ecoclass1, Ecoclass2, Ecoclass3): Since a typical vegetation polygon (20-30 acres) commonly contains more than one plant association, up to three plant associations were recorded for each polygon. The **Plantass** database contains the 6-digit Ecoclass codes (Hall 1998) that were used to record the plant association information. There are too many Ecoclass codes to include here; see Powell (1998) or Hall (1998) for a list that relates each Ecoclass code to the plant association it represents.

Plant Community Types (PCT1, PCT2): Up to two plant community types were recorded for each polygon. The Plantass database contains the 6-digit Ecoclass codes (Hall 1998) that were used to record the plant community type information. There are too many Ecoclass codes to include here; see Powell (1998) or Hall (1998) for a list that relates each Ecoclass code to the plant community type it represents.

Structural Stage (SS): Structural stages were derived using database queries. The queries used combinations of the overstory cover *(OvCov)*, overstory size *(OvSiz)*, understory cover *(UnCov)*, and understory size *(UnSiz)* fields in the existing (**97veg**) and historical (**39veg**) databases. Queries differed slightly by PVG. Veg Table 33 shows the structural stage queries. Refer to Oliver and Larson (1996) or O'Hara and others (1996) for definitions and further information about structural stages.

Code	Description
NF	Non Forest (no structural stage determined for non-forest polygons)
OFMS	Old Forest Multi Strata structural stage
OFSS	Old Forest Single Stratum structural stage
SECC	Stem Exclusion Closed Canopy structural stage
SEOC	Stem Exclusion Open Canopy structural stage
SI	Stand Initiation structural stage
UR	Understory Reinitiation structural stage

YFMS Young Forest Multi Strata structural stage

Cover Types (CovTyp): These codes describe the predominant cover type (whether vegetated or not) for each polygon. Polygons were considered nonforest when the total canopy cover of trees was less than 10 percent. For forested polygons, the cover type code represents an aggregation of similar stands based on floristics (tree species) and dominance (plurality of basal area or canopy cover; see Eyre 1980). Plurality was defined as 50% or more of the species composition – a polygon with 50% or more of the canopy cover in ponderosa pine was coded CP. Cover type codes are described below. [Note: Not all of the codes were actually used; however, they do reflect what was available to the interpreters.]

Code	Description
Nonvegetated Cover Types	
AX	Administrative/Agriculture
NR	Rock Outcrop
NT	Talus/Scree
NS	Sparse/Scabland
NX	Bare Ground/Burned/Other
WL	Water (Lakes)
WR	Water (Running)
Nonforest Cover Types	
FM	Forblands
GB	Bunchgrass Grassland
GS	Subalpine/Alpine Meadow/Grassland
GX	Other Grassland
MD	Dry Meadow
MM	Moist Meadow
MS	Subalpine/Alpine Meadow
MW	Wet Meadow
SD	Dry Shrubland (sagebrush, etc.)
SL	Low Shrubs < 6’
SS	Subalpine/Alpine Shrubland
ST	Tall Shrubs > 6’ (Mtn-Mahogany, etc.)
Forest Cover Types	
CA	Subalpine Fir
CB	Whitebark Pine
CD	Douglas-fir
CE	Engelmann Spruce
CJ	Western Juniper
CL	Lodgepole Pine
CP	Ponderosa Pine
CT	Western Larch/Tamarack
CW	Grand Fir
CX	Mixed; < 50% of any one tree species
HA	Quaking Aspen
HC	Black Cottonwood

Live Canopy Cover (LivCov): Total canopy cover was recorded for polygons with a nonforest or forest cover type code – total tree cover for forest cover types; total shrub cover for shrub types; total herb cover for meadow or grassland types. Total canopy cover refers to the percentage of the ground surface obscured by live plant foliage.

Cover Class (CovCls): This derived field was based on data in the *LivCov* field. It was used for the stand density analyses. Each polygon in the **39veg** and **97veg** databases was assigned to one of four cover classes, as described below:

Code	Description
<=40	Live canopy (crown) cover is 40 percent or less
41-55	Live canopy cover is between 41 and 55 percent
56-70	Live canopy cover is between 56 and 70 percent
>70	Live canopy cover is 71 percent or more

Canopy Layers (#Lay): The number of canopy layers was recorded for all polygons with a forest cover type code, as described below:

Code	Description
1	1 layer present
2	2 layers present
3	Three or more layers present

Overstory Cover (OvCov): For polygons with a forest cover type code, the canopy cover associated with the overstory layer was recorded in this field. When added to the understory cover value, the total should equal the canopy cover of the polygon as a whole (as coded in the *LivCov* field). [Note: the overstory is the tallest tree layer, whereas the understory is the shortest one.]

Overstory Size Class (OvSiz): For polygons with a forest cover type code, the predominant size class for the overstory layer was recorded using these codes:

Code	Description
1	Seedlings; trees less than 1 inch DBH
2	Seedlings and saplings mixed
3	Saplings; trees 1–4.9" DBH
4	Saplings and poles mixed
5	Poles; trees 5–8.9" DBH
6	Poles and small trees mixed
77	Small trees 9–14.9" DBH
88	Small trees 15–20.9" DBH (code not in EVG)
8	Small trees and medium trees mixed
9	Medium trees 21–31.9" DBH
10	Medium and large trees mixed
11	Large trees 32-47.9" DBH

Overstory Species (OvSp1, OvSp2): For polygons with a forest cover type code, one to three tree species were recorded for the overstory (only two species were included in the database). Species were recorded in decreasing order of predominance, using the following codes. [Note: additional species codes (western white pine, quaking aspen, etc.) were available to the interpreters, but were not used.]

Code	Description
BC	Black Cottonwood
DF	Douglas-fir
ES	Engelmann Spruce
GF	Grand Fir
LP	Lodgepole Pine
PP	Ponderosa Pine
SF	Subalpine Fir

Code	Description
WB	Whitebark Pine
WJ	Western Juniper
WL	Western Larch

Overstory Mortality (OvMor): For polygons with a forest cover type code, the abundance of dead trees (snags) was recorded for the overstory layer using these codes:

Code	Description
L	Low; <10 dead trees per acre
M	Moderate; 11-20 dead trees per acre
H	High; 21-60 dead trees per acre
V	Very High; >60 dead trees per acre

Understory Cover (UnCov): For polygons with a forest cover type code and two canopy layers, the canopy cover associated with the understory layer was recorded in this field. When added to the overstory cover value, the total should equal the canopy cover of the polygon as a whole (as coded in the *LivCov* field). [Note: the understory is the shortest tree layer, the overstory the tallest one.]

Understory Size Class (UnSiz): For polygons with a forest cover type code and two canopy layers, the predominant size class for the understory layer was recorded in this field. Codes were the same as those described above for the overstory.

Understory Species (UnSp1, UnSp2): For polygons with a forest cover type code and two canopy layers, one to three tree species were recorded for the understory (only two species were included in the database). Species are recorded in decreasing order of predominance, using the same species codes described above for the overstory.

Clumpy (Clmp): For polygons with a forest cover type code, the "horizontal patchiness" or intra-stand variation was recorded using the following codes.

Code	Description
Blank	Not rated (nonforest polygons)
N	Continuous, non-clumpy distribution
L	Low; widely-scattered clump distribution (<30% of polygon's area)
M	Moderate clump distribution (30–70% of polygon occupied by clumps)
H	High/dense clump distribution (>70% of polygon occupied by clumps)

Disturbance (Dist): For all polygons, evidence of disturbance was recorded using these codes:

Code	Description
Blank	No visible evidence of disturbance
CC	Recent clearcut timber harvest
CR	Old clearcut, now regenerating
FI	Evidence of recent fire
PC	Recent partial cutting timber harvest (selection, shelterwood, etc.)
PR	Old partial cut, now regenerating
SS	Evidence of sanitation/salvage timber harvest
TH	Evidence of thinning silvicultural treatment

Veg Table 33: Structural stage methodology used for the Desolation Ecosystem Analysis (used for both the historical and existing databases)

Order	PVG	OvCov	OvSiz	UnCov	UnSiz	Stage	Comments
1	Nonforest					NF	All F.., G.., M.., N.., S.., W.. polygons
2	Cold UF	>=30	88, 8, 9, 10, 11	>20		OFMS	Includes smaller size class (88) than ICBEMP (for LP, SF)
3	Cold UF	>=30	88, 8, 9, 10, 11	<=20		OFSS	Includes smaller size class (88) than ICBEMP (for LP, SF)
4	Dry UF	>=15	8, 9, 10, 11	>10		OFMS	Cover values are half of what ICBEMP used
5	Dry UF	>=15	8, 9, 10, 11	<=10		OFSS	Cover values are half of what ICBEMP used
6		>=30	8, 9, 10, 11	>20		OFMS	
7		>=30	8, 9, 10, 11	<=20		OFSS	
8	Dry UF	>=35	4, 5, 6, 77, 88	<10		SECC	Cover values are half of what ICBEMP used
9	Dry UF	<35	4, 5, 6, 77, 88	<10		SEOC	Cover values are half of what ICBEMP used
10		>=70	4, 5, 6, 77, 88	<10		SECC	
11		<=20		>=70	2 – 4	SECC	Stem exclusion under remnant overstory
12		<=20		<70	2 – 4	SI	Seeds/saps under remnant overstory
13			1, 2, 3, 4			SI	Seeds and saps are the overstory
14		<30	>=5			SI	Sparse overstory, but no seeds/saps are established yet
15	Dry UF	>=30	>=5	>=10		UR	Cover values are half of what ICBEMP used
16		>=30	>=5	Blank		SEOC	Sparse overstory stocking
17		>=30	>=5	<10		UR	Sparse overstory over sparse understory stocking
18		>=60	>=5	>=10		UR	
19		<=60	>=5	>=10		YFMS	
20	?	?	?	?	?	?	Classify remaining polygons by hand (and refine queries)

Sources/Notes: These queries were based on a draft paper entitled "Assessing change in vegetation structure and composition at mid-scale in the Interior Columbia River Basin assessment: analysis plan" by Hessburg and Smith (1996). Order is important because it is assumed that these calculations would occur using the following query statement: "blank, change to OFMS" (or another structural stage code). Therefore, if a polygon could meet more than one query option, a structural stage code would be assigned by the option with the lowest order number.

Appendix 2: Suggested Stocking Levels

Veg Table 34: Suggested stocking levels for subalpine fir (SF).

	Full Stocking Level				Upper Mgmt. Zone				Lower Mgmt. Zone			
PLANT ASSOCIATION	**TPA**	**BA**	**CC**	**ES**	**TPA**	**BA**	**CC**	**ES**	**TPA**	**BA**	**CC**	**ES**
ABLA2/MEFE	416	227	90	11.0	312	170	85	12.7	208	113	78	15.6
Mean: Cold Moist PAG	416	227	90	11.0	312	170	85	12.7	208	113	78	15.6
ABLA2/CAGE	372	203	88	11.6	279	152	83	13.4	186	101	76	16.4
ABLA2/VASC	365	199	88	11.7	274	149	83	13.6	183	100	76	16.6
ABLA2/VASC/POPU	365	199	88	11.7	274	149	83	13.6	183	100	76	16.6
Mean: Cold Dry PAG	367	200	88	11.7	276	150	83	13.5	184	100	76	16.5
ABGR/LIBO2	373	203	88	11.6	280	153	83	13.4	187	102	76	16.4
ABGR/VAME	412	225	90	11.0	309	169	85	12.8	206	112	78	15.6
ABGR/VASC-LIBO2	184	100	76	16.5	138	75	71	19.1	92	50	64	23.4
ABLA2/CLUN	416	227	90	11.0	312	170	85	12.7	208	113	78	15.6
ABLA2/LIBO2	335	183	87	12.3	251	137	82	14.1	168	91	75	17.3
ABLA2/TRCA3	382	208	89	11.5	287	156	84	13.3	191	104	77	16.2
ABLA2/VAME	265	145	83	13.8	199	108	77	15.9	133	72	70	19.5
Mean: Cool Moist PAG	338	184	86	12.5	254	138	81	14.5	169	92	74	17.7

Sources/Notes: All of the information in this table pertains to a stand with a quadratic mean diameter (QMD) of 10 inches. The information would differ slightly for stands with other QMDs (Powell 1998). The full stocking level is equivalent to maximum stocking; the upper management zone is 75% of full stocking; the lower management zone is 67% of the upper management zone; TPA is trees per acre when the quadratic mean diameter is 10 inches; BA is basal area per acre; CC is canopy cover and was calculated using the "CE" equation from Dealy (1985); and ES is equilateral spacing – the spacing, in feet, that the trees per acre would have when spaced equilaterally apart (also referred to as triangular spacing). The TPA values were derived from Cochran and others (1994). The BA and ES values were calculated using equations and were based on the TPA values.

Veg Table 35: Suggested stocking levels for grand fir (GF).

PLANT ASSOCIATION	FULL STOCKING LEVEL				UPPER MGMT. ZONE				LOWER MGMT. ZONE			
	tpa	BA	CC	ES	TPA	BA	CC	ES	TPA	BA	CC	ES
ABGR/VASC	368	201	90	11.7	276	151	85	13.5	184	100	78	16.5
Mean: Cold Dry PAG	368	201	90	11.7	276	151	85	13.5	184	100	78	16.5
ABGR/TABR/CLUN	560	305	98	9.5	420	229	93	10.9	280	153	85	13.4
ABGR/TABR/LIBO2	560	305	98	9.5	420	229	93	10.9	280	153	85	13.4
Mean: Cool Wet PAG	560	305	98	9.5	420	229	93	10.9	280	153	85	13.4
ABGR/GYDR	553	302	98	9.5	415	226	92	11.0	277	151	85	13.5
ABGR/POMU-ASCA3	486	265	95	10.2	365	199	90	11.7	243	133	83	14.4
ABGR/TRCA3	554	302	98	9.5	416	227	92	11.0	277	151	85	13.5
Mean: Cool Very Moist PAG	531	290	97	9.7	398	217	92	11.3	266	145	84	13.8
ABGR/CLUN	560	305	98	9.5	420	229	93	10.9	280	153	85	13.4
ABGR/LIBO2	516	281	96	9.9	387	211	91	11.4	258	141	84	14.0
ABGR/VAME	455	248	94	10.5	341	186	89	12.1	228	124	82	14.9
ABGR/VASC-LIBO2	494	269	96	10.1	371	202	90	11.7	247	135	83	14.3
Mean: Cool Moist PAG	506	276	96	10.0	380	207	91	11.5	253	138	84	14.1
ABGR/ACGL	461	251	94	10.4	346	189	89	12.1	231	126	82	14.8
Mean: Warm Very Moist PAG	461	251	94	10.4	346	189	89	12.1	231	126	82	14.8
ABGR/BRVU	560	305	98	9.5	420	229	93	10.9	280	153	85	13.4
Mean: Warm Moist PAG	560	305	98	9.5	420	229	93	10.9	280	153	85	13.4
ABGR/CAGE	560	305	98	9.5	420	229	93	10.9	280	153	85	13.4
ABGR/CARU	444	242	94	10.6	333	182	89	12.3	222	121	81	15.1
ABGR/SPBE	354	193	90	11.9	266	145	84	13.8	177	97	77	16.9
Mean: Warm Dry PAG	453	247	94	10.7	340	185	89	12.3	226	123	81	15.1

Sources/Notes: All of the information in this table pertains to a stand with a quadratic mean diameter (QMD) of 10 inches. The information would differ slightly for stands with other QMDs (Powell 1998). The full stocking level is equivalent to maximum stocking; the upper management zone is 75% of full stocking; the lower management zone is 67% of the upper management zone; TPA is trees per acre when the quadratic mean diameter is 10 inches; BA is basal area per acre; CC is canopy cover and was calculated using the "CW" equation from Dealy (1985); and ES is equilateral spacing – the spacing, in feet, that the trees per acre would have when spaced equilaterally apart (also referred to as triangular spacing). The TPA values were derived from Cochran and others (1994). The BA and ES values were calculated using equations and were based on the TPA values.

Veg Table 36: Suggested stocking levels for Engelmann spruce (ES).

	FULL STOCKING LEVEL				UPPER MGMT. ZONE				LOWER MGMT. ZONE			
PLANT ASSOCIATION	**TPA**	**BA**	**CC**	**ES**	**TPA**	**BA**	**CC**	**ES**	**TPA**	**BA**	**CC**	**ES**
ABLA2/VASC	366	200	88	11.7	275	150	83	13.5	183	100	76	16.6
ABLA2/VASC/POPU	366	200	88	11.7	275	150	83	13.5	183	100	76	16.6
Mean: Cold Dry PAG	366	200	88	11.7	275	150	83	13.5	183	100	76	16.6
ABGR/TABR/CLUN	426	232	91	10.9	320	174	86	12.5	213	116	79	15.4
ABGR/TABR/LIBO2	299	163	85	13.0	224	122	80	15.0	150	82	73	18.3
Mean: Cool Wet PAG	363	198	88	11.9	272	148	83	13.8	181	99	76	16.9
ABGR/POMU-ASCA3	469	256	92	10.4	352	192	87	12.0	235	128	80	14.6
ABGR/TRCA3	388	212	89	11.4	291	159	84	13.1	194	106	77	16.1
Mean: Cool Very Moist PAG	400	218	90	11.3	300	164	85	13.0	200	109	77	15.9
ABGR/CLUN	469	256	92	10.4	352	192	87	12.0	235	128	80	14.6
ABGR/LIBO2	399	218	90	11.2	299	163	85	13.0	200	109	78	15.9
ABGR/VAME	341	186	87	12.1	256	139	82	14.0	171	93	75	17.2
ABGR/VASC-LIBO2	349	190	87	12.0	262	143	82	13.9	175	95	75	17.0
ABLA2/CLUN	469	256	92	10.4	352	192	87	12.0	235	128	80	14.6
ABLA2/LIBO2	379	207	89	11.5	284	155	84	13.3	190	103	77	16.3
ABLA2/TRCA3	344	188	87	12.1	258	141	82	14.0	172	94	75	17.1
ABLA2/VAME	382	208	89	11.5	287	156	84	13.3	191	104	77	16.2
Mean: Cool Moist PAG	392	214	89	11.4	294	160	84	13.2	196	107	77	16.1
ABGR/ACGL	324	177	86	12.5	243	133	81	14.4	162	88	74	17.6
Mean: Warm Very Moist PAG	324	177	86	12.5	243	133	81	14.4	162	88	74	17.6
ABGR/BRVU	469	256	92	10.4	352	192	87	12.0	235	128	80	14.6
Mean: Warm Moist PAG	469	256	92	10.4	352	192	87	12.0	235	128	80	14.6

Sources/Notes: All of the information in this table pertains to a stand with a quadratic mean diameter (QMD) of 10 inches. The information would differ slightly for stands with other QMDs (Powell 1998). The full stocking level is equivalent to maximum stocking; the upper management zone is 75% of full stocking; the lower management zone is 67% of the upper management zone; TPA is trees per acre when the quadratic mean diameter is 10 inches; BA is basal area per acre; CC is canopy cover and was calculated using the "CE" equation from Dealy (1985); and ES is equilateral spacing – the spacing, in feet, that the trees per acre would have when spaced equilaterally apart (also referred to as triangular spacing). The TPA values were derived from Cochran and others (1994). The BA and ES values were calculated using equations and were based on the TPA values.

Veg Table 37: Suggested stocking levels for lodgepole pine (LP).

	FULL STOCKING LEVEL				UPPER MGMT. ZONE				LOWER MGMT. ZONE			
PLANT ASSOCIATION	**TPA**	**BA**	**CC**	**ES**	**TPA**	**BA**	**CC**	**ES**	**TPA**	**BA**	**CC**	**ES**
ABGR/VASC	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
ABLA2/CAGE	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
ABLA2/VASC	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
ABLA2/VASC/POPU	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
Mean: Cold Dry PAG	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
PICO/CARU	223	122	67	15.0	167	91	62	17.3	112	61	55	21.2
Mean: Cool Dry PAG	223	122	67	15.0	167	91	62	17.3	112	61	55	21.2
ABGR/CLUN	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
ABGR/LIBO2	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
ABGR/VAME	238	130	68	14.5	179	97	63	16.8	120	65	56	20.5
ABGR/VASC-LIBO2	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
ABLA2/TRCA3	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
ABLA2/VAME	255	139	69	14.0	191	104	64	16.2	128	70	57	19.8
Mean: Cool Moist PAG	265	144	70	13.8	199	108	65	15.9	133	73	58	19.5
ABGR/CARU	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0
Mean: Warm Dry PAG	277	151	71	13.5	208	113	66	15.6	139	76	59	19.0

Sources/Notes: All of the information in this table pertains to a stand with a quadratic mean diameter (QMD) of 10 inches. The information would differ slightly for stands with other QMDs (Powell 1998). The full stocking level is equivalent to maximum stocking; the upper management zone is 75% of full stocking; the lower management zone is 67% of the upper management zone; TPA is trees per acre when the quadratic mean diameter is 10 inches; BA is basal area per acre; CC is canopy cover and was calculated using the "CL" equation from Dealy (1985); and ES is equilateral spacing – the spacing, in feet, that the trees per acre would have when spaced equilaterally apart (also referred to as triangular spacing). The TPA values were derived from Cochran and others (1994). The BA and ES values were calculated using equations and were based on the TPA values.

Veg Table 38: Suggested stocking levels for western larch (WL).

PLANT ASSOCIATION	FULL STOCKING LEVEL				UPPER MGMT. ZONE				LOWER MGMT. ZONE			
	TPA	BA	CC	ES	TPA	BA	CC	ES	TPA	BA	CC	ES
ABGR/VASC	304	166	73	12.9	228	124	67	14.9	152	83	60	18.2
ABLA2/VASC	380	207	77	11.5	285	155	71	13.3	190	104	64	16.3
ABLA2/VASC/POPU	380	207	77	11.5	285	155	71	13.3	190	104	64	16.3
Mean: Cold Dry PAG	355	193	75	12.0	266	145	70	13.8	177	97	63	16.9
ABGR/TABR/LIBO2	302	165	72	12.9	227	124	67	14.9	151	82	60	18.3
Mean: Cool Wet PAG	302	165	72	12.9	227	124	67	14.9	151	82	60	18.3
ABGR/POMU-ASCA3	350	191	75	12.0	263	143	70	13.8	175	95	63	17.0
ABGR/TRCA3	398	217	77	11.2	299	163	72	13.0	199	109	65	15.9
Mean: Cool Very Moist PAG	374	204	76	11.6	281	153	71	13.4	187	102	64	16.4
ABGR/CLUN	410	224	78	11.1	308	168	73	12.8	205	112	65	15.7
ABGR/LIBO2	370	202	76	11.7	278	151	71	13.5	185	101	64	16.5
ABGR/VAME	410	224	78	11.1	308	168	73	12.8	205	112	65	15.7
ABGR/VASC-LIBO2	253	138	69	14.1	190	103	64	16.3	127	69	57	19.9
ABLA2/CLUN	410	224	78	11.1	308	168	73	12.8	205	112	65	15.7
ABLA2/LIBO2	410	224	78	11.1	308	168	73	12.8	205	112	65	15.7
ABLA2/VAME	382	208	77	11.5	287	156	72	13.3	191	104	64	16.2
Mean: Cool Moist PAG	378	206	76	11.6	283	155	71	13.5	189	103	64	16.5
ABGR/ACGL	351	191	75	12.0	263	144	70	13.8	176	96	63	16.9
Mean: Warm Very Moist PAG	351	191	75	12.0	263	144	70	13.8	176	96	63	16.9
ABGR/BRVU	410	224	78	11.1	308	168	73	12.8	205	112	65	15.7
Mean: Warm Moist PAG	410	224	78	11.1	308	168	73	12.8	205	112	65	15.7
ABGR/CARU	307	167	73	12.8	230	126	68	14.8	154	84	60	18.1
PSME/PHMA	256	140	69	14.0	192	105	64	16.2	128	70	57	19.8
PSME/SYAL	205	112	65	15.7	154	84	60	18.1	103	56	53	22.2
Mean: Warm Dry PAG	256	140	69	14.2	192	105	64	16.4	128	70	57	20.0

Sources/Notes: All of the information in this table pertains to a stand with a quadratic mean diameter (QMD) of 10 inches. The information would differ slightly for stands with other QMDs (Powell 1998). The full stocking level is equivalent to maximum stocking; the upper management zone is 75% of full stocking; the lower management zone is 67% of the upper management zone; TPA is trees per acre when the quadratic mean diameter is 10 inches; BA is basal area per acre; CC is canopy cover and was calculated using the "CL" equation from Dealy (1985); and ES is equilateral spacing – the spacing, in feet, that the trees per acre would have when spaced equilaterally apart (also referred to as triangular spacing). The TPA values were derived from Cochran and others (1994). The BA and ES values were calculated using equations and were based on the TPA values.

Veg Table 39: Suggested stocking levels for Douglas-fir (DF).

PLANT ASSOCIATION	FULL STOCKING LEVEL				UPPER MGMT. ZONE				LOWER MGMT. ZONE			
	TPA	BA	CC	ES	TPA	BA	CC	ES	TPA	BA	CC	ES
ABGR/VASC	274	149	80	13.5	206	112	75	15.6	137	75	69	19.2
ABLA2/VASC	366	200	85	11.7	275	150	80	13.5	183	100	74	16.6
ABLA2/VASC/POPU	366	200	85	11.7	275	150	80	13.5	183	100	74	16.6
Mean: Cold Dry PAG	335	183	83	12.3	252	137	78	14.2	168	91	72	17.4
ABGR/TABR/LIBO2	380	207	85	11.5	285	155	81	13.3	190	104	74	16.3
Mean: Cool Wet PAG	380	207	85	11.5	285	155	81	13.3	190	104	74	16.3
ABGR/CLUN	380	207	85	11.5	285	155	81	13.3	190	104	74	16.3
ABGR/LIBO2	380	207	85	11.5	285	155	81	13.3	190	104	74	16.3
ABGR/VAME	380	207	85	11.5	285	155	81	13.3	190	104	74	16.3
ABGR/VASC-LIBO2	347	189	84	12.0	260	142	79	13.9	174	95	73	17.0
Mean: Cool Moist PAG	372	203	85	11.6	279	152	80	13.4	186	101	74	16.5
ABGR/ACGL	241	131	78	14.4	181	99	73	16.7	121	66	67	20.4
Mean: Warm Very Moist PAG	241	131	78	14.4	181	99	73	16.7	121	66	67	20.4
PSME/ACGL-PHMA	277	151	80	13.5	208	113	76	15.6	139	76	69	19.1
PSME/HODI	255	139	79	14.0	191	104	74	16.2	128	70	68	19.9
Mean: Warm Moist PAG	266	145	80	13.8	200	109	75	15.9	133	73	68	19.5
ABGR/CAGE	301	164	82	12.9	226	123	77	14.9	151	82	70	18.3
ABGR/CARU	357	195	84	11.9	268	146	80	13.7	179	97	73	16.8
ABGR/SPBE	198	108	75	15.9	149	81	70	18.4	99	54	64	22.5
PSME/CAGE	281	153	80	13.4	211	115	76	15.4	141	77	69	18.9
PSME/CARU	264	144	79	13.8	198	108	75	15.9	132	72	68	19.5
PSME/PHMA	225	123	77	15.0	169	92	72	17.3	113	61	66	21.1
PSME/SPBE	371	202	85	11.6	278	152	80	13.4	186	101	74	16.5
PSME/SYAL	247	135	78	14.3	185	101	74	16.5	124	67	67	20.2
PSME/VAME	183	100	74	16.6	137	75	69	19.1	92	50	62	23.4
Mean: Warm Dry PAG	270	147	79	13.9	202	110	75	16.1	135	74	68	19.7

Sources/Notes: All of the information in this table pertains to a stand with a quadratic mean diameter (QMD) of 10 inches. The information would differ slightly for stands with other QMDs (Powell 1998). The full stocking level is equivalent to maximum stocking; the upper management zone is 75% of full stocking; the lower management zone is 67% of the upper management zone; TPA is trees per acre when the quadratic mean diameter is 10 inches; BA is basal area per acre; CC is canopy cover and was calculated using the "CD" equation from Dealy (1985); and ES is equilateral spacing – the spacing, in feet, that the trees per acre would have when spaced equilaterally apart (also referred to as triangular spacing). The TPA values were derived from Cochran and others (1994). The BA and ES values were calculated using equations and were based on the TPA values.

Veg Table 40: Suggested stocking levels for ponderosa pine (PP).

	Full Stocking Level				Upper Mgmt. Zone				Lower Mgmt. Zone			
PLANT ASSOCIATION	**TPA**	**BA**	**CC**	**ES**	**TPA**	**BA**	**CC**	**ES**	**TPA**	**BA**	**CC**	**ES**
ABGR/VASC	172	94	57	17.1	101	55	47	22.3	68	37	40	27.3
Mean: Cold Dry PAG	172	94	57	17.1	101	55	47	22.3	68	37	40	27.3
ABGR/LIBO2	686	374	83	8.6	162	88	56	17.6	109	59	48	21.5
ABGR/VAME	292	159	67	13.1	139	76	53	19.0	93	51	46	23.2
Mean: Cool Moist PAG	489	267	75	10.8	151	82	54	18.3	101	55	47	22.4
PSME/ACGL-PHMA	281	153	66	13.4	189	103	59	16.3	127	69	51	19.9
PSME/HODI	340	185	70	12.2	278	152	66	13.5	186	102	58	16.4
Mean: Warm Moist PAG	311	169	68	12.8	234	127	62	14.9	156	85	55	18.2
ABGR/CAGE	210	115	61	15.5	109	59	48	21.5	73	40	41	26.2
ABGR/CARU	316	172	68	12.6	154	84	55	18.1	103	56	47	22.1
ABGR/SPBE	255	139	64	14.0	147	80	54	18.5	98	54	47	22.6
PIPO/CAGE	201	110	60	15.8	83	45	43	24.6	56	30	36	30.1
PIPO/CARU	365	199	71	11.7	154	84	55	18.1	103	56	47	22.1
PIPO/CELE/CAGE	232	127	62	14.7	82	45	43	24.8	55	30	36	30.3
PIPO/ELGL	243	133	63	14.4	92	50	45	23.4	62	34	38	28.6
PIPO/PUTR/CAGE	204	111	60	15.7	70	38	40	26.8	47	26	33	32.7
PIPO/PUTR/CARO	243	133	63	14.4	92	50	45	23.4	62	34	38	28.6
PIPO/SYAL	318	173	68	12.6	218	119	61	15.2	146	80	54	18.6
PIPO/SYOR	260	142	65	13.9	135	74	52	19.3	90	49	45	23.6
PSME/CAGE	222	121	62	15.1	86	47	44	24.2	58	31	37	29.5
PSME/CARU	263	143	65	13.8	122	67	51	20.3	82	45	43	24.8
PSME/PHMA	274	149	66	13.5	167	91	56	17.4	112	61	49	21.2
PSME/SPBE	353	193	70	11.9	226	123	62	14.9	151	83	55	18.2
PSME/SYAL	273	149	65	13.6	151	82	54	18.3	101	55	47	22.3
PSME/SYOR	361	197	71	11.8	180	98	58	16.7	121	66	50	20.4
PSME/VAME	193	105	59	16.1	96	52	46	22.9	64	35	39	28.0
Mean: Warm Dry PAG	266	145	65	14.0	131	72	51	20.5	88	48	43	25.0
PIPO/AGSP	133	73	52	19.4	38	21	29	36.4	25	14	22	44.4
PIPO/CELE/FEID-AGSP	157	86	55	17.9	32	17	26	39.6	21	12	19	48.4
PIPO/FEID	194	106	59	16.1	63	34	38	28.3	42	23	31	34.5
PIPO/PUTR/FEID-AGSP	185	101	58	16.5	66	36	39	27.6	44	24	32	33.7
Mean: Hot Dry PAG	167	91	56	17.5	50	27	33	33.0	33	18	26	40.3

Sources/Notes: All of the information in this table pertains to a stand with a quadratic mean diameter (QMD) of 10 inches. The information would differ slightly for stands with other QMDs (Powell 1998). The full stocking level is equivalent to maximum stocking; the upper management zone was determined using a process described in Cochran and others (1994); the lower management zone is 67% of the upper management zone; TPA is trees per acre when the quadratic mean diameter is 10 inches; BA is basal area per acre; CC is canopy cover and was calculated using the "CP" equation from Dealy (1985); and ES is equilateral spacing – the spacing, in feet, that the trees per acre would have when spaced equilaterally apart (also referred to as triangular spacing). The TPA values were derived from Cochran and others (1994). The BA and ES values were calculated using equations and were based on the TPA values.

Appendix 3: Known Plants of the Desolation Watershed

Plant names based on the PLANTS database naming conventions, adapted from Kartesz. Species names that differ in Hitchcock and Cronquist's "Flora of the Pacific Northwest" are in parenthesis
* Plants not native to the United States -- underlined Sensitive plant species -- **bold** Noxious weeds

Trees:

Abies grandis grand fir
Abies lasiocarpa subalpine fir
Acer glabrum douglasii (*Acer glabrum*) Rocky Mountain maple
Betula occidentalis red birch/water birch
Frangula purshiana (*Rhamnus purshiana*) cascara
Juniperus occidentalis western juniper
Larix occidentalis western larch
Picea engelmannii Engelmann spruce
Pinus albicaulis whitebark pine
Pinus contorta lodgepole pine
Pinus monticola western white pine
Pinus ponderosa ponderosa pine
Populus balsamifera s. trichocarpa (*Populus trichocarpa*) black cottonwood
Populus tremuloides quaking aspen
Pseudotsuga menziesii Douglas fir
Taxus brevifolia Pacific yew

Shrubs:

Alnus incana mountain alder
Alnus viridis s. sinuata (*Alnus sinuata*) Sitka alder
Amelanchier alnifolia western serviceberry
Arctostaphylos nevadensis pinemat manzanita
Arctostaphylos uva-ursi bearberry
Artemisia arbuscula low sagebrush
Artemisia tridentata big sagebrush
Artemisia tridentata s. vaseyana (*Artemisia tridentata vaseyana*) mountain big sagebrush
Artemisia tripartita three-tip sagebrush
**Artemisia vulgaris* common wormwood/ mugwort
Betula nana (*Betula glandulosa*) bog birch
Ceanothus sanguineus redstem ceanothus
Ceanothus velutinus snowbrush ceanothus/ buckbrush
Cercocarpus ledifolius curlleaf mountain mahogany
Chimaphila menziesii little prince's pine/ pipsissewa
Chimaphila umbellata common prince's pine/ pipsissewa
Chrysothamnus nauseosus gray rabbitbrush
Cornus sericea s. sericea (*Cornus stolonifera*) red osier dogwood
Crataegus douglasii black hawthorn
Ericameria bloomeri (*Haplopappus bloomeri*) rabbitbrush goldenweed
Gaultheria humifusa western wintergreen
Gaultheria ovatifolia Oregon wintergreen
Holodiscus discolor (*Holodiscus dumosus glabrescens*) bush bockspiraea
Juniperus communis common juniper
Lonicera involucrata bearberry honeysuckle/black twinberry
Lonicera utahensis Utah honeysuckle
Mahonia aquifolium (*Berberis aquifolium*) shining Oregongrape
Mahonia nervosa nervosa (*Berberis nervosa*) cascade Oregongrape/dull Oregongrape
Mahonia repens (*Berberis repens*) low Oregongrape
Paxistima myrsinites (*Pachistima myrsinites*) Oregon boxwood
Philadelphus lewisii Lewis mockorange/syringa
Physocarpus malvaceus mallow ninebark
Prunus emarginata bittercherry
Prunus virginiana common chokecherry
Purshia tridentata antelope bitterbrush
Rhamnus alnifolia alder-leaved buckthorn
Ribes cereum cereum wax currant
Ribes hudsonianum stinking currant HSO
Ribes lacustre prickly currant/ swamp gooseberry
Ribes oxyacanthoides s. cognatum (*Ribes oxyacanthoides cognatum*) Umatilla gooseberry HSO;PSW
Ribes viscosissimum sticky currant
Rosa gymnocarpa baldhip rose
Rosa nutkana Nootka rose
Rosa woodsii Wood's rose
Rubus idaeus red raspberry
Rubus leucodermis whitebark raspberry
Rubus parviflorus western thimbleberry
Salix amygdaloides peachleaf willow

Shrubs, cont'd.

Salix bebbiana Bebb willow
Salix commutata undergreen willow
Salix exigua coyote willow
Salix lucida s. lasiandra (*Salix lasiandra*) Pacific willow/ red willow
Salix melanopsis (*Salix exigua melanopsis*) dusky willow
Salix prolixa (*Salix rigida mackenzieana*) rigid willow
Salix scouleriana Scouler willow
Sambucus cerulea blueberry elder
Sambucus racemosa black elderberry
Shepherdia canadensis russet buffaloberry/ Canada buffaloberry
Sorbus scopulina Cascade mountain ash
Spiraea betulifolia birch spiraea/ shiny leaf spiraea
Symphoricarpos albus common snowberry
Symphoricarpos oreophilus mountain snowberry
**Syringa vulgaris* lilac
Vaccinium cespitosum (*Vaccinium caespitosum*) dwarf huckleberry
Vaccinium membranaceum big huckleberry
Vaccinium myrtillus dwarf whortleberry/ low bilberry
Vaccinium scoparium grouse huckleberry/ whortleberry

Forbs:

Achillea millefolium common yarrow
Aconitum columbianum Columbia monkshood
Aconitum columbianum columbianum Columbia monkshood
Actaea rubra wild red baneberry
Adenocaulon bicolor trail plant/ pathfinder plant
Agastache urticifolia nettleleaf horsemint
Ageratina occidentalis (*Eupatorium occidentale*) western eupatorium
Agoseris aurantiaca orange agoseris
Agoseris glauca pale agoseris
Agoseris grandiflora large-flower agoseris
Agoseris heterophylla annual agoseris
Agoseris retrorsa spear-leaf agoseris
Allium acuminatum tapertip onion
Allium fibrillum fringed onion
Allium geyeri tenerum Geyer's onion
Allium tolmiei tolmiei Tolmie's onion
Allium validum Pacific onion HSO
**Alyssum alyssoides* pale alyssum
Amsinckia retrorsa rigid fiddleneck
Anaphalis margaritacea common pearlyeverlasting
Androsace filiformis slender-stemmed fairy candelabra
Anemone oregana Oregon anemone
Anemone piperi windflower
Angelica arguta sharptooth angelica
Antennaria anaphaloides tall pussytoes
Antennaria argentea silvery pussytoes
Antennaria corymbosa meadow pussytoes
Antennaria dimorpha low pussytoes
Antennaria luzuloides woodrush pussytoes
Antennaria racemosa raceme pussytoes
Antennaria rosea rosy pussytoes
Antennaria stenophylla narrow-leaf pussytoes
Antennaria umbrinella umber pussytoes
Apocynum androsaemifolium spreading dogbane
Aquilegia formosa Sitka columbine/ red columbine
Arabis divaricarpa spreadingpod rockcress
Arabis glabra tower mustard
Arabis hirsuta hairy rockcress
Arabis holboellii Holboell's rockcress
Arceuthobium americanum American dwarf mistletoe
Arceuthobium campylopodum western dwarf mistletoe
Arceuthobium douglasii Douglas dwarf mistletoe
Arenaria aculeata prickly sandwort
Arenaria capillaris mountain sandwort
Arenaria congesta ballhead/capitate sandwort
Arenaria congesta prolifera ballhead/capitate sandwort
**Arenaria serpyllifolia* thyme-leaf sandwort
Arnica chamissonis leafy arnica/ meadow arnica
Arnica cordifolia heartleaf arnica
Arnica longifolia longleaf arnica
Arnica mollis hairy arnica
Arnica parryi nodding arnica
Arnica sororia twin arnica
Artemisia ludoviciana prairie sage
Asclepias fascicularis narrow-leaved milkweed
Aspidotis densa pod fern
Aster chilensis long-leaved aster
Aster conspicuus showy aster
Aster eatonii Eaton's aster
Aster foliaceus leafy aster
Aster integrifolius thickstem aster/ sticky aster
Aster occidentalis western mountain aster
Astragalus diaphanus (*Astragalus diaphanus diaphanus*) transparent milkvetch HSO;PSW
Astragalus filipes basalt milkvetch
Astragalus reventus (*Astragalus reventus reventus*) Blue Mountain milkvetch HSO
Astragalus whitneyi balloon pod milkvetch HSW
Athyrium filix-femina lady fern

Forbs, cont'd

Balsamorhiza sagittata arrowleaf balsamroot
Balsamorhiza serrata serrated balsamroot
Barbarea orthoceras American wintercress
Besseya rubra red kittentail/ red besseya
Blepharipappus scaber blepharipappus
Botrychium crenulatum crenulate moonwort PSO;PSW
Botrychium lanceolatum lance-leaf grapefern PSO;PSW
Botrychium lunaria moonwort grapefern PSW;HSO
Botrychium minganense Mingan grapefern PSO;HSW
Botrychium montanum mountain grapefern PSO;PSW
Botrychium multifidum leathery grapefern
Botrychium paradoxum two-spiked moonwort PSO;PSW
Botrychium pinnatum pinnate grapefern PSO;PSW
Botrychium simplex least moonwort PSW;HSO
Botrychium virginianum Virginian grapefern
Brickellia grandiflora large flowered brickellbush
**Buglossoides arvensis* (*Lithospermum arvense*) corn gromwell
Calochortus elegans northwestern Mariposa
Calochortus eurycarpus bigpod Mariposa
Calochortus macrocarpus macrocarpus greenbanded startulip
Calypso bulbosa calypso orchid HSO
Camassia quamash common camas
**Capsella bursa-pastoris* shepherd's purse
Cardamine lyallii (*Cardamine cordifolia lyallii*) large mountain bittercress
Cardamine occidentalis western bittercress
Cardamine oligosperma little western bittercress
***Carduus nutans* musk thistle**
Castilleja cusickii Cusick's paintbrush
Castilleja glandulifera glandular Indian-paintbrush HSO
Castilleja hispida harsh paintbrush
Castilleja linariifolia (*Castilleja linariaefolia*) narrow-leaved paintbrush
Castilleja miniata scarlet paintbrush
Castilleja tenuis (*Orthocarpus hispidus*) hairy owl clover
***Centaurea biebersteinii* (*Centaurea maculosa*) spotted knapweed**
***Centaurea diffusa* diffuse knapweed/ tumble knapweed**
Cerastium arvense starry cerastium
**Cerastium fontanum s. vulgare* (*Cerastium vulgatum*) mouse-ear chickweed
Cerastium nutans nodding chickweed
Chaenactis douglasii douglasii (*Chaenactis douglasii glandulosa*) hoary chaenactis HSW
Cheilanthes gracillima lace lip-fern
Chenopodium rubrum red goosefoot
Cicuta douglasii Douglas' waterhemlock
Circaea alpina enchanter's nightshade
***Cirsium arvense* Canada thistle**
Cirsium canovirens gray-green thistle
Cirsium neomexicanum utahense (*Cirsium utahense*) Utah thistle HSW
Cirsium scariosum elk thistle
**Cirsium undulatum* wavy-leaved thistle
***Cirsium vulgare* bull thistle/ common thistle**
Cistanthe umbellata (*Spraguea umbellata*) umbellate pussypaws
Clarkia pulchella deerhorn/ pink fairies
Clarkia rhomboidea common clarkia
Claytonia cordifolia (*Montia cordifolia*) heart-leaved minerslettuce
Claytonia perfoliata s. perfoliata v. perfoliata (*Montia perfoliata*) minerslettuce
Claytonia sibirica sibirica (*Montia sibirica*) Siberian minerslettuce/ candy flower
Clintonia uniflora queen's cup beadlily
Collinsia parviflora small-flowered blue-eyed Mary
Collomia grandiflora large-flowered collomia/ mountain trumpet
Collomia linearis narrow-leaf collomia
Collomia tinctoria yellow-staining collomia
Conyza canadensis horseweed
Corallorrhiza maculata (*Corallorhiza maculata*) spotted coral root
Corallorrhiza mertensiana (*Corallorhiza mertensiana*) Merten's coral root
Corallorrhiza striata (*Corallorhiza striata*) striped coral root
Corallorrhiza trifida (*Corallorhiza trifida*) yellow coral root HSO
Crepis acuminata long-leaved hawksbeard/ tapertip hawksbeard
Crepis atribarba (*Crepis atrabarba*) slender hawksbeard
Crepis intermedia gray hawksbeard
Cryptantha ambigua obscure cryptantha
Cryptantha intermedia common cryptantha
Cryptantha pterocarya winged cryptantha
Cryptantha torreyana Torrey's cryptantha
Cryptantha watsonii Watson's cryptantha
Cryptogramma acrositchoides (*Cryptogramma crispa acrostichoides*) rockbrake/ parsleyfern
***Cynoglossum officinale* common houndstongue**
Cypripedium montanum mountain lady slipper HSO
Cystopteris fragilis brittle bladderfern

Forbs, cont'd

***Daucus carota* Queen Anne's lace**
Delphinium bicolor little larkspur
Delphinium burkei Burke's larkspur
Delphinium depauperatum slim larkspur/ dwarf larkspur HSW
Delphinium nuttallianum upland larkspur
Delphinium occidentale western larkspur
Delphinium stachydeum tall mountain larkspur
Descurainia pinnata pinnate tansymustard
Descurainia sophia flixweed tansymustard
**Dianthus armeria* Deptford pink
***Dipsacus fullonum* (*Dipsacus sylvestris*) teasel**
Disporum trachycarpum wartberry fairybell
Dodecatheon conjugens slimpod shootingstar
Dodecatheon jeffreyi tall mountain shooting star
Dodecatheon pulchellum darkthroat shootingstar
Draba praealta tall draba
Draba verna spring whitlow-grass
Elodea canadensis waterweed
Epilobium anagallidifolium (*Epilobium alpinum*) alpine willow-herb
Epilobium angustifolium fireweed
Epilobium brachycarpum (*Epilobium paniculatum*) tall annual willow-herb
Epilobium ciliatum s. glandulosum (*Epilobium glandulosum*) common willow-herb
Epilobium ciliatum s. watsonii (*Epilobium watsonii*) Watson's willow-herb
Epilobium glaberrimum smooth willow-herb
Epilobium minutum small-flowered willow-herb
Epilobium palustre swamp willow-herb
Equisetum arvense common horsetail/ field horsetail
Equisetum hyemale common scouringrush
Equisetum laevigatum smooth horsetail
Equisetum variegatum northern scouringrush
Ericameria suffruticosa (*Haplopappus resinosus*) gnarled goldenweed/ Columbia goldenweed
Erigeron chrysopsidis dwarf yellow fleabane
Erigeron chrysopsidis s. chrysopsidis (*Erigeron chrysopsidis chrysopsidis*) dwarf yellow fleabane
Erigeron corymbosus foothill daisy/ longleaf fleabane
Erigeron filifolius threadleaf fleabane
Erigeron linearis lineleaf fleabane
Erigeron peregrinus s. callianthemus (*Erigeron peregrinus s. callianthemus v. eucallianthemus*) subalpine daisy
Erigeron philadelphicus Philadelphia fleabane
Erigeron pumilus low fleabane
Erigeron speciosus showy fleabane
Eriogonum compositum northern buckwheat
Eriogonum flavum yellow buckwheat
Eriogonum flavum piperi yellow buckwheat
Eriogonum heracleoides Wyeth's creamy buckwheat
Eriogonum pyrolifolium (*Eriogonum pyrolaefolium*) oarleaf buckwheat
Eriogonum strictum strict buckwheat
Eriogonum umbellatum sulphur buckwheat
Eriophyllum lanatum Oregon sunshine/ woolly sunflower
**Erodium cicutarium* stork's bill / filaree
Erysimum asperum plains erysimum/ prairie rocket
Erythronium grandiflorum fawnlily/ glacierlily/ dogtooth violet
Euthamia occidentalis (*Solidago occidentalis*) western goldenrod
Floerkea proserpinacoides false mermaid
Fragaria vesca woods strawberry
Fragaria virginiana blueleaf strawberry/ broadpetal strawberry
Frasera speciosa giant frasera
Fritillaria atropurpurea checker lily/ chocolate Lily
Fritillaria pudica yellow bell
Gaillardia aristata blanketflower
Galium aparine catchweed bedstraw/ cleavers
Galium aparine (*Galium aparine aparine*) catchweed bedstraw / cleavers
Galium bifolium thinleaf bedstraw
Galium boreale northern bedstraw
Galium mexicanum s. asperulum (*Galium asperrimum*) rough bedstraw
Galium triflorum sweetscented bedstraw
Gayophytum diffusum spreading groundsmoke
Gayophytum ramosissimum hairstem groundsmoke
Gentiana affinis Rocky Mountain pleated gentian/ Oregon gentian
Gentianella amarella s. acuta (*Gentiana amarella*) northern gentian
Gentianella tenella s. tenella (*Gentiana tenella*) slender gentian ONHP List 2
Gentianopsis simplex (*Gentiana simplex*) one-flowered gentian
Geranium richardsonii white geranium
Geranium viscosissimum sticky geranium
Geum macrophyllum largeleaf avens
Geum triflorum ciliatum red avens/ old man's whiskers
Gilia capillaris smoothleaved gilia
Gnaphalium microcephalum white cudweed
Gnaphalium palustre lowland cudweed
Goodyera oblongifolia rattlesnake-plantain

Forbs, cont'd

Grindelia nana low gumweed
**Grindelia squarrosa* curly-cup gumweed / resinweed
Helianthella uniflora oneflower helianthella
Heracleum maximum (*Heracleum lanatum*) common cowparsnip
Hesperochiron pumilus centaur flower/ dwarf hesperochiron
Heterocodon rariflorum heterocodon
Heuchera cylindrica roundleaf lava alumroot
Hieracium albiflorum white hawkweed
Hieracium cynoglossoides houndstongue hawkweed
Hieracium cynoglossoides (*Hieracium albertinum*) western hawkweed
Hieracium scouleri woolly weed
**Holosteum umbellatum* jagged chickweed
Horkelia fusca tawny horkelia
Hydrophyllum capitatum ballhead waterleaf / woolly breeches
Hydrophyllum fendleri Fendler's waterleaf
Hypericum anagalloides bog St. John's wort
***Hypericum perforatum* Klamathweed**
Hypericum scouleri (*Hypericum formosum*) western St. John's wort
Ipomopsis aggregata s. aggregata (*Gilia aggregata*) skyrocket gilia
Iris missouriensis western blue flag / Rocky Mountain iris
Kelloggia galioides kelloggia
**Lactuca serriola* prickly lettuce
Lagophylla ramosissima slender rabbitleaf
Lathyrus lanszwertii thickleaf peavine
Lathyrus nevadensis Sierra peavine
Lemna minor duckweed/ water lentil
***Leucanthemum vulgare* (*Chrysanthemum leucanthemum*) oxeye daisy**
Lewisia pygmaea dwarf lewisia
Lewisia rediviva bitterroot
Ligusticum canbyi Canby licoriceroot
Linanthus harknessii Harkness' linanthus
***Linaria vulgaris* butter-and-eggs**
Linnaea borealis American twinflower
Linum lewisii lewisii (*Linum perenne*) blue flax
Listera caurina western twayblade
Listera convallarioides broadlipped twayblade
Listera cordata heartleaf twayblade
Lithophragma glabrum (*Lithophragma bulbifera*) bulbiferous fringecup
Lithophragma glabrum (*Lithophragma glabra*) smooth fringecup
Lithophragma parviflorum (*Lithophragma parviflora*) small-flowered fringecup
Lithospermum ruderale wayside gromwell
Lomatium ambiguum Wyeth biscuitroot
Lomatium bicolor leptocarpum (*Lomatium leptocarpum*) slenderfruit lomatium/ bicolor biscuitroot
Lomatium cous cous biscuitroot or cous
Lomatium dissectum fernleaved desert parsley
Lomatium grayi Gray's desert parsley
Lomatium macrocarpum big seed biscuitroot
Lomatium nudicaule barestem lomatium
Lomatium triternatum nineleaf desert parsley
**Lotus corniculatus* birdsfoot lotus
Lotus unifoliolatus unifoliolatus (*Lotus purshianus*) Spanish clover
Lupinus argenteus silvery lupine
Lupinus aridus s. aridus (*Lupinus lepidus aridus*) prairie lupine
Lupinus burkei s. burkei (*Lupinus polyphyllus burkei*) Burke's lupine HSO
Lupinus caudatus tailcup lupine
Lupinus holosericeus little-flower lupine/ silky lupine
Lupinus leucophyllus velvet lupine/ woolly lupine
Lupinus polyphyllus big leaf lupine
Lupinus sericeus silky lupine
Lycopodium annotinum stiff clubmoss HSO
Madia citriodora lemon tarweed
Madia exigua little tarweed
Madia glomerata cluster tarweed
Madia gracilis common tarweed/ slender tarweed
Madia minima small-head tarweed
Maianthemum racemosum (*Smilacina racemosa*) feather Solomonplume
Maianthemum stellatum (*Smilacina stellata*) starry false Solomon's seal
Matricaria discoidea (*Matricaria matricarioides*) pineapple weed
**Matricaria maritima* scentless may-weed
**Medicago lupulina* black medic
**Medicago sativa* alfalfa
**Melilotus officinalis* yellow sweetclover
Mentha arvensis field mint
Mentzelia albicaulis whitestem mentzelia
Mertensia ciliata broad-leaf bluebells
Mertensia cusickii (*Mertensia viridis*) green bluebells
Mertensia longiflora small bluebells
Mertensia paniculata tall bluebells
Microseris nutans nodding microseris
Mimulus breviflorus short-flowered mimulus

Forbs, cont'd

Mimulus guttatus common monkeyflower
Mimulus lewisii Lewis' monkeyflower
Mimulus moschatus musk monkeyflower
Mimulus nanus dwarf monkeyflower
Mimulus primuloides primrose monkeyflower
Mimulus tilingii large mountain monkeyflower
Minuartia rubella (*Arenaria rubella*) reddish sandwort
Mitella breweri Brewer mitrewort
Mitella pentandra five stamen mitrewort
Mitella stauropetala side-flowered mitrewort/ spider flower
Moehringia macrophylla (*Arenaria macrophylla*) bigleaf sandwort
Monardella odoratissima Pacific monardella
Moneses uniflora s. uniflora (*Pyrola uniflora*) woodnymph
Monotropa hypopithys (*Hypopitys monotropa*) pinesap
Montia chamissoi water montia
Montia linearis lineleaf Indianlettuce
Myosotis stricta (*Myosotis micrantha*) blue scorpion grass
Navarretia intertexta needleleaf navarretia
Nemophila breviflora Great Basin nemophila
Nemophila parviflora smallflower nemophila
Nemophila pedunculata meadow nemophila
Nothocalais troximoides (*Microseris troximoides*) false agoseris
Nuphar lutea s. polysepala (*Nuphar polysepalum*) wakas/ Indian pond lily
Olsynium douglasii inflatum (*Sisyrinchium inflatum*) grass widow
Orobanche uniflora oneflowered broomrape
Orogenia linearifolia linear-leaved orogenia
Orthilia secunda (*Pyrola secunda*) sidebells pyrola
Osmorhiza berteroi (*Osmorhiza chilensis*) mountain sweet-cicely
Osmorhiza depauperata bluntfruited sweet-cicely
Osmorhiza occidentalis western sweet-cicely
Paeonia brownii Brown's paeony/ wild paeony
Parnassia fimbriata fimbriata Rocky Mountain grass-of-Parnassus
Pedicularis groenlandica elephant's head/ pink elephants
Pedicularis racemosa leafy lousewort/ sickletop lousewort
Pellaea breweri Brewer's cliffbrake
Penstemon attenuatus sulphur penstemon
Penstemon confertus yellow penstemon
Penstemon davidsonii Davidson's penstemon
Penstemon deustus deustus hot rock penstemon/ scabland penstemon
Penstemon fruticosus shrub penstemon
Penstemon gairdneri Gairdner's penstemon
Penstemon pennellianus Pennell's penstemon HSO, HSW
Penstemon procerus littleflower penstemon
Penstemon richardsonii Richardson's penstemon
Penstemon speciosus royal penstemon
Penstemon venustus Blue Mountain penstemon
Perideridia bolanderi Bolander's yampah
Perideridia gairdneri Gairdner's yampah
Phacelia hastata whiteleaf phacelia
Phacelia heterophylla varileaf phacelia
Phlox austromontana desert phlox
Phlox caespitosa tufted phlox
Phlox diffusa spreading phlox
Phlox gracilis s. gracilis (*Microsteris gracilis*) pink microsteris
Phlox hoodii Hood's phlox
Phoenicaulis cheiranthoides daggerpod/ wallflower phoenicaulis
Piperia elegans (*Habenaria elegans*) California hillside habenaria
Piperia unalascensis (*Habenaria unalascensis*) Alaska rein orchid
Plagiobothrys scouleri Scouler's popcornflower
**Plantago lanceolata* buckhorn plantain
**Plantago major* nippleseed plantain
Platanthera dilatata dilatata (*Habenaria dilatata*) white bog orchid
Platanthera stricta (*Habenaria saccata*) slender bog orchid
Plectritis macrocera longhorn plectritis
Polemonium occidentale western p./ skunkweed p./ showy polemonium
Polemonium pulcherrimum showy p./ skunkweed p./ Jacob's ladder
Polygonum aviculare prostrate knotweed
Polygonum bistortoides American bistort/ western bistort
Polygonum douglasii Douglas' knotweed
Polygonum douglasii s. majus (*Polygonum majus*) wiry knotweed/ Palouse knotweed *Polygonum phytolaccifolium* (*Polygonum phytolaccaefolium*) pokeweed fleeceflower *Polygonum polygaloides* polygala knotweed
Polygonum polygaloides s. kelloggii (*Polygonum kelloggii*) Kellogg's knotweed
Polystichum lemmonii (*Polystichum mohrioides*) Shasta fern HSO
Polystichum munitum (*Polystichum munitum munitum*) common swordfern
Potamogeton natans floatingleaf pondweed

Forbs, cont'd

Potentilla glandulosa s. glandulosa (*Potentilla glandulosa glandulosa*) gland cinquefoil/ sticky cinquefoil
Potentilla gracilis northwest cinquefoil/ slender cinquefoil
Potentilla recta **erect cinquefoil**
Prunella vulgaris common selfheal
Psilocarphus elatior tall woolly-heads
Pteridium aquilinum bracken fern/brake fern
Pterospora andromedea woodland pinedrops
Pteryxia terebinthina foeniculacea (*Cymopterus terebinthinus foeniculaceus*) turpentine cymopterus
Pyrola asarifolia common wintergreen/ pink wintergreen
Pyrola chlorantha green pyrola
Pyrola elliptica white wintergreen
Pyrola minor snowline pyrola
Pyrola picta white-vein pyrola
Pyrola picta (*Pyrola aphylla*) leafless pyrola
Pyrrocoma carthamoides carthamoides (*Haplopappus carthamoides*) large-flowered goldenweed
Ranunculus alismifolius (*Ranunculus alismaefolius*) plantainleaf buttercup
Ranunculus aquatilis white water buttercup
Ranunculus occidentalis western buttercup
Ranunculus orthorhynchus straightbeak buttercup
Ranunculus populago mountain buttercup PSW
Ranunculus uncinatus wood buttercup
Rorippa curvisiliqua western yellowcress
Rorippa sinuata spreading yellowcress
Rudbeckia occidentalis blackhead/ western coneflower
**Rumex acetosella* sheep sorrel/ red sorrel
Rumex aquaticus fenestratus (*Rumex occidentalis*) western dock
**Rumex crispus* curly dock
**Rumex paucifolius* mountain sorrel
Rumex salicifolius willow dock
Sagina procumbens procumbent pearlwort
Sagina saginoides alpine pearlwort
Sanguisorba canadensis (*Sanguisorba sitchensis*) Sitka burnet
Sanguisorba occidentalis annual burnet
Sanicula graveolens Sierra sanicle
Saussurea americana American sawwort
Saxifraga integrifolia swamp saxifrage
Saxifraga mertensiana Merten's saxifrage/ wood saxifrage
Saxifraga occidentalis redwool saxifrage
Saxifraga odontoloma (*Saxifraga arguta*) brook saxifrage
Scutellaria angustifolia narrowleaved skullcap
Scutellaria antirrhinoides snapdragon skullcap
Sedum borschii (*Sedum leibergii*) Leiberg's stonecrop
Sedum lanceolatum lanceleaf stonecrop
Sedum lanceolatum s. lanceolatum (*Sedum lanceolatum lanceolatum*) lanceleaf stonecrop
Sedum stenopetalum wormleaf stonecrop
Selaginella densa compact selaginella
Senecio canus woolly groundsel
Senecio crassulus thickleaf groundsel
Senecio hydrophiloides (*Senecio foetidus*) sweetmarsh butterweed
Senecio integerrimus western groundsel/ woolly groundsel
Senecio jacobaea **tansy ragwort**
Senecio pseudaureus streambank butterweed
Senecio serra butterweed groundsel
Senecio triangularis arrowleaf groundsel
**Senecio vulgaris* old-man-in-the-spring/ common groundsel
Sidalcea oregana s. oregana v. procera (*Sidalcea oregana procera*) Oregon checkermallow
Silene douglasii douglasii Douglas' silene
**Silene latifolia s. alba* (*Lychnis alba*) white campion
Silene menziesii Menzies' silene
Silene oregana Oregon catchfly
Silene scouleri Scouler's silene
**Sisymbrium altissimum* tumblemustard
Sisyrinchium angustifolium blue-eyed grass
Solidago canadensis meadow goldenrod
Solidago gigantea smooth goldenrod
Solidago missouriensis Missouri goldenrod
**Sonchus asper* prickly sow-thistle
**Spergularia rubra* red sandspurry
Spiranthes porrifolia (*Spiranthes romanzoffiana porrifolia*) western ladiestresses/ pearltwist PSW
Spiranthes romanzoffiana (*Spiranthes romanzoffiana romanzoffiana*) western ladiestresses/ pearltwist
Stellaria crispa crisped starwort
Stellaria longipes longstalk starwort
**Stellaria media* chickweed
Stellaria obtusa bluntsepaled starwort
Stenotus lanuginosus lanuginosus (*Haplopappus lanuginosus*) woolly goldenweed
Stenotus stenophyllus (*Haplopappus stenophyllus*) narrow-leaf goldenweed
Streptopus amplexifolius claspleaf twistedstalk
Swertia perennis swertia
Tanacetum vulgare **common tansy**
**Taraxacum officinale* common dandelion
Thalictrum fendleri Fendler's meadowrue
Thalictrum occidentale western meadowrue
**Thlaspi arvense* field pennycress

Forbs, cont'd

Thlaspi montanum montanum (*Thlaspi fendleri*) blue pennycress/ Fendler's pennycress
Tiarella trifoliata coolwort foamflower
**Tragopogon dubius* yellow salsify
**Tragopogon pratensis* meadow salsify
Trautvetteria caroliniensis false bugbane
**Trifolium aureum* (*Trifolium agrarium*) yellow clover
Trifolium cyathiferum cup clover
Trifolium eriocephalum woollyhead clover
**Trifolium hybridum* alsike clover
Trifolium latifolium twin clover
Trifolium longipes longstalk clover
Trifolium macrocephalum bighead clover
Trifolium microcephalum woolly clover/ smallhead clover
Trifolium plumosum pussy clover HSO
**Trifolium pratense* red clover
**Trifolium repens* white clover
Trifolium wormskioldii (*Trifolium wormskjoldii*) springbank clover
Trillium petiolatum purple trillium
Trimorpha lonchophylla (*Erigeron lonchophyllus*) spearleaf fleabane
Triteleia grandiflora (*Brodiaea douglasii*) Douglas' brodiaea
Triteleia hyacinthina hyacinthina (*Brodiaea hyacinthina*) hyacinth brodiaea
Typha latifolia common cattail
Urtica dioica stinging nettle
Valeriana scouleri Scouler's valerian
Valeriana sitchensis Sitka valerian
Veratrum californicum California falsehellebore
Veratrum viride green falsehellebore
***Verbascum thapsus* flannel mullein**
Veronica americana American speedwell
**Veronica anagallis-aquatica* water speedwell
**Veronica arvensis* common speedwell
Veronica serpyllifolia thyme-leaved speedwell
Veronica wormskjoldii Wormskjold speedwell

Vicia americana American vetch
Viola adunca early blue violet
Viola glabella stream violet
Viola macloskeyi Macloskey's violet/ small white violet
Viola orbiculata darkwoods violet
Viola palustris marsh violet
Viola purpurea goosefoot violet
Viola vallicola major (*Viola nuttallii major*) Nuttall's violet
Woodsia oregana Oregon woodsia/ western woodsia
Wyethia amplexicaulis mule's ears/ northern mule's ear
***Xanthium strumarium* cocklebur**
Zigadenus elegans mountain death camas/ glaucous zigadenus
Zigadenus paniculatus panicled death camas
Zigadenus venenosus meadow death camas/ deadly death camas

Grasses:

**Agropyron desertorum* (*Agropyron cristatum*) crested wheatgrass
Agrostis diegoensis thin bentgrass/ leafy bentgrass
Agrostis exarata spike bentgrass
Agrostis scabra winter bentgrass/ tickle-grass
**Agrostis stolonifera* (*Agrostis alba*) redtop
Agrostis thurberiana Thurber bentgrass
**Aira caryophyllea* silver hairgrass
Alopecurus aequalis shortawn foxtail
**Alopecurus pratensis* meadow foxtail
**Apera interrupta* (*Agrostis interrupta*) interrupted apera
**Arrhenatherum elatius* tall oatgrass
**Bromus briziformis* (*Bromus brizaeformis*) rattlesnake brome
Bromus carinatus mountain brome
Bromus ciliatus fringed brome
**Bromus commutatus* hairy brome/ hairy chess
**Bromus diandrus* (*Bromus rigidus*) ripgut brome
**Bromus erectus* meadow brome
**Bromus hordeaceus s. hordeaceus* (*Bromus mollis*) soft brome
**Bromus inermis* (*Bromus pumpellianus*) Pumpelly brome
**Bromus inermis* smooth brome
**Bromus japonicus* Japanese brome
Bromus suksdorfii Suksdorf brome
***Bromus tectorum* cheatgrass brome/ downy chess**
Bromus vulgaris Columbia brome
Calamagrostis canadensis canadensis bluejoint reedgrass
Calamagrostis purpurascens purple pinegrass
Calamagrostis rubescens pinegrass
Calamagrostis stricta s. inexpansa (*Calamagrostis inexpansa*) northern reedgrass

Grasses, cont'd

Cinna latifolia drooping woodreed
**Dactylis glomerata* orchard grass
Danthonia californica California danthonia
Danthonia intermedia timber oatgrass
Danthonia unispicata onespike oatgrass
Deschampsia cespitosa tufted hairgrass
Deschampsia danthonioides annual hairgrass
Deschampsia elongata slender hairgrass
Elymus elymoides (*Sitanion hystrix*) bottlebrush squirreltail
Elymus glaucus blue wildrye
Elymus glaucus s. glaucus (*Elymus glaucus glaucus*) blue wildrye
Elymus glaucus s. jepsonii (*Elymus glaucus jepsonii*) blue wildrye
Elymus lanceolatus s. lanceolatus (*Agropyron dasystachyum*) thickspike wheatgrass
**Elytrigia intermedia* (*Agropyron intermedium*) intermediate wheatgrass
***Elytrigia repens repens* (*Agropyron repens*) quack grass**
Festuca campestris (*Festuca scabrella*) rough fescue
Festuca idahoensis Idaho fescue
Festuca occidentalis western fescue
Festuca ovina sheep fescue
**Festuca pratensis* meadow fescue/ English fescue
Festuca rubra red fescue
Glyceria elata tall mannagrass
Glyceria grandis American mannagrass
Hierochloe odorata sweetgrass
***Holcus lanatus* common velvetgrass**
Hordeum brachyantherum meadow barley
Koeleria macrantha (*Koeleria cristata*) prairie junegrass
Leymus cinereus (*Elymus cinereus*) Great Basin wildrye
**Lolium perenne* perennial ryegrass
Melica bulbosa oniongrass
Melica spectabilis showy oniongrass
Melica subulata Alaska oniongrass
Muhlenbergia filiformis slender muhly
Phalaris arundinacea reed canarygrass
Phleum alpinum alpine timothy
**Phleum pratense* common timothy
**Poa bulbosa* bulbous bluegrass
**Poa compressa* Canada bluegrass
Poa nervosa wheeleri Wheeler's bluegrass
**Poa palustris* fowl bluegrass
**Poa pratensis* Kentucky bluegrass
Poa secunda (*Poa canbyi*) pine bluegrass
Poa secunda (*Poa sandbergii*) Sandberg's bluegrass
**Pseudoroegneria spicata s. inermis* (*Agropyron inerme*) beardless bluebunch wheatgrass
Pseudoroegneria spicata s. spicata (*Agropyron spicatum*) bluebunch wheatgrass
Stipa lettermanii Letterman needlegrass
Stipa nelsonii s. dorei (*Stipa occidentalis minor*) western needlegrass
Stipa occidentalis western needlegrass
Stipa thurberiana Thurber's needlegrass
Torreyochloa pallida pauciflora (*Puccinellia pauciflora*) weak alkaligrass
Trisetum cernuum canescens (*Trisetum canescens*) tall trisetum
Trisetum spicatum downy oatgrass
Trisetum wolfii Wolf's trisetum
**Triticum aestivum* cultivated wheat
Vahlodea atropurpurea (*Deschampsia atropurpurea*) mountain hairgrass
***Ventenata dubia* ventenata**
**Vulpia microstachys microstachys* (*Festuca microstachys*) small fescue
**Vulpia myuros* (*Festuca megalura*) foxtail fescue

"Grasslike":

Carex amplifolia big leaved sedge
Carex aquatilis water sedge
Carex athrostachya slender-beaked sedge
Carex aurea golden sedge
Carex concinnoides northwest sedge
Carex deweyana Dewey's sedge
Carex disperma soft-leaved sedge
Carex filifolia threadleaf sedge
Carex geyeri elk sedge
Carex hoodii Hood's sedge
Carex illota sheep sedge
Carex stipata sawbeak sedge
Carex interior inland sedge ONHP List 2
Carex lanuginosa woolly sedge
Carex lenticularis densely tufted sedge
Carex lenticularis lenticularis densely tufted sedge
Carex luzulina luzulina woodrush sedge
Carex microptera small-winged sedge
Carex nebrascensis Nebraska sedge
Carex nigricans black alp sedge
Carex petasata Liddon's sedge
Carex praegracilis clustered field sedge
Carex rossii Ross sedge
Carex subnigricans dark alp sedge ONHP List 3
Carex vesicaria inflated sedge
Eleocharis acicularis needle spike-rush
Eleocharis palustris common or creeping spike-rush
Juncus acuminatus tapered rush
Juncus balticus Baltic rush
Juncus bufonius toad rush
Juncus confusus Colorado rush
Juncus drummondii Drummond's rush
Juncus effusus soft rush
Juncus ensifolius swordleaf rush
Juncus filiformis thread rush
Juncus mertensianus Merten's rush
Juncus orthophyllus straight-leaved rush
Juncus tenuis slender rush
Luzula campestris field woodrush
Luzula parviflora small-flowered woodrush
Luzula spicata spike woodrush
Scirpus americanus three-square bulrush
Scirpus microcarpus panicled bulrush
Scirpus pallidus pale bulrush

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