UPPER SOUTH PLATTE WATERSHED PROTECTION AND RESTORATION PROGRAM
MORRISON, COLORADO

Report on Vegetation Monitoring 2000 – 2003

March 1, 2005

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Long Scraggy from just above Trumbull. October 2001.

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A typical stand of ponderosa pine after thinning treatment – now much more fire-resistant and with more grass.

Acknowledgements

Many thanks to Fred Patten, leader of the Upper South Platte Watershed Protection and Restoration Project, who has been the inspiration and driver behind this project from the beginning. Those people on the staff (in one sense or another) of that Project have been very helpful in many ways – especially Steve Culver, Jim Thinnes, Deb Entwistle, Floyd Freeman, and Terry McCann. The South Platte District people have been a great help in every way, especially Randy Hickenbottom, Brian Banks, Gary Shaffer, Denny Bohon, and Mike Elson. Many thanks to Bob Siemens for taking care of all of us. Ken Kanaan, Forest Soil Scientist in Pueblo, kindly provided electronic versions of soil maps for the project area.

1. Introduction

The Upper South Platte Protection and Restoration Project

The Upper South Platte Watershed Restoration Project is a cooperative partnership among several agencies and groups with common interests in this area. The partners include:

- USDA Forest Service, Rocky Mountain Region, Pike National Forest
- Colorado State Forest Service
- Denver Water Department
- Middle East Research Cooperative
- U. S. Environmental Protection Agency
- U. S. Geological Survey

The major goals of the Upper South Platte Watershed Protection and Restoration Project are:

A. Reduce the risk to forests and property from crown fires. Especially reduce the risk at urban interfaces, for example across public–private land boundaries.
B. Bring soil erosion and sediment production within the range of natural levels.

These goals and a plan for accomplishing them are explained in a recent Business Plan (Anonymous 2000). In order to achieve these goals, we will strive to provide sustainable ecosystems that will be more resilient to disturbances, both natural disturbances and man-caused disturbances. We expect that this will result in benefits such as reduced risk of large-area outbreaks and epidemics of forest insects and diseases, maintained or enhanced fish populations and quality of fish habitat, maintained or enhanced water quality, and restored or enhanced condition of riparian areas and wetlands.

Proposed Treatments

In order to achieve the above goals, the U. S. Forest Service prepared an Environmental Assessment. In the environmental assessment, treatments are proposed in several areas within the Upper South Platte Watershed, some of which are shown in Figures 1-1 and 1-2.

After the Environmental Assessment was complete, the Forest Supervisor decided to separate this into two decisions: one for the roaded areas (Figure 1-1) and one for the roadless areas (Figure 1-2; Kimbell 2001ab).

The decision for the roaded areas (Figure 1-1) was not appealed by the public, but the decision for the roadless areas (Figure 1-2) was appealed. The appeals resulted in some adjustments in diameter of trees to be cut and sizes of openings to be created. The areas thinned in 2002 and those scheduled for treatment in 2003-2004 are all covered under the Environmental Assessment for roaded areas (Figures 1-1, 2-1). Some of the areas planned for treatment in 2004-2005 are covered by the Environmental Assessment for the roadless areas (Figures 1-1, 2-6).

In her decision for the non-roadless areas (Figure 1-1), the Forest Supervisor decided to “phase the first two years of work to allow time to evaluate the treatment activities and identify any potential problems that may require remedial measures or modifications to treatment prescriptions. ... Upon completion of the project approximately 75 to 80% of the treated acres will be thinned, 20 to 25% of the treated acres will be created openings, and up to 100% of the treated acres will be prescribed burned. ” Tree stands would be thinned “to a canopy closure of about 25 percent.... The residual stand basal area will average 40-60 square feet per acre (or approximately 50-75 trees per acre)” (Kimbell 2000a).

The Forest Supervisor specified that the resulting stands “will be resilient to surface fires and have a low risk of sustaining a crown fire. Preference will be given to retaining ponderosa pine over Douglas-fir and retaining larger trees with few low branches. More Douglas-fir will be retained on north aspects and higher elevations with few Douglas-fir retained on east, south, and west aspects in the lower elevations. Larger more mature trees will typically be retained. The spacing will be variable, retaining natural clumpy characteristics. Retain existing snags that are not a hazard, for cavity-dependent wildlife” (Kimbell 2000a).

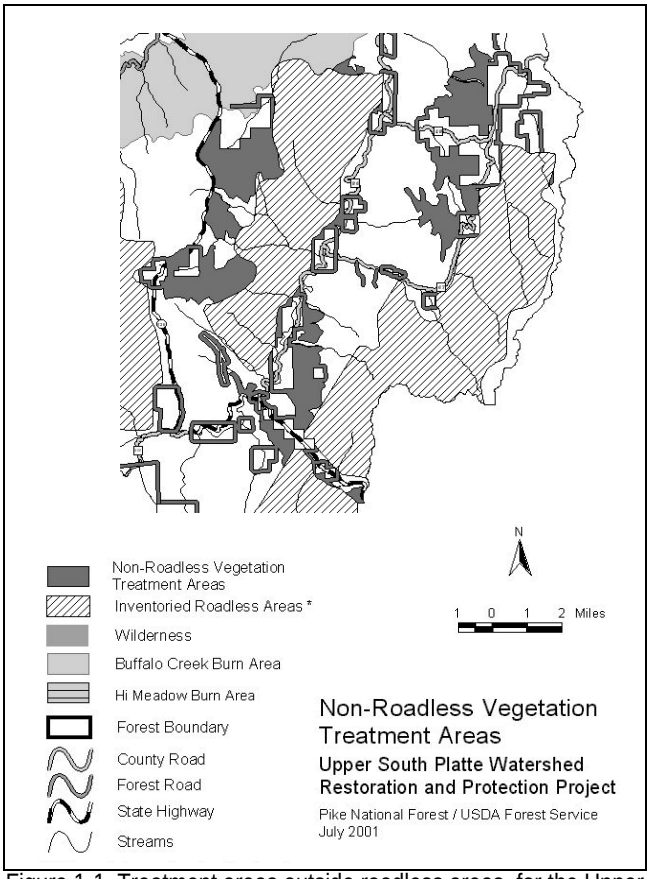

Figure 1-1. Treatment areas outside roadless areas, for the Upper South Platte Watershed Restoration and Protection Project (Anonymous 2000, Kimbell 2001a).

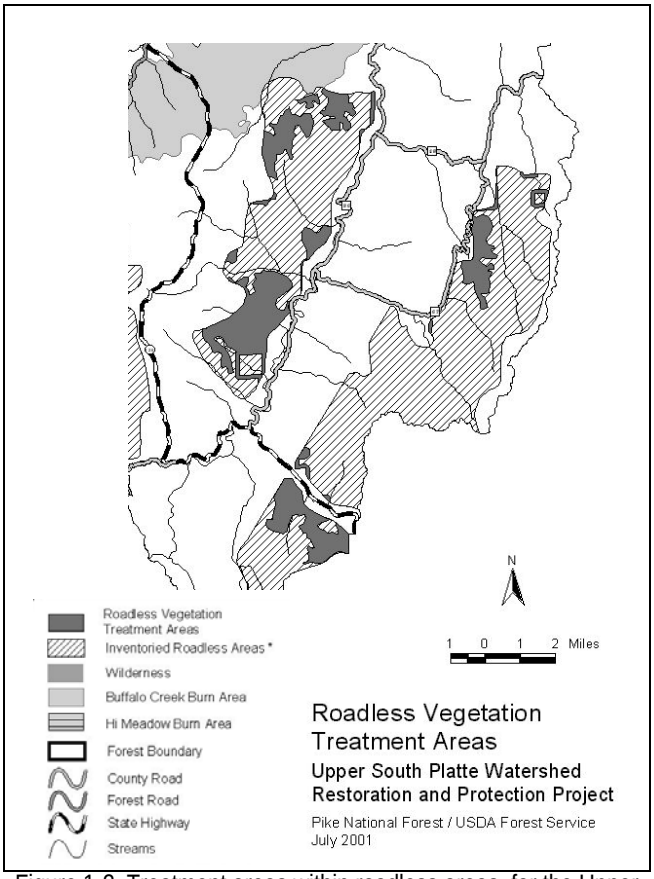

Figure 1-2. Treatment areas within roadless areas, for the Upper South Platte Watershed Restoration and Protection Project (Anonymous 2000, Kimbell 2001b).

In order to protect old-growth stands where they might occur, the Forest Supervisor ordered that "any trees identifiable as being over 150 years old will be retained to help achieve future old-growth conditions. Larger trees will generally be retained throughout the treatment areas.... Areas that do not meet the old-growth standard but have larger trees where the local residual stocking is greater than 80 square feet of basal area per acre will be thinned to approximately 60 square feet of basal area. Priority will be given to retaining the largest ponderosa pine and then the largest Douglas-fir. The residual stand will be kept on a trajectory to achieve an old-growth condition" (Kimbell 2000a).

Openings one to 40 acres in size would be created "where they would most likely have naturally persisted the longest. The openings will be in areas that have regenerated in the past 120 years and will primarily be located on south and west aspects. Approximately 80 to 90% of the openings will be 5 acres or less. Openings larger than 5 acres will be created only where there is evidence that a larger opening existed historically. These sites will have few if any trees greater than 100 years old, no stumps, and little or no organic soil development. No openings will be greater than 40 acres. ... Approximately 40% of the acres in openings will have no trees and the remaining 60% will have canopy closures of 1-10%" (Kimbell 2000a).

Most of the areas where thinning and opening creation occur would be burned. Logs and slash would be burned "after completing mechanical treatments." The new openings would be burned again "5 to 6 years later if necessary to minimize tree regeneration, then every 10 to 30 years as needed to maintain the openings" (Kimbell 2000a).

In general, "harvesting equipment will not be allowed on slopes greater than 30%.... No vegetation treatments will occur on any slopes greater that 40%.... No roads will be constructed or reconstructed in the ... non-roadless area. ... No equipment access [would be allowed] to treatment areas through Inventoried Roadless Areas.

In her decision, the Forest Supervisor emphasized monitoring in the context of adaptive management, "during the life of the project to ensure management and resource protection objectives are achieved. " Six general areas of monitoring were prescribed: monitoring of threatened, endangered, and sensitive wildlife

and plant species; monitoring of forest vegetation; monitoring of noxious weeds; monitoring of soil erosion; monitoring of water quality; and monitoring of off-highway vehicle use (Kimbell 2000a).

The Forest Supervisor specified that monitoring follow the monitoring strategy written by the Upper South Platte Watershed Project, summarized above. "If the Forest Plan general directions, standards, and guidelines for habitat improvement and maintenance are not achieved," then vegetation treatment operations would be reduced or modified, or monitoring intensity would be increased to determine the source of the impact. Appropriate mitigation for the impact would be applied.

Monitoring and Adaptive Management

Most workers consider monitoring to be of four kinds (Spellerberg 1991, Noss and Cooperrider 1994, Lee and Bradshaw 1998):

- Baseline monitoring
- Implementation monitoring
- Effectiveness monitoring
- Validation monitoring

Baseline monitoring is collection of data necessary to begin or plan for the other monitoring activities. In the Upper South Platte watershed, almost all of the baseline data has already been (or will be) collected; examples would include soil surveys, ongoing forest inventories, range allotment inventories, watershed assessments and forest plan inventories. Also included would be inventories for special projects, such as the Two Forks Dam proposal. The only task left for us would be to collect this together in some common location, where all cooperators and partners would be able to access the information. Thus, baseline monitoring is largely outside the scope of this monitoring strategy.

Implementation monitoring is "the process of determining if a planned activity was accomplished. Thus it asks the question 'Did we do what we said we were going to do?'" (Noss and Cooperrider 1994). Implementation monitoring, we assume, will be done by others as part of implementation of each small project, so it too is outside the scope of this monitoring strategy. And yet, the results of implementation monitoring on each small project will be extremely important for designing future projects.

Effectiveness monitoring "is the process of determining if an activity achieved the stated goal or objectives. It asks the basic question 'Did it work?'" (Noss and Cooperrider 1994). We assume that most of this monitoring strategy will comprise this type of monitoring.

Validation monitoring "determines if assumptions and models used in developing the plan are correct... Many biologists consider validation monitoring to be synonymous with research" (Noss and Cooperrider 1994). This monitoring strategy will not cover much of this, only to identify what the most important priorities are for research in our view.

Adaptive management is the process of linking management to monitoring. This kind of management recognizes that we do not know as much as we should, yet we cannot afford to collect all the data that we should to support management before it happens. A realistic approach to this seeming dilemma is to begin a management process on a relatively small area, and carefully monitor the outcome of management on key indicators. Our monitoring, then, should show us how to modify and improve future management, and thereby increase the confidence of resource managers (Kershner 1997).

Noss and Cooperrider (1994) show a diagram illustrating some of the flow of activities (Fig. 1-1). Lee and Bradshaw show a similar diagram, but with some interesting variations (Figure 1-2).

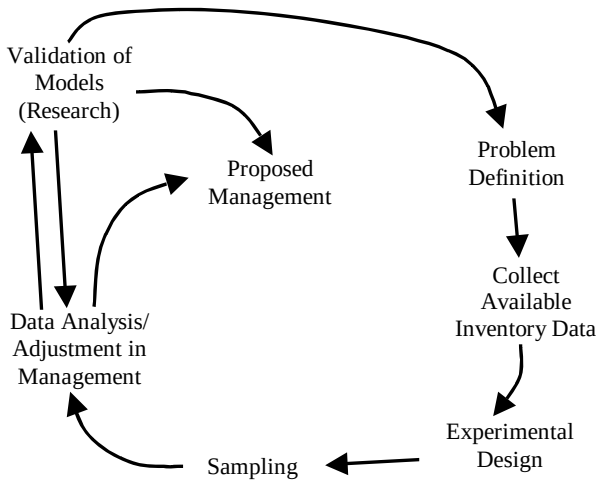

Figure 1-1. "The adaptive management and monitoring cycle" (slightly modified from Noss and Cooperrider 1994).

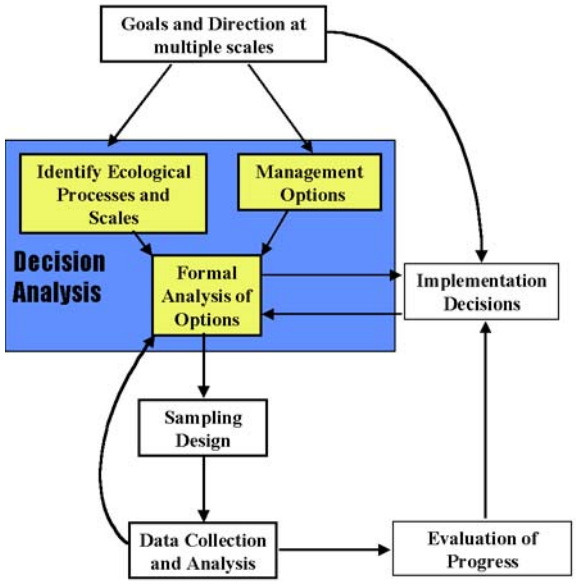

Figure 1-2. One view of the monitoring process (from Lee and Bradshaw 1998).

The Monitoring Process

Noss and Cooperrider (1994) describe steps to develop a monitoring program, including:

1. Problem Definition. They also call this "scoping," but that word is confusing, since it is has a different meaning in the NEPA process. "In adaptive management the goals and objectives of management will determine the goals and objectives of monitoring." So the first thing to do is define the goals and objectives of management. I propose the following:

Goal Statement

Primary Goals

A. Reduce the risk to forests and property from crown fires. Especially reduce the risk at urban interfaces, especially across public-private land boundaries.
B. Bring soil erosion and sediment production within the range of natural levels.

Secondary Goals

We will strive to provide sustainable ecosystems that will be more resilient to disturbances, both natural disturbances and man-caused disturbances. We expect that this will result in benefits such as:
C. Reduced risk of large-area outbreaks and epidemics of forest insects and diseases.
D. Maintained or enhanced fish populations and quality of fish habitat.
E. Maintained or enhanced water quality.
F. Restored or enhanced condition of riparian areas and wetlands.

We have expectations of our activities, among which are:
G. To not expand the size and number of populations of noxious weeds, but to reduce these if possible.
H. To maintain or enhance populations of threatened, endangered, and sensitive species.

In addition, we intend to fully inform the public, partners, cooperators, and stake holders of problem situations, progress in resolving problems, opportunities, and need for their continued assistance and input.

From these goals, I have derived monitoring goals in the fashion of Noss and Cooperrider (1994). Table 1-1 shows the primary management goals (A and B) and subgoals, and monitoring goals we have derived from these; Table 1-2 shows secondary goals. Tables 1-1 and 1-2 show only those goals and subgoals relevant to vegetation monitoring; several other goals and subgoals have been omitted that are relevant to watershed monitoring.

The third column shows the vegetation quantities to be measured to determine whether the goals have been met; there are other watershed quantities that may be measured in addition to the ones shown here.

Table 1-1. The relationship between the primary management goals and monitoring goals for the Upper South Platte Protection and Restoration Project. Goals are denoted by capital letters, and subgoals by numerals.

Management (Goal/Subgoal)	Monitoring (Goal/Subgoal)	Quantities to be Measured
A. Reduce the risk to forests and property from crown fires. Especially, reduce the risks at urban interfaces, particularly across public-private land boundaries	A. Detect any significant changes in crown fire risk in and around treatment areas	Tree density Cover in tallest tree layers Size class distribution of trees Fuel ladders Dead and down fuel loading
1. Reduce tree density and create openings	1. Detect changes in tree density, number of openings, and sizes of openings in and near treatment areas	Tree density Number of openings Size of openings
2. Reduce risk of fire spotting, and decrease number of fuel ladders	2. Detect any significant changes in fire spotting risk and fire ladders	Size class distribution of trees Cover by layer
B. Bring soil erosion and sediment production within the range of natural levels	B. Detect any significant changes in soil erosion risk and increased sediment production risk across the watershed	Cover by species Bare soil cover Cover by layer Cover of coarse fragments
3. Increase cover of understory low vegetation	3. Detect any significant changes in understory vegetation, especially in treatment areas, burned areas, and riparian areas	Cover by species
4. Decrease cover of bare soil and coarse fragments	4. Detect any significant changes in bare soil and coarse fragment cover across the watershed, especially in treatment areas, burned areas, and riparian areas	Bare soil cover Cover of coarse fragments
5. Maintain soil productivity	5. Detect any significant changes in erosion and sediment response on a watershed level	Litter Cover

Table 1-2. One selected secondary management goal and its relationship to vegetation monitoring.

Management (goal/subgoal)	Monitoring (goal/subgoal)	Indicators/Comments
H. Maintain or enhance populations of threatened, endangered, and sensitive species		
8. Maintain habitat for montane Pawnee skipper	8. Detect any significant changes in habitat of montane Pawnee skipper	Cover of key plant species

Monitoring Activities

Not all the monitoring activities will be done by any one agency or entity. Individual tasks will be assigned to specific agencies and people, based on the ongoing cooperation and agreements among cooperators.

Eventually sample sites, plots, transects, and other places where monitoring happens will be located throughout the Upper South Platte Watershed, in locations designed to:

- Characterize the watersheds and subwatersheds sufficiently to enable ongoing watershed assessment.
- Accurately track progress toward the goals.
- Elucidate and describe key ecological processes and ecosystem responses (including human interactions), so that future management decisions are made clearer and easier.

Management Definition Of Success

From the quantities to be measured in Tables 1-1 and 1-2, the management team has devised what specific outcomes we expect from the planned treatments (Table 1-3). Most of these have been extracted from the Forest Plan, as amended, or from the Decision Notices (Kimbell 2001ab).

Table 1-3. The relationship between quantities to be measured and management definition of success in achieving goals (Johnston and Entwistle 2002).

Monitoring Category	Quantities to be Measured	Desired Outcome
Vegetation	Bare soil cover	No increase or increase of < 5%, by transect
	Fuel ladders	Reduce cover in tree layers shorter than 8 ft by half or to 5% cover
	Cover by species	No increase in noxious weed cover or increase of < 5%, by transect Increase total herbaceous cover by 10% cover, by transect Increase Total Live Cover by 10% cover, by transect
	Cover of coarse fragments	No increase or increase of < 5%, by transect
	Crown cover	Reduce to 25% in forested portions of treated areas
	Dead and down fuel loading	Reduce post-treatment fuel loads to < 12 Tons/ac
	Number of openings	Openings comprising 20–25% of treated areas
	Size class distribution of trees	Reduce number of Douglas-fir trees in size classes < 8 in dbh by half or to 10 trees/ac Stands with old-growth potential to be about 60 ft^2/ac basal area
	Size of openings	80-90% of openings < 5 ac in size No created or enhanced openings > 40 ac in size
	Tree density	Reduce basal area of trees to < 60 ft^2/ac averaged across forested portions of treated areas
Watershed	Channel/water slope	No significant change
	Channel Cross Sectional Area	No significant change
	Streambed Particle Size Distribution	No significant change in the percentage of fine particles (< 8 mm)
	Erosion and sediment monitoring with sediment fence	No measurable delivery of sediment from roads to streams, and no additional development of gullies due to road drainage. No significant difference in sediment produced between cut and uncut swales.
	Streamflow	No significant change over pre-treatment or compared to control watershed.
	Suspended Sediment, Total Phosphorus, and Turbidity	No significant change over background during base flow, or no significant difference when compared to control watershed
	Width/depth ratios	No significant change

2. Study Area

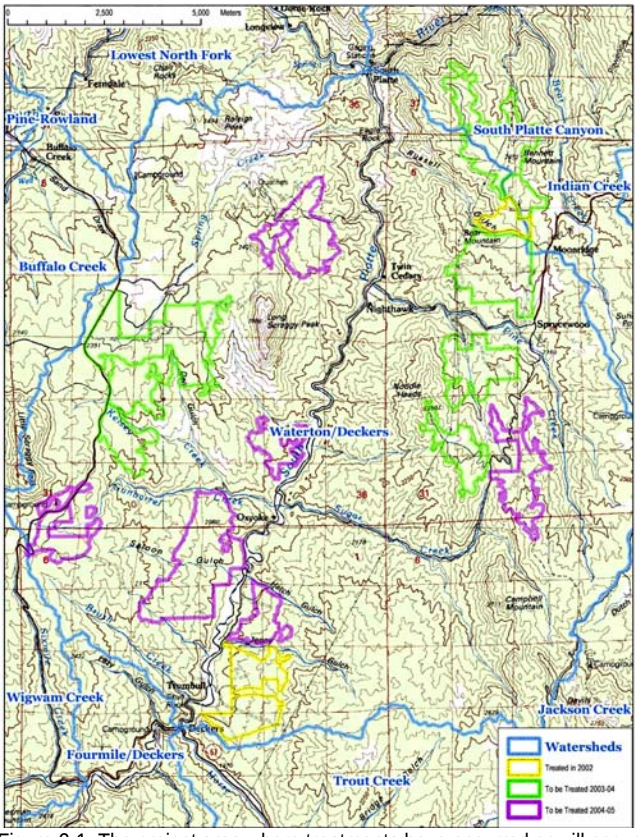

Figure 2-1. The project area where treatments have occurred or will occur in the next few years. The South Platte River flows from southwest to northeast, and its North Fork joins it at the village of South Platte near the middle of the top margin. Most of the planned treatments are in the Waterton/Deckers Watershed, with some in the South Platte Canyon Watershed.

The study area shown in Figure 2-1 is comprised of the treatment areas – current and future – outlined in color. Most of the areas are contained within the Waterton-Deckers Watershed, but parts of a few areas are in the South Platte Canyon Watershed.

Several large wildfires have occurred in the study area in the last decade (Figure 2-2); all of them burned from southwest to northeast. The Buffalo Creek Fire occurred in 1997, and burned parts of upper Buffalo Creek and lower Spring Creek watersheds; the heavy rains that occurred shortly after the fire caused considerable sediment problems in Denver's water supply.

The Schoonover Fire of May 2002 burned hot and moved very quickly, about 2 mi/hr at its height. The much larger Hayman Fire of June 2002 burned large portions of the southwestern part of the study area (Figure 2-2).

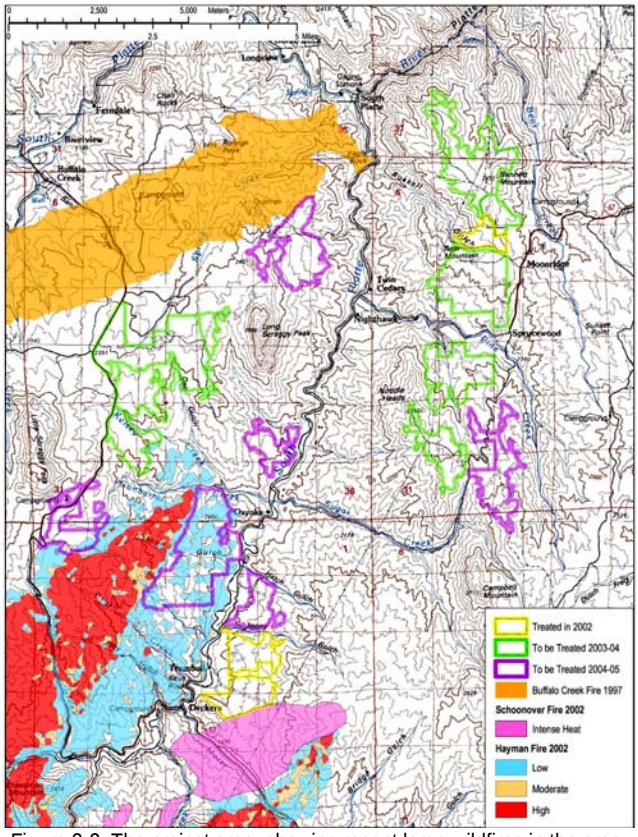

Figure 2-2. The project area, showing recent large wildfires in the area.

Geology and Soils

Coarse geology patterns are shown in Figure 2-3, from Tweto (1979) and Green (1995). There is no geological map at a finer scale that covers the whole study area. There is a finer-scale map of one quadrangle, Platte Canyon Quadrangle (Peterson 1964); it shows only slightly more detail than Figure 2-3.

Most of the study area is in Map Unit Yp, described by Peterson (1964) as “Pikes Peak Granite, coarse-grained seriate granular granite.” A portion in the northeastern corner of the study area is shown in Map Unit Xb, described by Peterson (1964) as “interlayered metasedimentary rocks, which are predominantly biotite gneiss.”

Soils of the study area are shown in Figure 2-4, derived from Moore (1992) and Irvine (2004). Because the study area covers parts of two soil surveys, I have grouped the soils as shown in Table 2-1.

Most of the soils in the study area have been mapped as Sphinx series (or family), which are poorly-developed, gravelly to very gravelly soils with no apparent horizons. In the study area, Sphinx nearly always occurs on Pikes Peak granite and closely related pink to orange-red granites that erode rapidly to gravel.

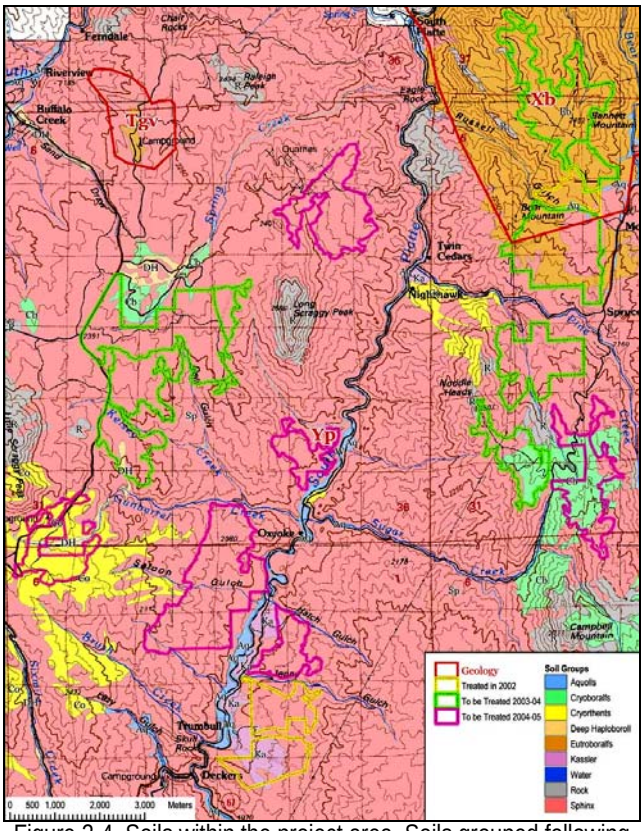

Figure 2-4. Soils within the project area. Soils grouped following Moore (1992) and Irvine (2004); see Table 2-1. The white areas near the top of the map were not included in either soil survey. Treatment areas and geology shown as in Figure 1-3.

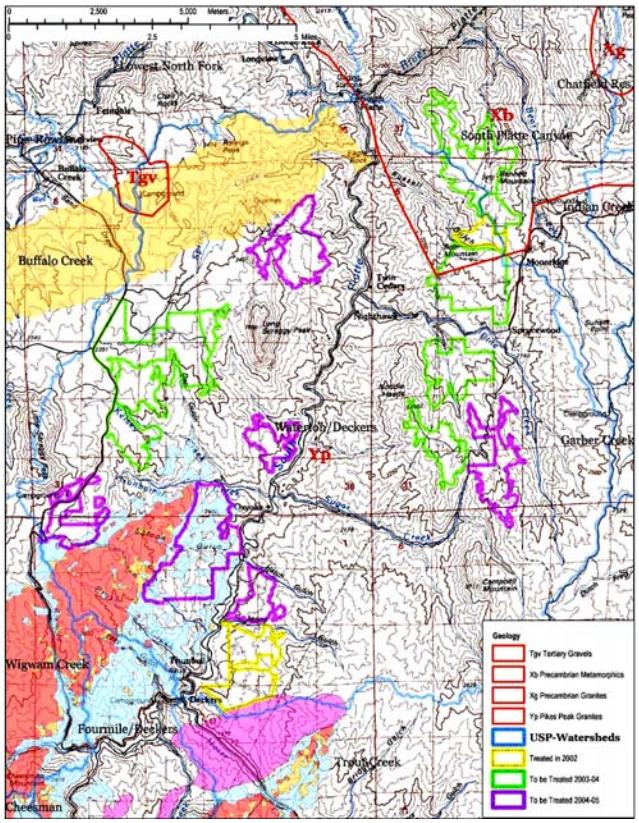

Figure 2-3. The project area, showing geology. Wildfires shown as in Figure 2-2. Geology from Tweto (1979) and Green (1995): Yp – Precambrian (Igneous) Granites of Pikes Peak Batholith; Xb – Precambrian (Metamorphic) Biotitic Gneiss, Schist, and Migmatite; Xg – Precambrian (Igneous) Granitic Rocks of 1,700-MY Age Group; Tgv – Tertiary (Sedimentary) Bouldery Gravel on Old Erosion Surfaces.

Also within the Pikes Peak granite area (Yp on Figures 2-3 and 2-4) there are also warmer soils with a well-developed organic-rich layer in the Kassler Series, mapped on lower slopes in the Trumbull area. At the upper ends of Gunbarrel Creek, Saloon Gulch, and Brush Creek in the southwest portion of the study area occur the same poorly-developed, very gravelly soils as Sphinx, but in a cooler temperature regime (Cryorthents). At higher elevations in upper Spring Creek, Pine Creek, and Sugar Creek occur cooler soils with a well-developed subsurface clay horizon (Cryoboralfs).

The biggest change in geology and soils within the project area is in the northeast corner, where warm soils with a well-developed subsurface clay horizon (Eutroboralfs) occur over Precambrian metamorphosed sedimentary rocks (geology map unit Xb). These soils are a great deal more productive of vegetation than any others in the project area.

Table 2-1. Soil groups as shown in Figure 2-3, following Moore (1992) and Irvine (2004).

Code	Soil Group (Fig. 2-3)	Survey[1]	MU Code	Soil Map Unit[2]	Soil Taxonomy[3]
Aq	Aquolls	NSI-WP	110F	Cryoborolls – Cryaquolls association	Cryoborolls, Cryaquolls
		NSI-WP	120F	Cumulic Haploborolls - Endoaquolls association	Cumulic Haploborolls, Endoaquolls
		EP	2	Aquolls	Aquolls
Cb	Cryoboralfs	EP	11	Condie coarse sandy loam	Mollic Cryoboralfs
		EP	15, 16	Guffey very gravelly sandy loam	Typic Cryoboralfs
Co	Cryorthents	NSI-WP	791Y	Legault family - Rock outcrop - Herbman family complex	Typic Cryorthents, Typic Cryoborolls
		NSI-WP	795M, 795S	Legault family	Typic Cryorthents
		NSI-WP	795Y	Legault family - Rock outcrop complex	Typic Cryorthents
		EP	5, 6	Catamount gravelly sandy loam	Typic Cryorthents
DH	Deep Haploborolls	NSI-WP	122F	Cumulic Haploborolls	Cumulic Haploborolls
		EP	13, 14	Garber very gravelly coarse sandy loam	Pachic Haploborolls
Eb	Eutroboralfs	EP	27, 28	Palboone-Security complex	Typic Cryoboralfs, Mollic Eutroboralfs
		EP	38, 39	Security very gravelly coarse sandy loam	Mollic Eutroboralfs
		EP	40	Security-Cathedral complex, very stony	Mollic Eutroboralfs, Lithic Haploborolls
		EP	41	Security-Cathedral-Rock outcrop complex, very stony	Mollic Eutroboralfs, Lithic Haploborolls
		EP	48	Tecolote very gravelly sandy loam, very stony	Typic Eutroboralfs
Ka	Kassler	EP	22	Kassler very gravelly coarse sandy loam	Torriorthentic Haploborolls
R	Rock	EP	34	Rock outcrop-Security-Cathedral complex	
		EP	35	Rock outcrop-Sphinx complex	
		EP	36	Rock outcrop-Sphinx, warm complex	
Sp	Sphinx	NSI-WP	790M, 790S	Sphinx family, dry	Typic Ustorthents
		NSI-WP	790Y	Sphinx family, dry - Rock outcrop complex	Typic Ustorthents
		NSI-WP	794M. 794S	Sphinx family	Typic Ustorthents
		NSI-WP	794Y	Sphinx family - Rock outcrop complex	Typic Ustorthents
		EP	42, 43	Sphinx gravelly coarse sandy loam	Typic Ustorthents
		EP	44, 45	Sphinx gravelly coarse sandy loam, warm	Typic Ustorthents
		EP	46	Sphinx-Rock outcrop complex	Typic Ustorthents
		EP	47	Sphinx, warm-Rock outcrop complex	Typic Ustorthents

1. NSI-WP = Soil survey of the Northern San Isabel and Western Pike National Forests (Irvine 2004). EP = Soil survey of the Eastern Pike National Forest (Moore 1992).
2. Slope angle designations omitted. 3. For explanation of terms, see Soil Survey Staff (1999, 2003).

Climate

The treatment areas on the western slopes of the Rampart Range (Pine Creek, Nighthawk, Noddle Heads, Bear Mountain, Russell Ridge, and Bennett Mountain Areas) are considerably moister than other treatment areas in this project area, with 20 in/yr or more precipitation (Figure 2-5); they get considerable moisture from late winter-early spring storms of the piedmont and foothills.

On the other hand, Trumbull, Lower Saloon Gulch, Jenny Gulch, Ouzel, and Long Scraggy Areas are near the bottom of the Platte and in a depression in the annual precipitation map, less than 18 in/yr; lower Trumbull and lower Saloon Gulch are even less than 16 in/yr. Spring Creek, Kelsey, Dell, and Gunbarrel Areas are at higher elevations than the canyon (and so they are cooler), but they are still relatively dry (around 18 in/yr) since they are in a rainshadow from the mountains to the west.

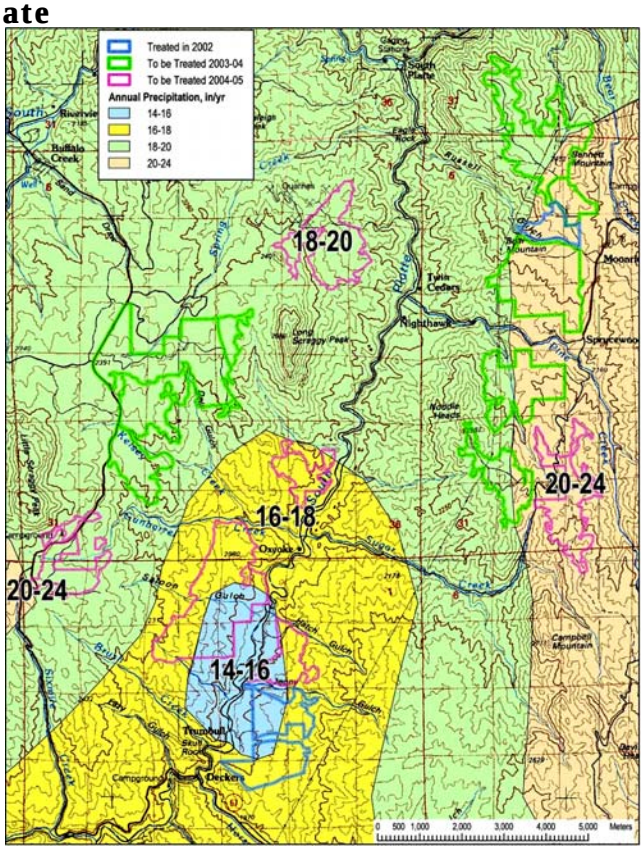

Figure 2-5. Precipitation zones in the project area. Derived from USDA NRCS (2001).

Vegetation

Most of the project area is covered by forests of ponderosa pine and Douglas-fir (Figure 2-6). Much of the lower slopes above the South Platte River, especially in the 14-16 in/yr precipitation zone near Deckers, has a potential of *Pinus ponderosa/ Arctostaphylos uva-ursi* plant association (Johnston 1987, Livingston 1949). On upland sites west of the South Platte River, *Pinus ponderosa/Carex rossii* or *Pseudotsuga menziesii/Carex rossii* are common. *Pseudotsuga menziesii/Quercus gambelii* and *Pinus ponderosa/Quercus gambelii* are common on tops of the Rampart Range east of the River, along the eastern edges of the study area. Forested potential plant associations seen in the study area are shown in Table 2-2.

In this area, there are several insects causing evident mortality in trees, especially in Douglas-fir. In the early and mid-1990's there were several large outbreaks of Douglas-fir tussock moth, *Orgyia pseudotsugata* (Wickman and others 1981) on the Rampart Range, in the eastern part of the study area (Figure 4-31). Smaller patches of past Douglas-fir tussock moth infestations, a few tree-lengths wide, can be seen throughout the study area.

The drought of the late 1990's and early 2000's contributed to later large outbreaks of Douglas-fir beetle (Schmitz and Gibson 1996), which combination killed many of the Douglas-firs in the Rampart Range that the tussock moth spared (Figures 2-12, 2-19).

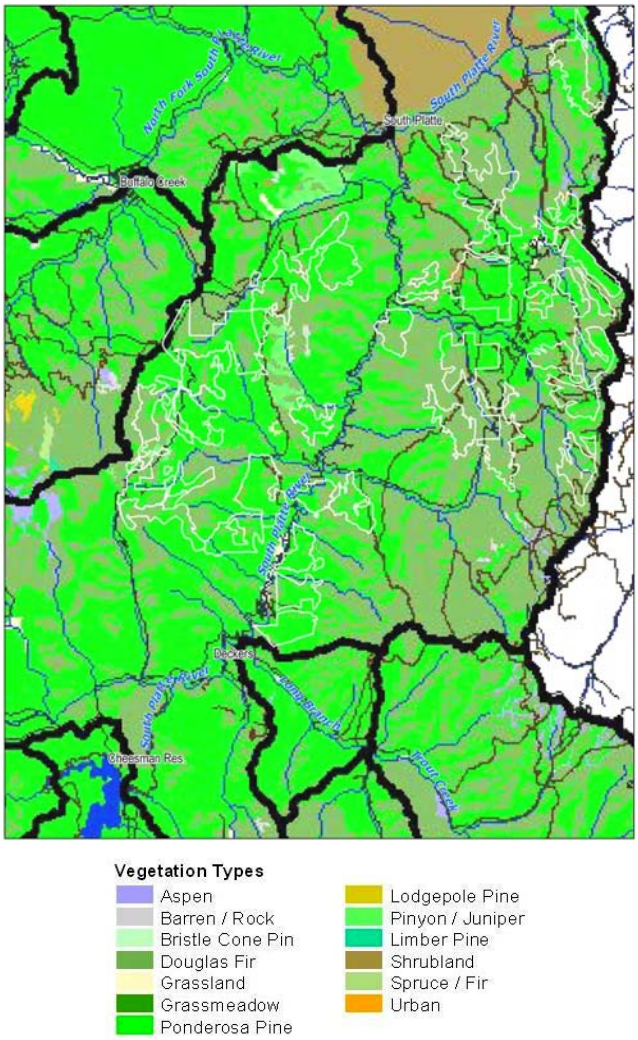

Figure 2-6. Vegetation in the project area. Current and proposed treatment areas are outlined in white. Derived from map in Foster Wheeler (1999).

In the southwestern United States, restoration of ponderosa pine forests commonly consists of mechanical thinning of overly dense stands and re-introduction of presettlement surface fires. In northern Arizona, Bailey and Covington (2002) found that 7-12 seedlings/ha (3-5 seedlings/ac) were produced after one or two surface burnings in 7- to 35-year-old thinnings, and 18-41 seedlings/ha (7-17 seedlings/ac) without surface fire. They estimate that 3.6 trees/ha/decade (1.5 trees/ac/decade) would be needed to sustain tree densities "like those present before Euro-American settlement," in which case either the thinning treatment alone or the thinning plus surface fire would be sufficient to ensure adequate reproduction.

Table 2-2. Forested potential plant associations in the study area.

Plant Association[1]	Common Names	Code[2]	References	Habitat and Location
Pinus ponderosa/ Arctostaphylos uva-ursi	Ponderosa pine/ kinnikinnick	PIPO/ARUV	Livingston 1949, Johnston 1987	Common on Sphinx soils from Pikes Peak Granites, lower slopes above South Platte R., rainshadows of 14-18 in/yr precipitation (Fig. 2-5), rolling to gentle non-northerly slopes.
Pinus ponderosa/ Bouteloua curtipendula	Ponderosa pine/ sideoats grama	PIPO/BOCU		Uncommon on Sphinx soils from Pikes Peak Granites, lower slopes above South Platte R., rainshadows of 14-18 in/yr precipitation (Fig. 2-5), steep rocky southerly slopes.
Pinus ponderosa/ Carex rossii	Ponderosa pine/ Ross sedge	PIPO/CARO5	Peet 1975, Hess 1981, Hess and Alexander 1986, Johnston 1987	Common on Sphinx soils from Pikes Peak Granites, lower to upper slopes, all precipitation within study area, gentle to moderately-inclined slopes and benches, non-northerly aspects.
Pinus ponderosa/ Cercocarpus montanus	Ponderosa pine/ mountain-mahogany	PIPO/CEMO2	Peet 1975, Hess 1981, Hess and Alexander 1986, Johnston 1987	A few stands on various well-drained soils, near tops of ridges on southerly aspects.
Pinus ponderosa/ Festuca arizonica	Ponderosa pine/ Arizona fescue	PIPO/FEAR2	Radloff 1983, Johnston 1987	A few stands on old-alluvial benches overlooking the river.
Pinus ponderosa/ Muhlenbergia montana	Ponderosa pine/ mountain muhly	PIPO/MUMO	Peet 1975, Hess 1981, Radloff 1983, Hess and Alexander 1986, Johnston 1987	A few stands on old-alluvial benches overlooking the river.
Pinus ponderosa/ Quercus gambelii	Ponderosa pine/ Gambel oak	PIPO/QUGA	Livingston 1949, Johnston 1987	Common in northeastern part of study area on Eutroboralfs derived from Metamorphic rocks (Fig. 2-4).
Pseudotsuga menziesii/ Arctostaphylos uva-ursi	Douglas-fir/ kinnikinnick	PSME/ARUV	Peet 1975, Radloff 1983, Powell 1985	Common on Sphinx soils from Pikes Peak Granites, lower slopes above South Platte R., rainshadows of 14-18 in/yr precipitation (Fig. 2-5), rolling to gentle northerly slopes.
Pseudotsuga menziesii/ Carex rossii	Douglas-fir/ Ross sedge	PSME/CARO5	Peet 1975, Hess 1981, Hess and Alexander 1986	Common on Sphinx soils from Pikes Peak Granites, lower to upper slopes, all precipitation within study area, gentle to moderately-inclined slopes and benches, northerly aspects.
Pseudotsuga menziesii/ Jamesia americana	Douglas-fir/ waxflower	PSME/JAAM	Radloff 1983	A few stands in moist pockets in draws of the Rampart Range.

1. After Johnston (1987). 2. Plant species codes from USDA NRCS (2004).

Treatment Areas

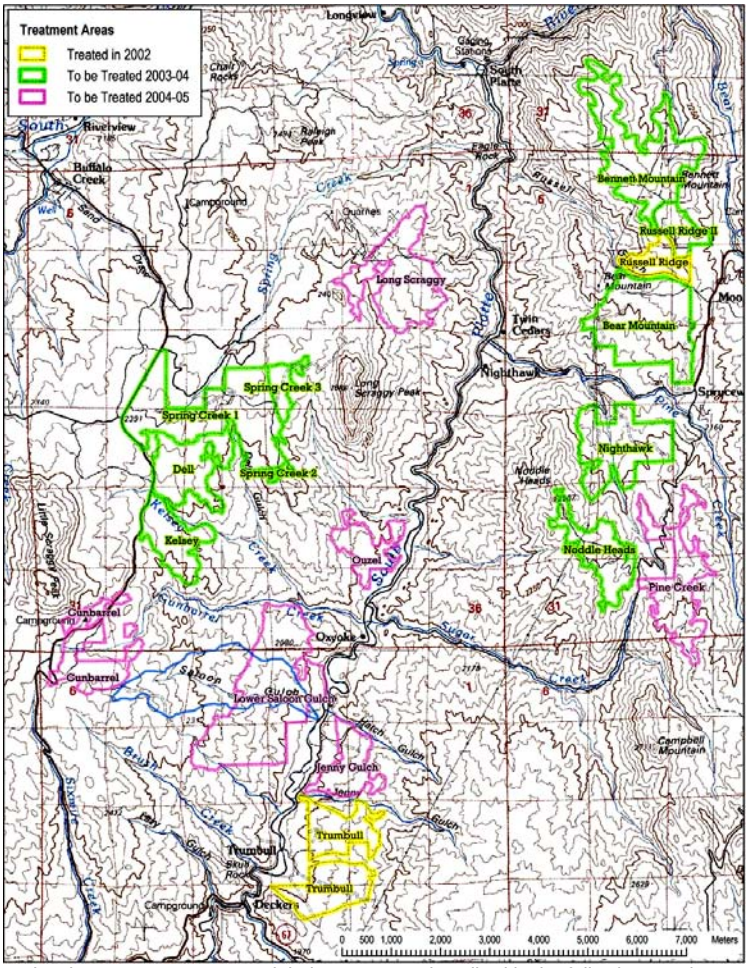

Figure 2-7. Showing treatment areas and their names, as described in the following text (See Table 2-2). Saloon Gulch Watershed is shown in blue outline.

Table 2-3. Treatment areas and their sizes (Figure 2-6).

Year(s)	Code	Unit Name	Acres	Hectares	Comments
2002	RR1	Russell Ridge I	171	69	Treated 2002
	SG	Saloon Gulch Watershed	856	346	Considered for treatment before 2002 fires
	TRW	Trumbull West			Area not delineated; samples used for controls on Trumbull
	TR	Trumbull	651	263	Treated 2002
2003-2004	BEM	Bear Mountain	815	330	To be treated 2003-2004
	BEN	Bennett Mountain	774	313	
	DG	Dell	424	172	
	GU	Gunbarrel	378	153	
	JG	Jenny Gulch	284	115	
	KE	Kelsey	328	133	
	NI	Nighthawk	560	227	
	NH	Noddle Heads	365	148	
	RR2	Russell Ridge II	168	68	
	SC	Spring Creek 1	931	377	
		Spring Creek 2	19	8	
		Spring Creek 3	117	47	
2004-2005	LS	Long Scraggy	629	254	To be treated 2004-2005
	SG	Lower Saloon Gulch	1,149	465	
	OU	Ouzel	240	97	
	PC	Pine Creek	503	204	

A. Trumbull Area

The Trumbull area is east, northeast, and southeast of the town of Trumbull (Figure 4-22). This area can be accessed with permission across Denver Water Department lands east of Trumbull; the northern part of the area can be accessed on foot from State Highway 67. There are many old, disused wagon roads and timber access roads throughout this area. The boundaries between National Forest and private lands in this area are usually not fenced.

Figure 2-8. A typical stand of ponderosa pine in the Trumbull Area, transect 138. Early October 2001 (left), early October 2002 (right). Thinning occurred on this site in late 2001.

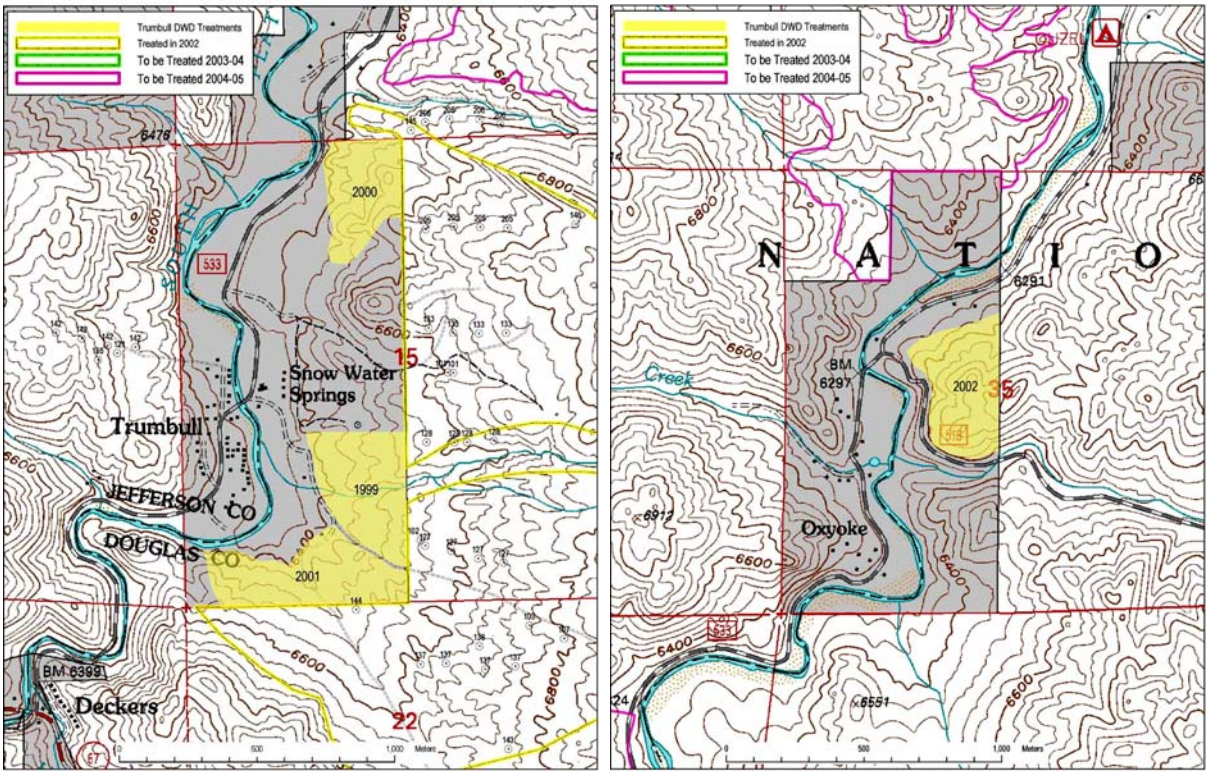

Figure 2-9. The yellow shading shows approximate locations of areas treated on Denver Water Department lands by the Colorado State Forest Service within the project area: Left, near Trumbull; Right, near Oxyoke.

Thinning treatments began here in 1999 on Denver Water Department lands (yellow shading on Figure 2-6), and continued into 2001-2002 (Figures 2-9, 2-10). This thinning was done under contract from the Colorado State Forest Service. Then in 2002, the U. S. Forest Service began thinning the area outlined in Figure 4-22 on the National Forest (Figures 2-7, 4-24).

Figure 2-10. A typical view of the thinning done by the Colorado State Forest Service on Denver Water Department lands east of Trumbull. September 2000, about a year after the thinning occurred.

Figure 2-11. Looking at Green Mountain across thinning done by the Colorado State Forest Service in 2001. September 2002, about a year after the treatments occurred, but the intervening year has seen extreme drought and large wildfires in the area.

With a landscape view, this is a platter-shaped landform, generally gently concave, between the rocky ridges and breaks to the east and the main fork of the South Platte River. At a finer scale, the area is moderately to highly dissected, but at relatively low slope angles because the erosive nature of these soils will not allow steep slopes to last for long.

All of the Trumbull Area is derived from gravelly to very gravelly Pikes Peak Granite, and most of the soils belong to the Sphinx Series, poorly developed soils that are essentially made of gravel, on slopes and ridges (Figure 2-4). Some of the lower southern part of the area has been mapped in the Kassler Series, still very gravelly and derived from Pikes Peak Granite, but with slightly differentiated surface horizons. In the Trumbull area, Kassler occurs more on (geologically) old alluvial outwash fans and terraces just above the recent river terraces. In my opinion Kassler was mapped too far up the slope in the Trumbull area. Climate is warm and dry, 16 in/yr precipitation or less (Figure 2-5).

There are three major drainages that cross this slope. The first is an unnamed gulch that heads on the divide to the Horse Creek watershed, which is close to the quadrangle boundary, and flows northwest into the South Platte River; this is an intermittent drainage with a surprisingly broad, gravelly floodplain. This floodplain is much affected by runoff, changing shape with every large storm in these gravelly, erosive soils, which is why the floodplain is so broad. Riparian vegetation is not developed along this drainage on the National Forest, but there are some patches on the private land below, where the areas have escaped damage from land management, people use, or browsing by deer.

The second major drainage has been called by some "No-Name Creek." It heads just east of the private eighth-section in Section 14, and flows west into the South Platte just below the highway bridge at Trumbull. There are several patches of riparian vegetation along this drainage on the National Forest and just below it on private land just south of the middle of Section 15. These patches have a few willows, alders, and river birch.

The third major drainage is Jenny Gulch, which flows west into the South Fork just above the second highway bridge above Trumbull.

Almost all of this area is dominated by ponderosa pine forests of various sizes. On the National Forest, these pine forests are often denser than in Saloon Gulch or upper Spring Creek. There are a few Douglas-fir trees here and there, but they are often minor.

On the National Forest, there are a number of small openings, of two kinds. Some openings have mountain-mahogany, a shrub that prefers open sun and that is preferred by deer as browse. Other openings are steeper and south-facing, and apparently have been kept open by the extremely dry, gravelly environment, where fine-textured soil forms very slowly and what little that has formed has eroded away.

The whole area is at lower elevations and in a lower precipitation zone compared with other treatment areas, so it is warm and dry most days of the year. Soils are derived from Pikes Peak Granite, and are usually excessively well-drained, adding to the aridity of the environment.

The National Forest portion of this area has been heavily used by humans ever since the wagon road was first built up the South Platte. Stumps are common from several waves of timber cutting throughout the area – the first in the middle nineteenth century with the first settlers, another with the arrival of livestock in the 1870s and early 1880s. Almost the whole area burned in the 1880s and 1890s, part of the large fires that swept across the whole lower South Platte in the foothills during that time. There was another cycle of timber cutting with the miners later in that century, another with water development early in the twentieth century, another with recreational development after World War II. There were a few timber sales here on the National Forest in the 1950s and 1960s, and more lately firewood hunters have continued the tradition.

There are several houses and other structures in the eighth-section of private land around Snow Water Springs. There are several garbage dumps and old-car graveyards in the area, some of these on National Forest.

In May 2002, the Schoonover Fire burned hot across the lower southeastern portion of the area planned for treatment (Figure 4-12), after which the treatment area was adjusted.

In late 2002, stands in the area east of Trumbull were thinned using mechanical equipment (Figure 4-24). All woody material was piled by Forest Service hand crews starting in early 2003, and the area closest to Trumbull was opened for personal firewood use. The intention is to burn the woody material in piles, so as to reduce the possibility of insect epidemics. The equipment used in the Trumbull area was a Hydro-Ax model (Blount 2004), an attachment to a medium-sized front-end loader which shears trees off close to the ground surface. Since the Hydro-Ax did not need roads to access the stands, it was not necessary to build new roads or rebuild old roads. The only woody material that left the site was fuelwood collected by individuals for personal use.

B. Saloon Gulch, Jenny Gulch, and Gunbarrel Areas

The Saloon Gulch area is a small watershed of about 850 acres (350 hectares), tributary from the northwest into the North Fork about one-half mile above Trumbull (Figure 4-25). Most of the watershed is National Forest, with a small portion at the very bottom of the watershed owned by the Denver Water Department. The boundaries of this eighth-section piece of private land is fenced, but the fence has been downed or cut in many places and has not been maintained in several years. Otherwise, there are no fences in the watershed or adjacent to it.

Figure 2-12. From Highway 67, looking across the South Platte River towards the delta of Saloon Gulch. July 2000 (left), August 2003 (right)

Figure 2-13. A view from the delta of Saloon Gulch. July 2000 (left), August 2002 (right). The Hayman Fire of June 2002 has caused considerable gravelly sedimentation to deposit, and the delta has moved into the South Platte River.

Figure 2-14. A stand in the bottom of Saloon Gulch near the top of the watershed. July 2000 (left) and September 2002 (right).

Saloon Gulch flows nearly due east to where it enters the South Platte River just below the Swayback Ranch (Figure 4-25). Saloon Gulch is an intermittent stream; surface water only enters the South Platte River during large storm events. There are several sections of perennial water further up in the watershed, most with underground spring sources, such as the big bend in the middle of Section 4. There is usually no water at all on the surface at the mouth – it is all underground. Saloon Gulch is a tributary to the South Platte River. Elevations range from approximately 6,300 ft (1,920 m) at the River to 8,120 ft (2,475 m) at the top. Average annual precipitation varies from <16 in/yr at the mouth to somewhat over 18 in/yr at the headwaters; most of the watershed would be in the 16-18 in/yr class (Figure 2-5).

The lower half of the watershed is "roadless," and the upper half has roads along both ridgetops. Some old logging has occurred in the watershed, and there is a small amount of recreation activity. There is some active erosion along the roads and in some of the downcut side channels, but the majority of the watershed is stable. The upper part of the watershed can be accessed by Forest Service Road 534, which begins at Jefferson County Highway 126 just northeast of Kelsey Campground; the road is blocked by a locked Forest Service gate about at the township boundary shown on Figure 4-25. The lower part of the watershed can be accessed by foot from Bridge Crossing Picnic Ground.

On a landscape view, the land in the watershed is predominantly at three coarsely-defined elevational levels. Road 534 defines the upper level, which occupies Section 5 in Figure 4-25. The middle level occupies Section 4, and the lower level Section 3. The southeast third of Section 4 is mostly a transition between the lower and middle levels. On a finer-textured view, the watershed is moderately dissected at fairly low angles, with many side channels and swales. Some of these side channels were downcut in past events. Slope angles are rarely over 40%, and often less than 30%. Saloon Gulch has many side gulches and draws, which with the intervening ridges makes for a complex landscape when you are on the ground.

Almost all of this small watershed is forested with ponderosa pine and Douglas-fir. Generally, there is more Douglas-fir on north-facing slopes and on all slopes in the upper third of the watershed. There are a few non-forested patches: mountain-mahogany shrublands along the higher ridges and rock outcrops. Rock outcrops are especially common on the breaks between the middle and lower plateaus. The long, narrow open area along the north boundary of the watershed is the area of old timber sales that expanded on the mountain-mahogany shrublands along a flat ridge. The timber sales apparently ended in the 1960s or 1970s. The mountain-mahogany stands along this ridge have noticeably decreased in extent with encroachment of trees since fire suppression became standard here. These steadily-decreasing mountain-mahogany stands have been hit fairly hard by mule deer, since this is one of their favored plants.

The lower part of the watershed is warmer and drier, and has been used by humans since the first roads were built up the South Fork. The name reportedly derives from a saloon that was built near the gulch's mouth, that burned in the 1890s. Old stumps are common in the lower part of the watershed, from trees that were cut by early settlers. Almost the whole watershed burned (or was burned) in the 1880s and

1890s. The large and destructive fires common in watersheds like this at that that time, were part of the reason why the U. S. Forest Service was created in 1905. The upper part of the watershed is cooler and somewhat moister, although it still seems dry because of the low precipitation and excessively well-drained soils. The prominent past human use in the upper part of the watershed mostly dates from after 1950 – the timber sales of the 1960s and 1970s.

The lower part of Saloon Gulch and its major forks often have wide, gravelly, fluvial outwash floodplains, surprisingly wide for the small amount of perennial water in the stream. At its first fork, the floodplain of Saloon Gulch is 250-300 ft wide below, then divides into two (the main south fork and the north fork), each 50-80 ft wide. All of these floodplains have two or even three newer benches cut into them; these apparently change with every large storm. The upper part of Saloon Gulch often has narrower floodplains that also change with every storm. Saloon Gulch enters the South Platte River about 2½ miles below Trumbull. Precipitation after the Hayman Fire caused much additional sedimentation in the bottom of Saloon Gulch, which is especially evident at its delta (Figures 2-11, 2-12)

There are several narrow riparian areas in the upper part of Saloon Gulch and its north-facing tributary gulches, dominated by a wide variety of moist-site shrubs; there are a few narrowleaf cottonwoods and a blue spruce or two occasionally seen. The soils are apparently too well-drained and gravelly, and move too often, to allow ponded water (even seasonally), so there are very few willows. There is no riparian vegetation in lower Saloon Gulch – the floodplains move too often, the soils are too well-drained, and the climate is too arid and evaporative.

The Hayman Fire of 2002 affected nearly every stand in the Saloon Gulch watershed, and severely burned roughly all of the upper half of the watershed (Figure 2-13). The lower half was lightly burned, usually a fire in the duff that also killed seedling and sapling trees and most shrubs. Up to this fire, the project had planned the whole Saloon Gulch watershed for thinning treatment; the plan was that we could treat the whole watershed and compare the results with adjacent untreated watersheds. But after the Hayman Fire two separate areas were assigned for treatment: lower Saloon Gulch, a relatively unburned area in lower Saloon Gulch watershed and adjacent watersheds; and Gunbarrel, comprising part of upper Gunbarrel Creek watershed, west of Saloon Gulch (Figure 4-25). These areas are scheduled for thinning treatment in late 2004 or 2005.

The soils are primarily decomposed granite, derived from Pikes Peak Granite, and are very gravelly, generally very well-drained to excessively well-drained throughout (Figure 2-4). Lower Saloon Gulch and adjacent lower watersheds is all mapped in the Sphinx Family, poorly developed soils that are essentially made of gravel, on slopes and ridges. Upper Saloon Gulch and the Gunbarrel treatment area are mapped in the Legault Family, the same decomposed-gravel soils as Sphinx, and on the same slopes and hills, but with a somewhat cooler temperature regime; the distinction is not yet apparent to me on the ground.

The Jenny Gulch Area is across the South Platte River from lower Saloon Gulch (Figure 4-25); it also is scheduled for late 2004 or 2005. Geology in the Jenny Gulch area is the usual Pikes Peak Granite, and soils are mapped in the Sphinx Family, poorly developed soils that are essentially made of gravel, on slopes and ridges (Figure 2-4).

C. Spring Creek, Dell, and Kelsey Areas

The Spring Creek area is located south and east of a development of dispersed houses (Figure 4-27). All of the area proposed to be treated is National Forest. The property boundary between the development and National Forest is usually fenced and the boundary is usually conspicuously marked with survey markers and old and new signs. However, the fence has often been breached (or removed in a few places), and is apparently not consistently maintained. There are several newer gates from houses close to the boundary.

Figure 2-15. A typical stand in the Spring Creek Area, transect 115. Early October, 2000.

The watershed can be accessed by permission from the private land in the Spring Creek Development, or by Forest Service Road 530, which is closed by a locked gate just east of Jefferson County Highway 126 (Figure 4-27). Road 530 follows the top of the ridge separating Spring Creek watershed to the north from Dell Gulch and Long Scraggy Gulch to the south. Dell Gulch is a tributary of Gunbarrel Creek; Spring Creek, Long Scraggy Gulch, and Gunbarrel Creek all are tributary to the South Platte River.

With a landscape view, the area is a relatively flat broad ridge top, sloping gently to the north and west, but steeper and much more dissected to the south and east. At a finer scale, the top and north slopes of the ridge are easy to get around in; but once you get very far south or (especially) east of the ridge, the topography gets complex quickly, soils get shallower, and the environment becomes noticeably more arid.

This area is predominantly forested with ponderosa pine and Douglas-fir. The whole area is at or near the top of the plateau along which Highway 126 follows, so there is quite a bit more Douglas-fir here than in the other two areas; there are a number of stands in which ponderosa pine is a minor species. The flat top of the ridge just north of Road 530 past the 1½ mile point is mostly non-forested and occupied by shrub stands of mountain-mahogany and a few remnant grasslands, survivors of the heavy livestock grazing that occurred here before 1970. The mountain-mahogany stands have noticeably decreased in extent with encroachment of trees since fire suppression became standard here. These steadily-decreasing mountain-mahogany stands have been hit fairly hard by mule deer, since this is one of their favored plants.

Both forks of Spring Creek head near Highway 126, between it and the private land, on National Forest. They are both intermittent, seasonal streams here; the only other stream in the area on National Forest is a very small portion of upper Long Scraggy Gulch, which is also intermittent. There are just a very few small patches of riparian vegetation on the National Forest in any of these places, due to the well-drained soils.

The Spring Creek area is noticeably cooler and moister than Saloon Gulch or Trumbull, especially on the flatter portion of the ridge, north of Road 530. This portion of the area has deeper soils and considerably more Douglas-fir. There are quite a few small openings in the Douglas-fir forest on the flat between Road 530 and the private land, with occasional small patches of aspen.

In spite of the obviously cooler and moister microclimate of the Spring Creek area, the soils have almost all been mapped as Sphinx (Figure 2-4). In my opinion, there should be much more Cryoboralfs (Cb) and Deep Haploborolls (DH) mapped in the Spring Creek treatment area, perhaps some Cryorthents (Co) as well.

Human activity has been fairly intense in the Spring Creek area. Cattle heavily grazed the open ridge and network of openings from the Long Scraggy Ranch, probably from the 1880s to the 1960s. There were several timber sales in the 1960s and 1970s – that was why Road 530 was built. In recent decades, the U. S. Forest Service has actively managed much of this area for production of Douglas-fir Christmas trees. In most years, Road 530 is opened to individuals and families for cutting of Christmas trees by permit.

The Spring Creek subdivision began in the late 1970s, and ever since then there has been increasing recreational use of the National Forest in this area. Hikers, horseback riders, domestic dogs, bicycles, four-wheelers, and motorcycles can be seen here. The use decreases sharply with distance from private land, since the people who live here have a suburban outlook on life.

The Dell and Kelsey treatment areas are adjacent to and south of the Spring Creek area. Dell and Kelsey are on gently south-facing benches, similar to the southern portions of the Spring Creek area. Some areas near the roads in both Dell and Kelsey areas were logged in the 1960s and 1970s.

Average annual precipitation is 18-20 in/yr across all three areas (Figure 2-5).

D. Nighthawk, Noddle Heads, and Pine Creek Areas

The Nighthawk treatment area (Figure 4-31) is south of the Pine Creek Road (Douglas County 91) and southwest of Sprucewood, on benches around an unnamed north-flowing tributary of Pine Creek (Noddle Creek? South Fork of Pine Creek?). Access is with permission to cross private land from the Pine Creek Road; the southeast portion of the area can be accessed by ATV or motorcycle from the Sugar Creek Road (Douglas County 67).

Soils in the Nighthawk treatment area are all of the Sphinx Series, derived from very gravelly Pikes Peak Granite.

Forest vegetation in the Nighthawk Treatment Area is mostly mixed Douglas-fir and ponderosa pine, with occasional patches where aspen shares dominance (Figure 2-15). There are several large patches of pure ponderosa pine on south-facing slopes, and a number of north-facing slopes are dominated by Douglas-fir. Most Douglas-firs are diseased, and there are many Douglas-fir hazard trees. Douglas-fir beetle has been documented, and Douglas-fir tussock moth is has had several small outbreaks in the past. Most of the forested stands have common juniper or kinnikinnick subdominant; there is little oak here.

Figure 2-16. A typical, very dense stand of mixed Douglas-fir and ponderosa pine in the Nighthawk Area. This stand has many dead and dying Douglas-fir trees from various insects and diseases. August, 2003.

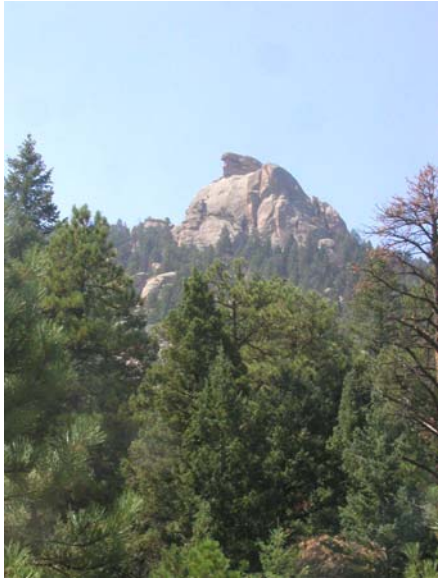

Figure 2-17. North Noddle Head from the vicinity of sample 154.

There had been some pre-Forest Service light cutting in this area, and a few old stumps can be seen in places, but the area has not seen much timber harvest in general, except a swath for the high-tension electric line that cuts across the western portion of the area.

The Noddle Heads treatment area is south-southeast of the Noddle Heads, accessible by an old Forest Service timber road from the Sugar Creek Road (Figure 4-31). There was considerable timber harvest here in the 1960s and 1970s, and there is a small network of access and haul roads. Soils in the southern half of the Noddle Heads treatment area are gravelly, with a subsurface clay layer (Cryoboralfs); in the northern half we have the usual poorly-developed Sphinx soils with no clay layers; all are derived from Pikes Peak or other Precambrian granites.

The Pine Creek treatment area is mostly east of the Sugar Creek Road. I don't know much about it except there is a large old Douglas-fir tussock moth outbreak area nearby, visible on the aerial photo and from the Sugar Creek Road. Soils are gravelly, with a subsurface clay layer (Cryoboralfs), except along the northern and southern sedges where we have the usual poorly-developed Sphinx soils with no clay layers; all are derived from Pikes Peak or other Precambrian granites.

Average annual precipitation is around 20 in/yr across all three areas (Figure 2-5).

E. Bear Mountain, Russell Ridge, and Bennett Mountain Areas

The Bear Mountain treatment area is northwest of Sprucewood and north of Pine Creek Road (Figure 4-34). It is accessible by road with easement west of Moonridge, or by ATV-hiking trail from Sprucewood; so far, the private landowners between the Forest and the Pine Creek Road have not allowed access.

There is a permitted archery range in the northeast corner of the Bear Mountain area, along a ridge that parallels the northern boundary of the area. There is a great deal of ATV and motorcycle use of this area, from Sprucewood and from the private lands south of the area; deep ruts in the main trails are common, and there are many unauthorized, cutoff and ridgeline trails.

Figure 2-18. Sample 156, in a very dense Douglas-fir stand on a north-facing slope in the north portion of the Bear Mountain Area. September 2003.

Figure 2-19. A typical stand in the Eutroboralfs area, ponderosa pine-Gambel oak (Sample 158) on the south-facing slope that comprises much of the southern two-thirds of the Bear Mountain Area. September 2003.

Most of the Bear Mountain area is south-facing, so the dominant vegetation is ponderosa pine, usually with an understory of Gambel oak when soils are Eutroboralfs (Figure 2-18), and lower shrubs when soils are Sphinx (Figure 4-34). There are several areas where Douglas-fir codominates, and a few patches of Douglas-fir dominance. On the north slope of the ridge that parallels the north boundary of the area, Douglas-fir dominates with some pine and patches of aspen in a very dense, overgrown forest (Figure 2-17).

The Russell Ridge treatment area is just north of Russell Gulch and northwest of Moonridge. It was almost all ponderosa pine with patchy Gambel oak associated with the pine stands. In mid-2002, the Russell Ridge Area (Figure 4-34) was thinned using a Hot Saw attachment to a medium-sized front-end loader. This equipment felled all small trees and shredded the wood into pieces approximately 1 ft long; in addition all the Gambel oak stems were cut at the ground surface with a roller-chopper.

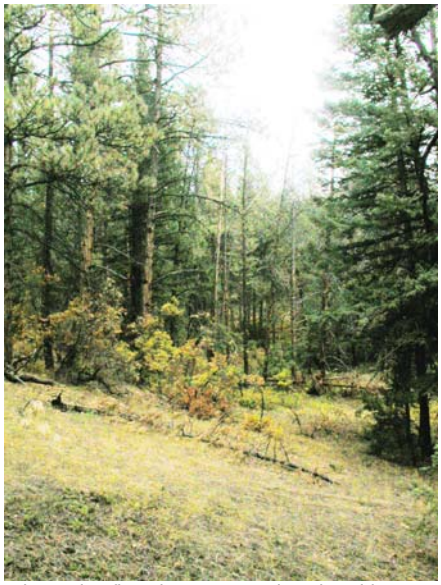

Figure 2-20. Patch of dead Douglas-firs, about 1½ tree-lengths wide, apparently was the site of an old Douglas-fir tussock moth infestation. Lower (south) Bear Mountain Area, September 2003.

Figure 2-21. Left, a stand in the Russell Ridge II Area (Sample 164), October 2003. Right, A stand in the Russell Ridge I Area (148), after thinning and roller-chopping to cut down the oak. These are roughly comparable. July 2003. See data in Table 4-9.

The Russell Ridge II treatment area is northeast of the Russell Ridge treatment area, and is a small area, generally east-facing. It is very dense ponderosa pine, oak, and Douglas-fir, with the highest vegetation productivity within the project area. Average precipitation seems to be well above 20 in/yr.

Average precipitation is around 20 in/yr for all of these areas. Soils are mostly stony soils with a well-developed clay subsurface layer and a noticeably darker organic-rich surface layer (Mollic Eutroboralfs), derived from Precambrian metamorphosed sedimentary rocks; part of the eastern Bear Mountain area has Sphinx soils, very gravelly poorly-developed soils derived from Pikes Peak Granite (Figure 4-34). The Eutroboralfs are sharply different from soils of the rest of the project area, and combined with the higher precipitation in these areas, makes for much more vegetation, both greater number of species and higher productivity. Within the project area, these soils are the only ones that can support Gambel oak, for example.

F. Long Scraggy and Ouzel Areas

The Long Scraggy treatment area is north-northeast of Long Scraggy Peak, about ¾ mile west of the South Platte River (Figure 4-37). Access is by old timber road from Spring Creek. Average precipitation is 18-20 in/yr. I do not know much about this area.

The Ouzel treatment area is on a southeast-facing bench just west of the South Platte River, north of Oxyoke and west of the Ouzel Campground on the South Platte (Figure 4-38). Average precipitation is 16-18 in/yr. I do not know much about this area.

Both the Long Scraggy and Ouzel areas are mapped as having Sphinx soils, poorly-developed very gravelly soils derived from Pikes Peak Granite.

3. Methods and Procedures for Vegetation Monitoring

I. Vegetation Attributes Measured

Following is a list of all the *vegetation* attributes that were measured.

Table 3-1. Vegetation attributes measured as part of vegetation monitoring.

Characteristic to be Measured	Methods Used
Tree[a] and shrub[f] density	Fixed 0.05 ac plot[a,f]
Crown cover	At 20 points along a transect[b]
Size class distribution of trees	Fixed 0.05 ac plot[a]
Groups of trees with high risk	Cover less than 8 ft[d]
Cover by species	Transect with 20 microplots[b]
Above-ground productivity by species	1 m² clipped plot[e]
Bare soil cover	Transect with 20 microplots[b]
Cover by layer	Transect with 20 microplots[b]
Number of layers	Transect with 20 microplots[b]
Cover of coarse fragments	Transect with 20 microplots[b]

Footnotes to the above table:

a. Tree density and size class distribution of trees were measured using one 0.05 ac ($^1/_{20}$ ac = 0.02 ha) permanent fixed plot per point sampled. We used the latest version of the Common Stand Exam Field Guide for Region 2 (USDA Forest Service 2001a, 2004). The Tree Data Form is used to record the diameter, height, crown characteristics, and damage categories for each individual of any tree species in the plot.

b. Crown cover, canopy cover by species, bare soil cover, and cover of coarse fragments were measured in two somewhat different methods, depending on the purposes for the transect:

The basic method in all areas uses one 30 m (98.4 ft) transect per plot, using the Cover-Frequency and Line-Intercept Methods in the National Draft Protocols for Rangeland Vegetation Inventory, most recent version (USDA Forest Service 2001b). A transect has twenty 20 × 50 cm microplots evenly spaced along it, which are used to read canopy cover for all plant species; cover of bare soil, coarse fragments, moss, lichen, fungi, and animal droppings; and canopy cover by the most conspicuous layers.

In the Trumbull area, 400 m transects had been set up to monitor the threatened Pawnee montane skipper. For vegetation monitoring of these habitats, each 400 m transect was broken into four 100 m transects. Each 100 m transect was sampled as a separate transect for vegetation, with twenty 20 × 50 cm microplots spaced evenly along it, beginning at the 5 m mark on the tape. These microplots were read in the same way as for the 30 m transects. A vertical photograph was taken of alternate microplots, those ending in "5," i. e., at the 5 m, 15 m, 25 m, ... marks. No tree plot was associated with the 100 m skipper transects, although canopy cover by layer was read, including the tree layers.

d. In order to detect and monitor groups of trees posing a high fire risk, we have added another set of characteristics to be measured using the line-intercept method as in (b) above. Beginning about halfway through the 2001 season, we measured canopy cover of tree species along the transect line where the canopies were less than 8 ft from the soil surface. This was measured separately by tree species and separately for live and dead canopies.

e. For most of the 2000 season and the first several weeks of the 2001 season, we clipped one 1 m² plot, centered on the 5½ m mark on each transect; this procedure was later dropped from the protocol. This plot was square, 1 m on a side. We clipped all above-ground vegetation that occurs within the prism defined by this plot, up to 3 m tall. The vegetation clipped was bagged by species, air dried for a few weeks, and weighed. For future readings, it will be necessary to choose a different location for this plot in order to avoid the effects of clipping on the vegetation.

f. We counted shrub species by size class, number of stem class, and browse class. This was done on the same $^1/_{20}$ ac plot as in (a) above, and usually at the same time. We have invented this procedure, partially in imitation of tree inventory method and the BLM's Browse Class Estimation method.

II. Methods and Procedures

Following are the methods and procedures that were used.

A. Locate the site[1] (stand). Choose a site[1] that (one or more of the following):

1. Is in one of the areas to be treated, dark green on the map in the Environmental Assessment.
2. Is likely to be treated. The site meets one or more of the risk factors for crown fire and insect infestations (stand density too high, crowns touch, fuel ladders).
3. Is accessible for the equipment and operators likely to be chosen to do the work. Talk with one or more of the specialists (foresters, wildlife biologists, etc.) planning the project to work out guidelines for assessing this in the field. Currently, the guidelines are mostly driven by a 30% slope cutoff for equipment operating on-site. Barriers to equipment, such as cliffs, rock outcrops, and uncooperative private land need to be assessed, but some equipment can cross terrain >30% to get to the site.
4. Is representative of the Ecological Type (potential vegetation-landform-soil-geology-water combination) across the landscape (the subwatershed).

B. Locate the point. Within the site chosen, locate a point that (one or more of the following):

1. Is in a part of the site that is likely to be treated (see A1, A2, A3 above).
2. Accurately represents the part of the site that contains the features of interest (overly dense stands of trees, burning at a certain intensity, key plant species, key habitat, population of noxious weed, etc.). If there are more than one features of interest, and they are concentrated in different parts of the site, several points may be needed.
3. Accurately represents the average ecological expression of the whole site. Walk around, or look around, the whole site. Take mental (or written) notes of the existence, distribution, and relative abundance of the various patches and unusual situations. Take mental (or written) notes of correlations among the major factors of vegetation, soil, landform, and water. Note the ecotones (boundaries) with adjacent sites, and note the obvious factors making the ecotones. Then choose a point that:
   a. Avoids ecotones to adjacent sites.
   b. Avoids *unusual small* patches and situations, for example, little non-forested rock outcrops (in a forest). Of course, if the site being sampled is in the majority non-forested rock outcrops, that's not unusual! Another example might be a road. Of course, if the whole site is road, that's not unusual; that's not often the case in our work, but if you work for CDOT, it could be.
   c. The transect and plot (described below) will represent the typical ecological expression of the whole site. All of the transect and plot (with a buffer around them) is in the largest patch type, in the (site's) average condition, on the dominant landform, on the dominant soil. The patches should be (mentally) characterized by vegetation, soil, and landform as a minimum. A quick, visual estimate of cover by dominant plant species on an imagined transect (don't even take your pack off, much less lay out a tape), gives cover estimates that roughly correspond with cover estimates for those species on the site as a whole. If there are two (or more) patch types in the site, about equally covered, then select more than one point, one for each major patch type, and make each of these representative its patch type.
4. Can be relocated later, after the treatment. All points were located with a GPS unit.

C. Set up the point for sampling.

1. Lay out a 30 m tape in a straight line, as close to the ground as possible (Figure 3-1).
2. Permanently mark the transect beginning, end, and midpoint, on the ground. Re-bar (½ inch diameter) was most commonly used, driven in as far as possible using a sledge hammer.

[1]. "Site" in the concept of RMRIS, which is generally synonymous with "stand" in forested areas.

Also mark the point location (midpoint of the transect) on aerial photos and quadrangle maps that will become part of the permanent monitoring record. Set up the GPS unit, and record the three-dimensional location of the point.

3. Locate a *reference point* (could be done later; take photos first!): witness tree, permanent fencepost, conspicuous rock, sign, old foundation, etc. The reference point should be relocatable after several decades and several treatments. A big, straight pine tree is not a good choice; but a big snag might be. Preferably, the reference point should be away from the transect (5 m or more) but close enough to see the permanent marks of the transect; but locatability is much more important than close proximity! Mark the reference point with flagging, paint, and/or a metal tag. Record the azimuth (bearing) and distance *from* the reference point *to* the beginning of the transect; also put that on the metal tag; record the azimuth and distance more accurately for a more distant reference point. Make two reference points, in different directions, if you guess the point might be hard to locate later.

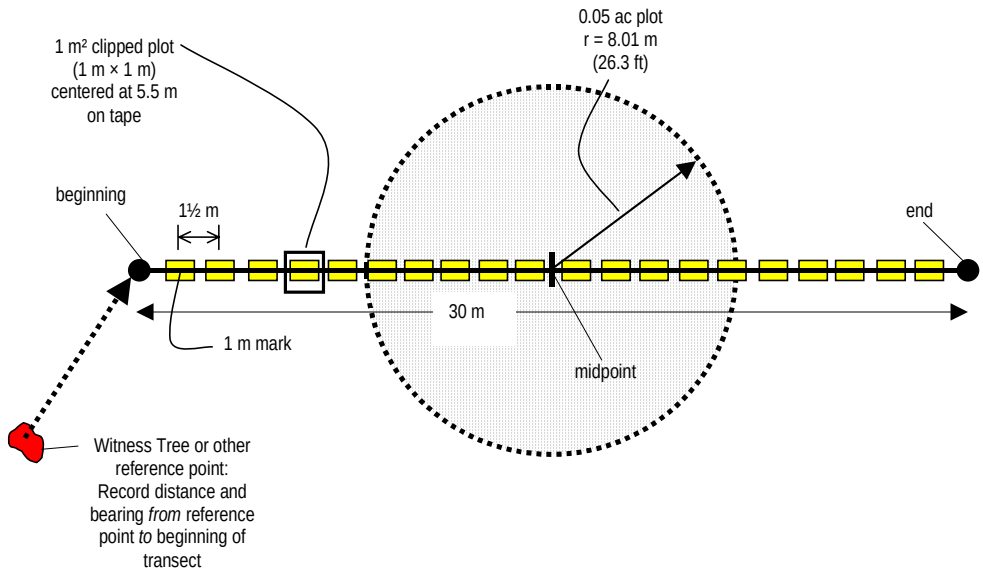

Figure 3-1. Layout of a typical sample scheme at a point. The yellow rectangles are 20 microplots, as shown in Figure 3-3.

D. Take photographs (Figure 3-2).

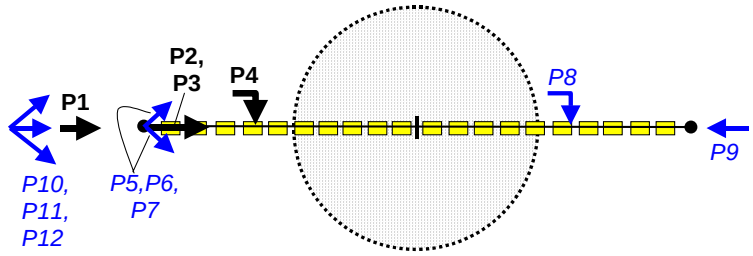

Figure 3-2. Required photographs shown **black bold**; optional photographs shown *blue italics*.

At a minimum, take four photographs with a 35 mm SLR camera, with a 28 mm wide-angle lens:

P1. A photo taken *towards* the beginning of the transect from 3-5 m away, looking down the transect line, showing stand structure. Try to get all the structure in the photograph; soil surface will be shown in other pictures. Use a vertical photograph if necessary. Put a completed photo form (Appendix C) in the photo, alongside or atop a pole giving scale (Figure 3-4). Focus on both the canopy and the photo form.

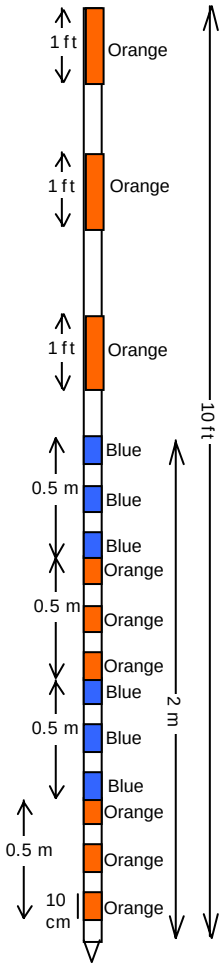

Figure 3-4. The cover pole shown in photographs.

P2. A photo taken *from directly above* the beginning of the transect, looking parallel to the surface towards the end of the transect, showing as much of the stand structure as possible. Focus on the trees and the transect end point.

P3. A photo taken from directly above the beginning of the transect, looking obliquely down at the first microplot, centered and focused on it.

P4. A photo taken looking directly (vertically) down at one of the microplots. In the picture, show the microplot frame and ½-1 m around it, and make sure the tape mark is visible. Put the completed photo form in the picture if the photo frame (negative or slide) will not be easily labeled as to plot number later. Choose the microplot for a photography if it is typical of conditions along the transect.

Other photos are recommended but not required:

P5-6-7. Panorama taken from above the start of the transect, or taken from the same point as P1.

P8. A vertical picture of another microplot, as in P4.

P9. A photo taken looking back along the transect line.

P10. A landscape photo taken from farther away, of the transect beginning. Especially important if the transect beginning is in a densely vegetated stand where the beginning point will not be visible from outside the stand.

Still other photos can be added. Remember that film and processing are usually cheaper than returning to the site later.

E. Record down woody material on the first 10 m of the transect (or any other 10 m length of the transect). Use the "Down-Woody" Form from Appendix A. The form is almost self-explanatory.

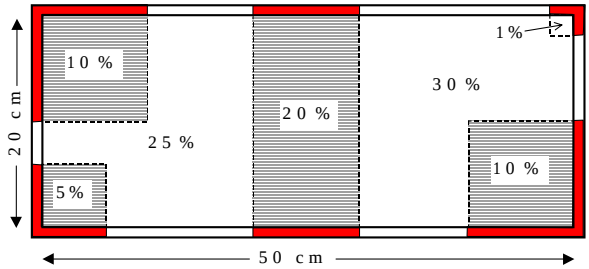

Figure 3-3. The microplot frame shown in Figures 3-1 and 3-2.

F. Sample the transect. Use the "Cover-Frequency Form" as shown in Appendix C, and the procedures in the Rangeland Vegetation Guide and in Daubenmire (1959). List all vascular plant species seen in the area of the transect, plot, and surrounding for 5 m or so. Before you begin the transect, estimate heights of the layers evident on the site (minimum, average, and maximum) in meters. Usually there are 5-8 layers for forests, 4-7 for rangelands, 7-12 for well-developed riparian areas, etc. Then for each microplot, estimate cover for all layers you have established. Also record cover for the ground-cover categories, as described in the Rangeland Vegetation Guide and in Johnston and others (2001). Be especially careful not to disturb the vegetation that will be clipped in (H) below. As you move along the transect, record beginning and ending of canopy cover intercepts for all shrub species (live and dead) and for tree canopies (live and dead) that are less than 8 ft tall, by species.

G. Line-intercept for all shrubs. Use the "Line-Intercept Form" as shown in Appendix C, and the procedures in the Rangeland Vegetation Guide. Record the beginning and end points of the *canopy* (canopy as described in Daubenmire 1959), in centimeters. If there are no shrubs along

the transect (at all) then don't complete the form. Be especially careful not to disturb the vegetation that will be clipped in (H) below.

Table 3-2. Cover classes used with the microplot frame in Figure 3-3.

Code	Range	Midpoint
T	0-1%	0.5%
0	1-5%	3.0%
1	5-15%	10.0%
2	15-25%	20.0%
3	25-35%	30.0%
4	35-45%	40.0%
5	45-55%	50.0%

Code	Range	Midpoint
6	55-65%	60.0%
7	65-75%	70.0%
8	75-85%	80.0%
9	85-95%	90.0%
A	95-99%	97.0%
X	99-100%	99.5%

H. Set up the 1 m^2 plot centered on the 5½ m mark. Clip all the current year's growth that falls within the prism defined by this 1 m^2 plot, up to 3 m above the surface. This may come from plants that are either rooted within the plot or rooted outside the plot. Place the clippings in small paper bags, labeled by transect number, date, and species name – one bag for each species.

I. Use a second tape to set up the 0.05 ac ($^1/_{20}$ ac) fixed plot, centered at the transect midpoint, which is 8.01 m (26.3 ft) radius. Use the "Tree Data" Form from Appendix C, and the procedures in the Region 2 Common Stand Exam Field Guide. Use the "Shrub Data" Form from Appendix C to count number of shrubs.

J. Measure and record every tree individual (live or dead, standing or down) on the "Tree Form" (Appendix C). For every tree, record dbh, height, status, crown conditions, and damage characteristics. Records additional damage in the comments section. Choose one to several trees (one for each species and broad size class) for growth measurements: accurately record dbh, height, age, and growth by decade for each of those, using the R-2 Common Stand Exam Guide.

K. Complete the "General Field Form" (Appendix C). Accurately locate the beginning of the transect using a GPS unit. Begin this form after taking the photographs, and before sampling vegetation; complete most of the form before leaving the site. Some items can be left until later, such as Section, Township, and Range, which can be easily filled in later – *if* you have exactly located the point on a quad map!

4. Results

Results of Thinning

In late 2002, stands in the area east of Trumbull were thinned using mechanical equipment (Figure 4-24). The results of that thinning are shown below.

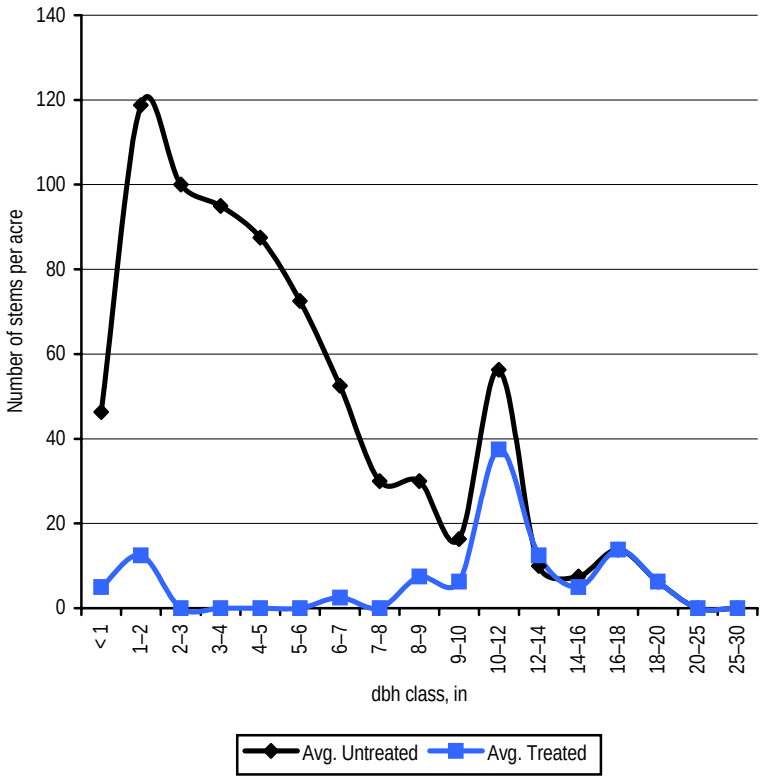

Figure 4-1. Ponderosa pine in eight plots, comparing average unthinned size-class distribution (black line) with average size-class distribution after thinning (blue line). All of these plots were in the Trumbull area. There were no ponderosa pines > 30 in dbh in these plots.

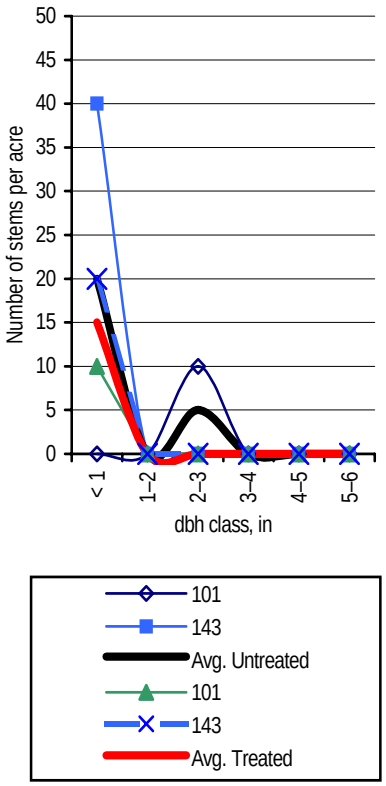

Figure 4-2. Douglas-fir in two plots, the only two where Douglas-fir occurred, in the Trumbull Area. There were no Douglas-firs > 6 in dbh in these plots.

The number of ponderosa pines less than 10 inches in diameter was significantly reduced by the thinning (Figures 4-1, 4-4, 4-5, 4-24). In all profiles, there are peaks in the 10-to-12 inch and 16-to-18-inch classes, presumably corresponding to past pine reproduction peaks; here the thinning left those reproduction peaks essentially intact.

The number of small Douglas-firs was also reduced (Figure 4-2). This is more difficult to interpret, because Douglas-fir is not common in the warm, dry climate of the Trumbull area where the thinning occurred.

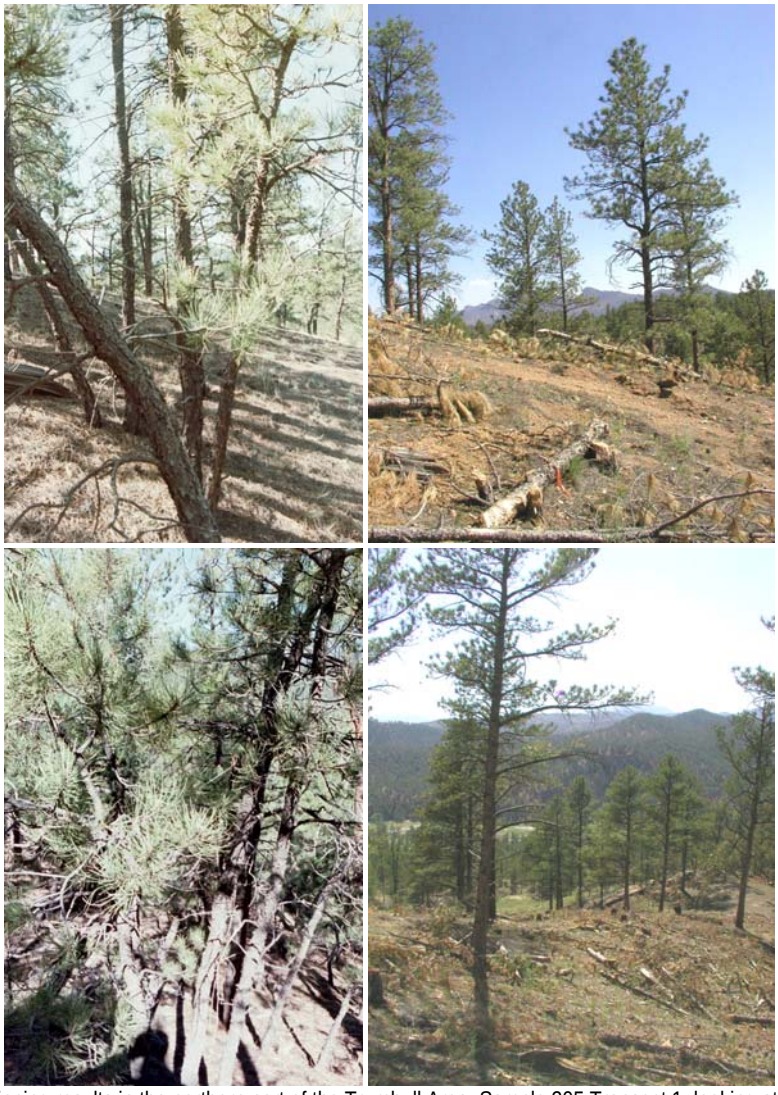

Figure 4-3. A typical view of thinning results in the northern part of the Trumbull Area. Sample 205 Transect 1, looking at 90° (above) and 180° (below) from the transect line. July 24, 2002 (left) and July 9, 2003 (right).

Cover of trees was also significantly reduced after thinning, averaging less than half what it had been (Figures 4-6, 4-8). Basal area of trees was also significantly reduced to about two-thirds of what it had been (Figure 4-7).

Thinning caused a significant decline in tree cover, and in total live cover, but the number of live vascular plant species increased somewhat (Figure 4-8). Shrub cover, graminoid cover, and forb cover all increased, especially shrub and forb cover, which both doubled.

Graminoid cover increased only slightly; most grasses in this area take a few years to establish. The principal graminoid under pine canopies here is the highly shade-tolerant Ross sedge, which would be expected to decline as the tree canopy is opened. Another factor is the drought that worsened between initial reading and re-reading.

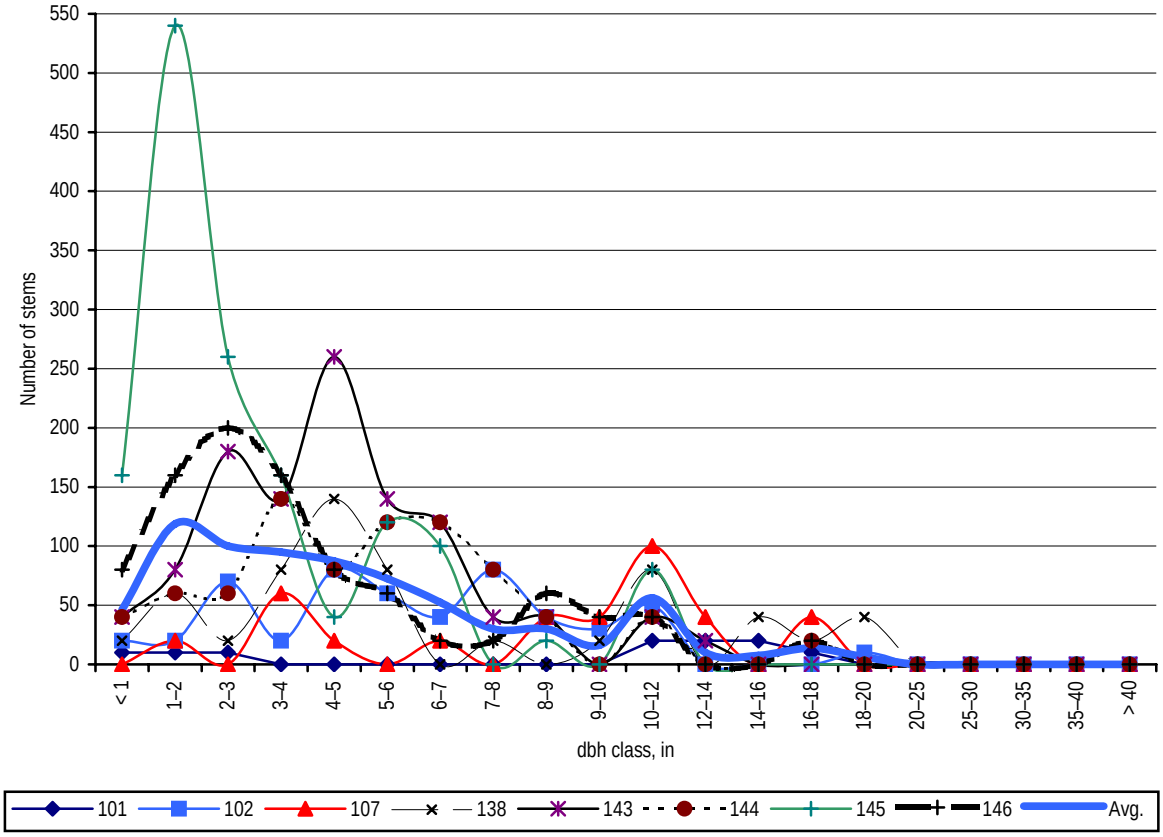

Figure 4-4. Size class distribution of ponderosa pine in eight tree plots in the Trumbull Area, before thinning.

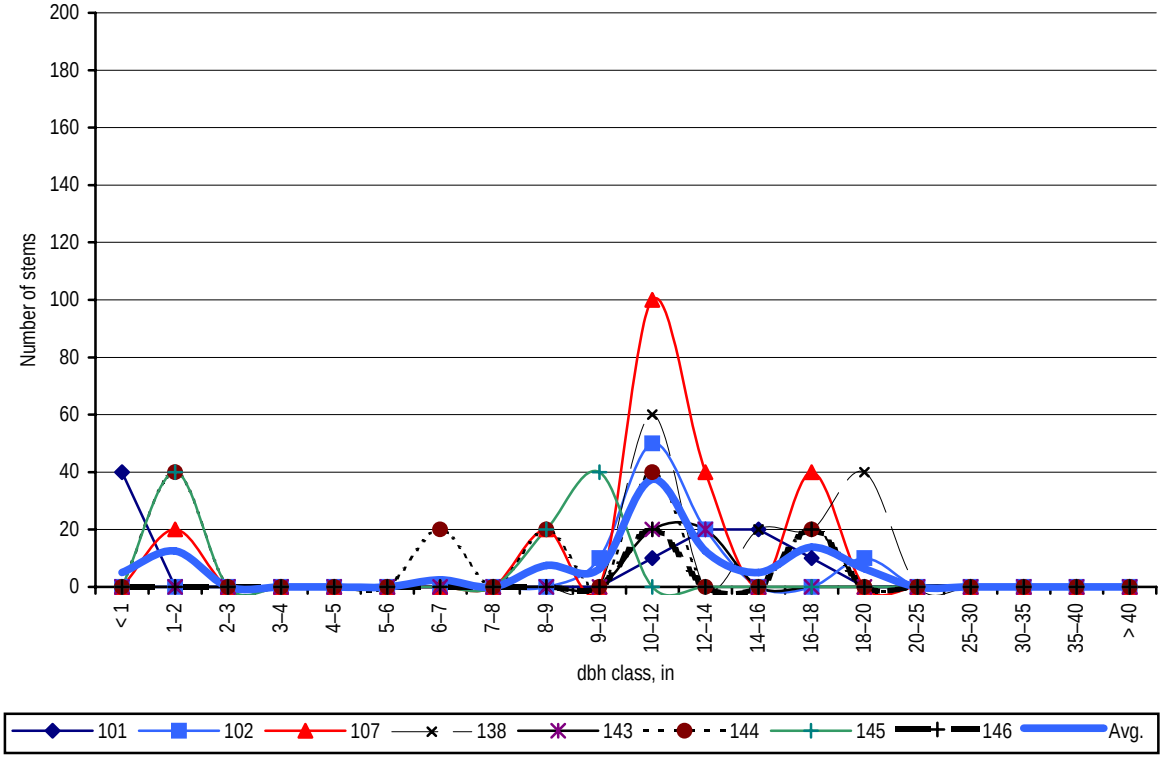

Figure 4-5. Size class distribution of ponderosa pine in eight tree plots in the Trumbull Area, after thinning.

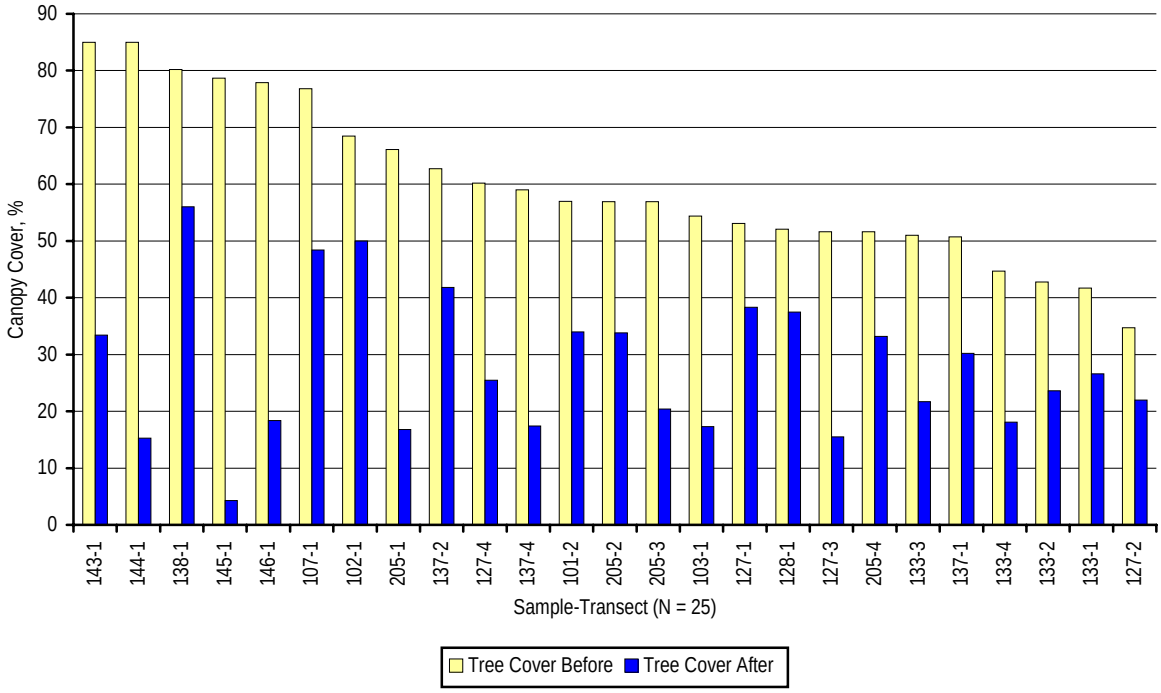

Figure 4-6. Canopy cover of trees in 25 transects in the Trumbull Area, before and after thinning. Average tree cover 59.97% before, and 27.98% after. A few transects are not shown in this graph because they are in areas not thinned.

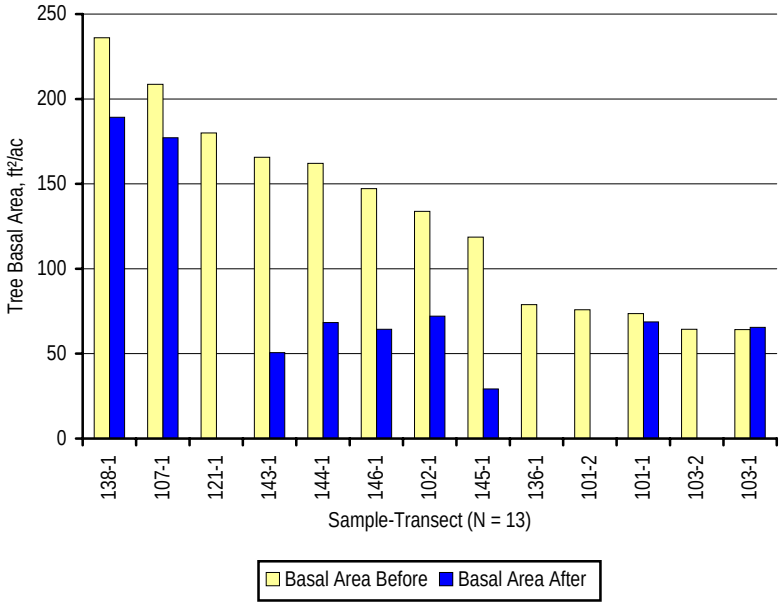

Figure 4-7. Basal Area of trees on 13 plots in the Trumbull Area, before and after thinning. Tree Basal Area averages 131.5 ft²/ac before, and 87.3 ft²/ac after.

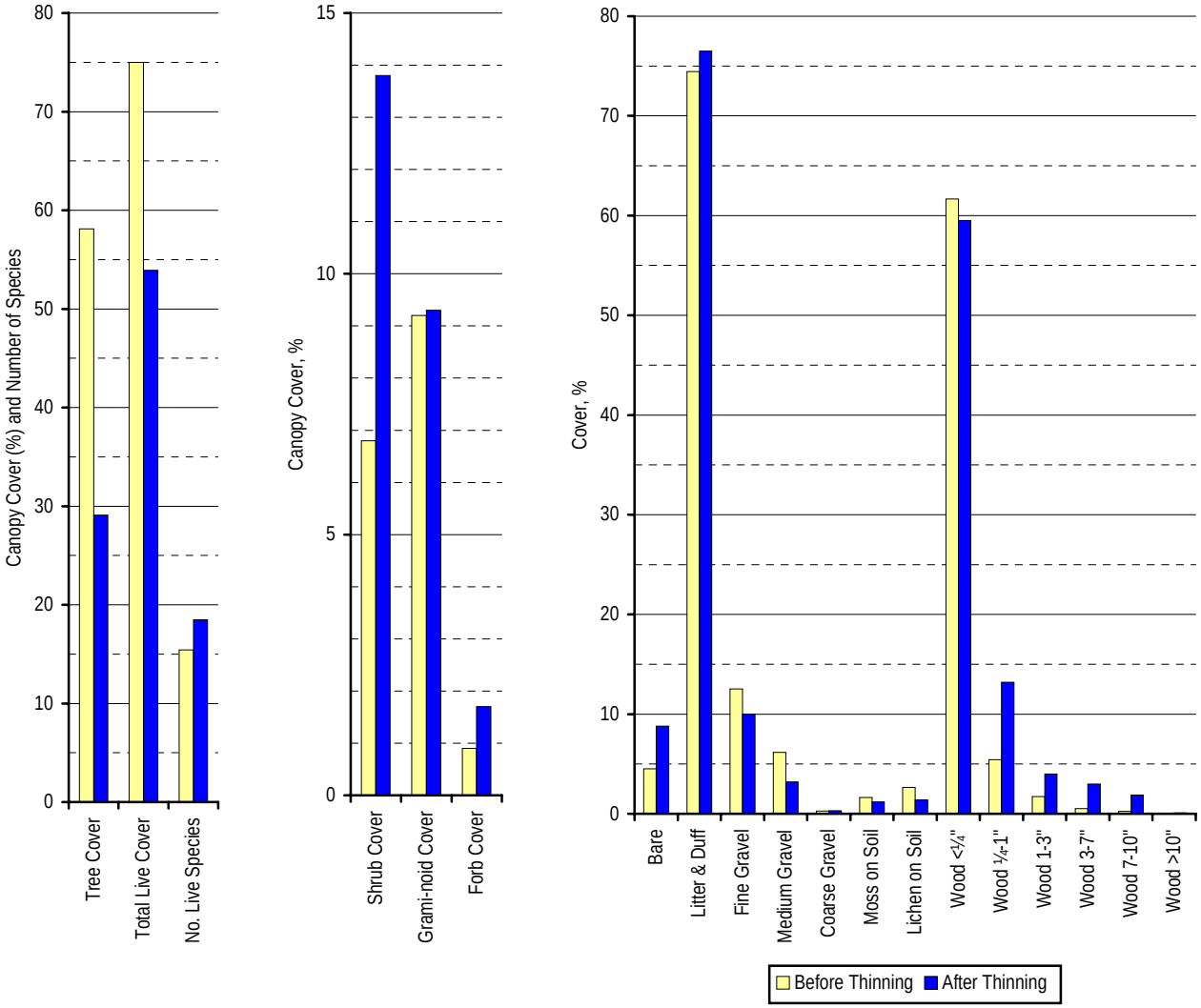

Figure 4-8. Average Canopy Cover (left and middle), Number of Live Species (left), and ground cover (right), before and after thinning at 42 transects (before) and 29 transects (after) in the Trumbull Area.

Bare soil increased, and litter increased slightly (Figure 4-8). Gravel declined significantly, probably because it is now partially covered with wood fragments of various sizes. Wood fragments greatly increased, not surprising.

Results of Wildfire

Figure 4-9. Panorama of upper Saloon Gulch from the ridge to the north. September, 2002.

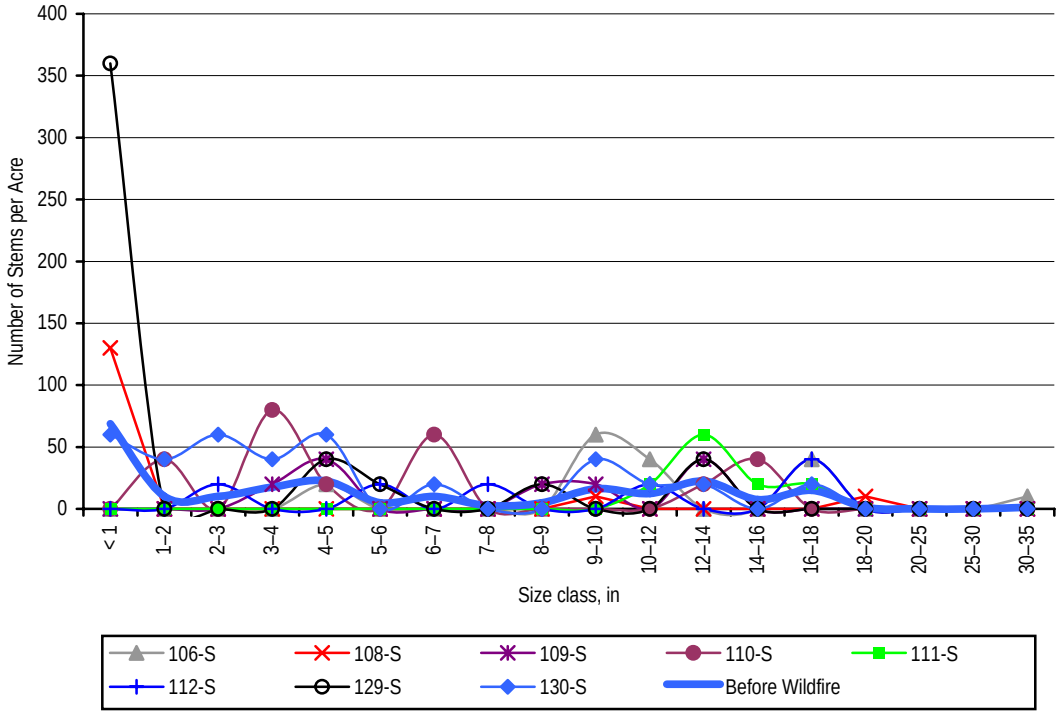

Figure 4-10. Ponderosa pine size-class distribution in eight plots in the Saloon Gulch watershed, before wildfire.

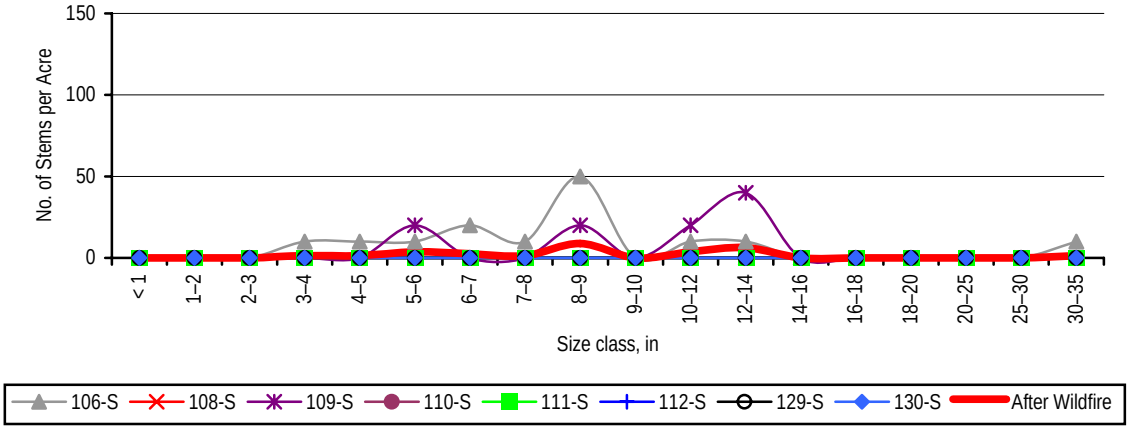

Figure 4-11. Ponderosa pine size-class distribution in eight plots in the Saloon Gulch watershed, after the Hayman wildfire.

A portion of the ponderosa pine stands in the Trumbull treatment area burned hot in the Schoonover Fire of May, 2002 (Figures 4-12, 4-16).

Many ponderosa pine stands in the Saloon Gulch watershed were severely impacted by the Hayman wildfire of June, 2002 (Figures 4-9, 4-10, 4-11, 4-13). Ponderosa pine size-class distributions before the fire are different from the pattern in the Trumbull area (compare Figures 4-4 & 4-10): for one thing, not all plots peak in the smaller size-classes. There is a much wider range of peaks in the larger size-classes, and the 10-to-12-inch class that was so prominent at Trumbull is not evident at Saloon Gulch.

Douglas-fir was also affected by wildfire in the Saloon Gulch and Trumbull areas as a result of wildfires (Figures 4-14, 4-15). There were very few Douglas-fir left in the parts of these areas that burned in these wildfires.

Figure 4-12. Transect 104 in the Trumbull Area in June 2000 (left), late July 2002 (middle), and late July 2003 (right). Burned hot in the Schoonover Fire, May 2002.

Figure 4-13. Transect 129 in the Saloon Gulch Area in September 2001 (left), September 2002 (middle), and September 2003 (right). Below is the microplot at the 7 m mark. Burned hot in the Hayman Fire of June, 2002.

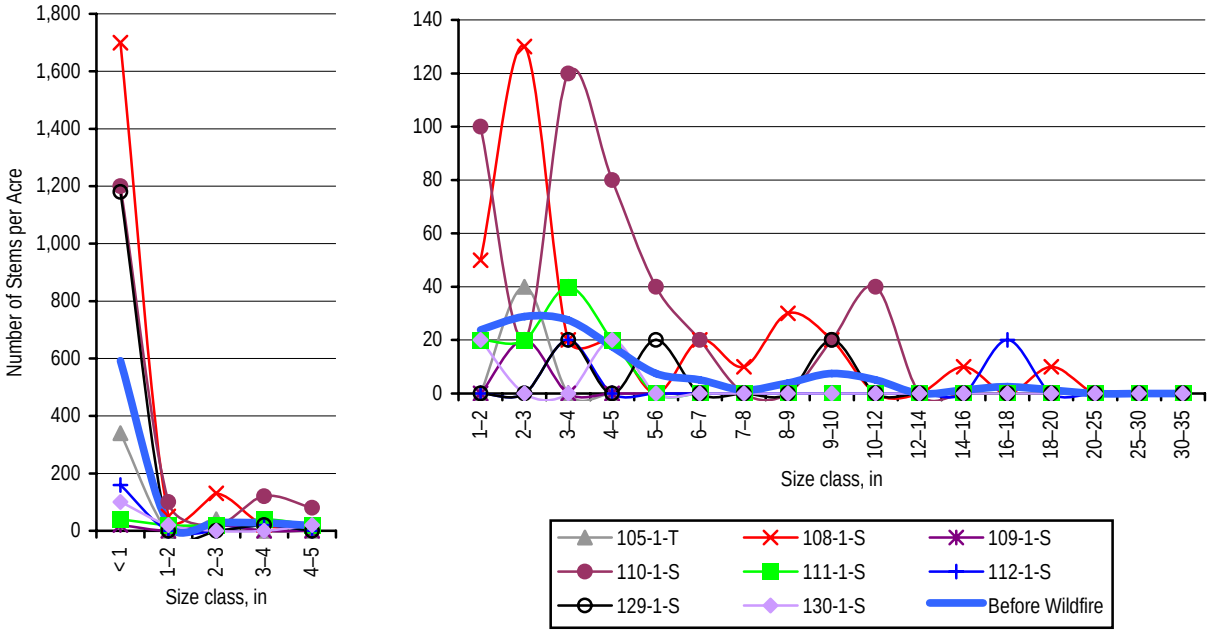

Figure 4-14. Size-class distribution of Douglas-fir in the Saloon Gulch (seven plots) and Trumbull areas (one plot) before wildfire. Both figures show different parts of the same graph at different scales: smaller size-classes are shown left, and larger right.

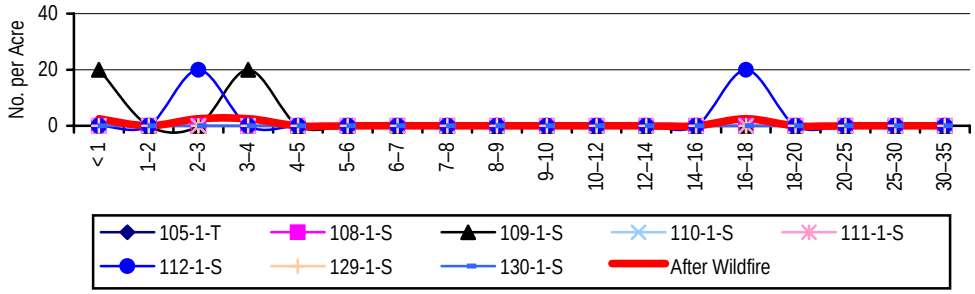

Figure 4-15. Size-class distribution of Douglas-fir in the same plots as Figure 4-14, after wildfire.

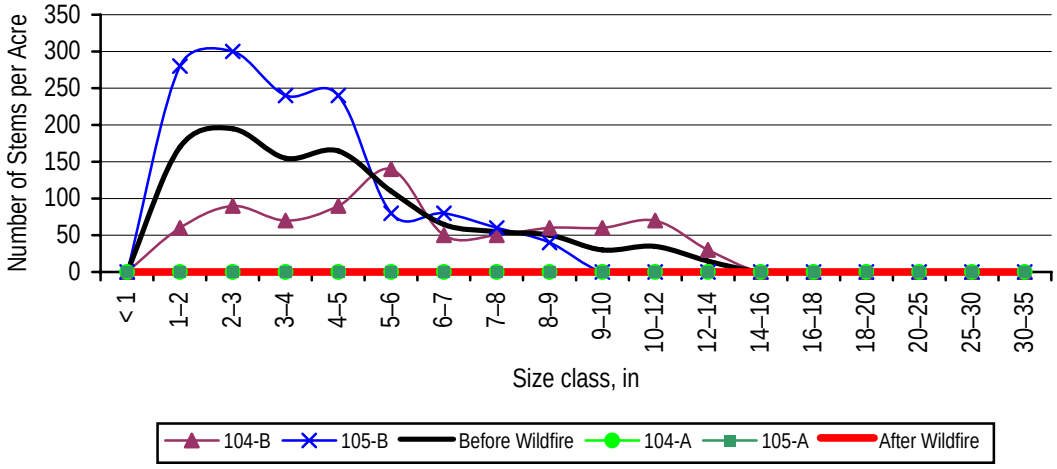

Figure 4-16. Size-class distributions for ponderosa pine in two plots in the Trumbull area that burned very hot in the Schoonover Fire. There were no live trees in either plot after the wildfire.

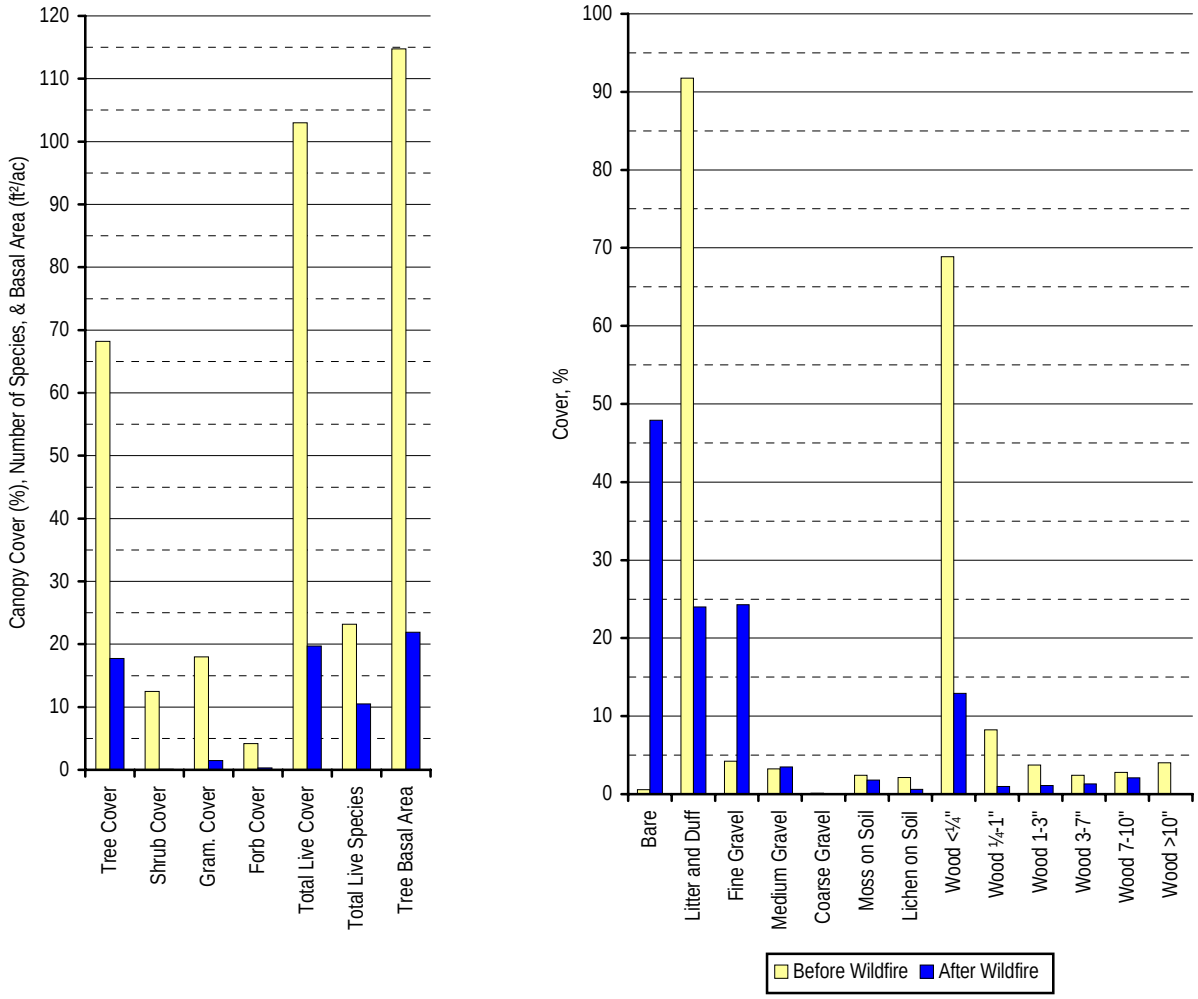

Figure 4-17. Average canopy cover, number of species, tree basal area, and ground cover before and after wildfire, in the Saloon Gulch watershed (Hayman Fire, nine transects) and the Trumbull area (Schoonover Fire, two transects).

The transects that burned in Saloon Gulch were combined with the two in the Trumbull area for the analysis of canopy cover and ground cover (Figure 4-17). Cover of all species, tree basal area, number of live species, and litter cover all declined sharply. Shrub cover nearly disappeared, and very little live kinnikinnick was seen after the fires, even though it was prominent in many areas before. All categories of ground fuels declined, especially fine (< ¼ inch) fuels.

Some shrubs were apparently killed in some wildfire areas, especially kinnikinnick (Figure 5-1, Table 5-7). Apparently currant shrubs are not fire-resistant, as many of them did not sprout. Mountain-mahogany did sprout in most areas (Figure 4-18), and there was some re-sprouting of kinnikinnick (Figure 4-19).

Figure 4-18. Mountain-mahogany re-sprouting two months after being burned hot in the Schoonover Fire (left) and Hayman Fire (right). Late July, 2002.

Figure 4-19. Spotted gayfeather (*Liatris punctata*), kinnikinnick, and soapweed (*Yucca*) re-sprouting two months after being burned hot in the Schoonover Fire. Late July, 2002.

Statistical Results

When all vegetation data are taken together, for all areas and regardless of whether the samples were pre- or post-treatment, some interesting correlations emerge (Table 4-1). Tree basal area is positively correlated with tree cover, and negatively with number of species and number of layers (Figure 4-20).

Production is positively correlated with cover, for shrubs, graminoids, or forbs. For graminoids, the relationship shows the characteristic sigmoid shape that is typical of production – cover curves (Figure 4-21).

Table 4-1. Correlation coefficients for vegetation data.
Degrees of freedom: 133 for cover data, 20 for production data, 81 for tree basal area.
Correlation coefficients significant at 1% shown in **bold**; those significant only at 5% shown smaller.

	Total Live Cover	No. of Species	No. of Layers	Tree Cover	Shrub Cover	Graminoid Cover	Forb Cover	Shrub Production	Graminoid Production	Forb Production
Total Live Cover, %										
No. of Species	**0.5657**									
No. of Layers	**0.6499**	**0.4904**								
Tree Cover, %	**0.7079**									
Shrub Cover, %	**0.7687**	**0.6044**	**0.7092**	**0.2846**						
Graminoid Cover, %	**0.3988**	**0.5601**	**0.6533**	**–0.2245**	**0.2862**					
Forb Cover, %	**0.3063**	**0.7853**	**0.3854**	**–0.2629**	**0.4370**	**0.5416**				
Shrub Production, g/m²/yr		0.4557			**0.7081**					
Graminoid Production, g/m²/yr		0.4787				**0.6585**	0.5250			
Forb Production, g/m²/yr	0.4288	0.5122			0.5052		**0.6181**	0.5130		
Tree Basal Area, ft²/ac		**–0.3455**	**–0.3349**	**0.4433**		**–0.5570**	–0.3312		–0.4696	

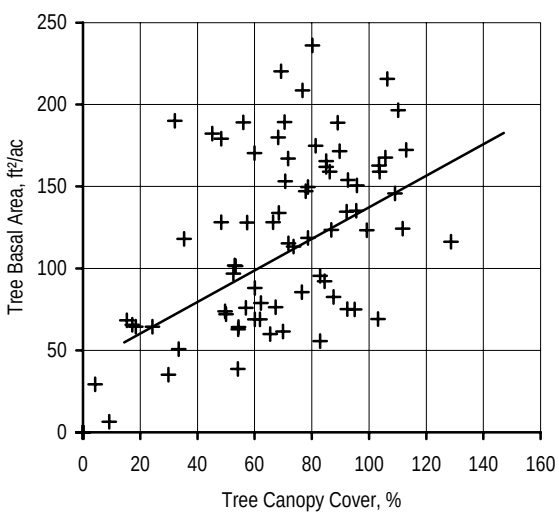

Figure 4-20. Tree Basal Area as a function of Tree Canopy Cover. N = 81.

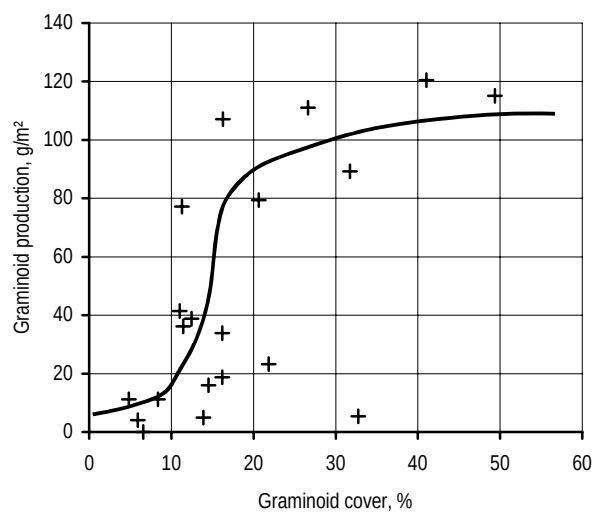

Figure 4-21. Graminoid production as a function of graminoid cover. Shows the sigmoid shape usually characteristic of production-cover curves. N = 20.

Correlation coefficients between cover of selected species and environmental variables are shown in Table 4-2.

Table 4-2. Correlation coefficients between canopy cover of selected species and some environmental and vegetation variables. Correlation coefficients significant at 1% shown in **bold**; those significant only at 5% shown smaller.

	Live Canopy Cover, %				
	ponderosa pine (PIPO)	Douglas-fir (PSME)	Ross sedge (CARO5)	kinni-kinnick (ARUV)	mountain-mahogany (CEMO2)
Elevation, ft	–0.2835	–0.2610	–0.7423	0.3548	0.3566
Aspect x-value	0.3000		0.6927	–0.2844	–0.4794
Aspect y-value	0.2845	0.8099	0.5787	0.2269	–0.8525
Slope angle, %		0.6163	–0.3277	–0.6335	0.3570
No. of species			–0.1973	–0.4937	0.8702
Tree cover, %	0.2255		0.3791	0.3632	–0.8715
Shrub cover, %	–0.2668	–0.6542	–0.5305		0.8087
Graminoid cover, %				–0.2312	0.8534
Forb cover, %			0.3397	–0.5668	0.8587
Bare soil cover, %		–0.5058			0.8077
Litter & duff cover, %			0.1866	0.4728	–0.8719
Fine gravel cover, %				–0.5506	0.8622
Medium gravel cover, %			–0.3965	–0.5161	0.8678
Coarse gravel cover, %	–0.3182		–0.5867	–0.4220	0.8734
Moss on soil, %	–0.2125		–0.4903	0.6816	–0.7995
Lichen on soil, %	0.3939		0.9255	0.7065	–0.7560
Wood <¼", %		–0.2458	0.2354	0.5731	–0.8572
Wood ¼-1", %		0.7216			–0.7507
Wood 1-3", %	0.1956	–0.3190	0.4433	0.7133	–0.6620
Tree Basal Area, ft²/ac	0.2964		0.7583	0.7078	–0.7523

Ponderosa pine occurs at lower elevations. Greater cover of ponderosa pine is associated with more lichen and wood >1 inch, and associated with less shrub cover and less coarse gravel and moss on the soil surface.

Douglas-fir occurs on steeper, northerly slopes. Greater cover of Douglas-fir is associated with more wood ¼ –1 inch, but less wood > 1 inch; and associated with less shrub cover, and less bare soil and wood < ¼ inch.

Ross sedge occurs at lower elevations on low-angle, northwesterly slopes, where there is more tree cover and forb cover, but less shrub cover. Greater cover of Ross sedge is associated with more litter cover, lichen cover, and wood cover; but with less medium to coarse gravel and moss.

Kinnikinnick occurs at higher elevations on low-angle, northeasterly slope, where there is more tree cover, but less graminoid and forb cover. Greater cover of kinnikinnick is associated with more litter, moss, lichen, and wood cover; but with less gravel of all sizes.

Mountain-mahogany occurs at higher elevations on moderately-steep, southeasterly slopes, where there is less tree cover, but more graminoid and forb cover. Greater cover of mountain-mahogany is associated with more bare soil and gravel, but less litter, moss, lichen and wood. Mountain-mahogany tends to occur away from tree cover, in openings in the forest.

Results of Drought

Drought has had a considerable effect on the ecosystems within the study area, especially in the areas with less than 16 in/yr precipitation (Figure 2-5). This includes the valley of the South Platte River from Cheesman Lake down to just above Scraggy View Campground, and the surrounding slopes and gulches up to about 7,500 ft (2,250 m). Within this area, mortality in kinnikinnick due to drought was commonly seen (Figure 4-21A), especially in 2002 and early 2003, which was near the end of the severe drought. In most cases, only part of a plant was apparently dead, but in many cases over 50% of the canopy cover of kinnikinnick was dead in a transect. However, even outside that area, significant cover of dead kinnikinnick was common in late 2002 and through most of 2003 (Table 4-3).

Figure 4-22. Mortality in kinnikinnick, likely caused by the drought, in the north part of the Trumbull Area. July, 2003.

Table 4-3. Comparing live and dead shrub species.
Dead cover was not measured after fire, so the percentages for dead are due to drought.

Species	Area	No. Transects	GM	Cover
Kinnikinnick (*Arctostaphylos uva-ursi*)	Bear Mountain	9	Live	6.4%
			Dead	6.5%
	Nighthawk	8	Live	7.9%
			Dead	10.0%
mountain-mahogany (*Cercocarpus montanus*)	Four Areas*	21	Live	7.9%
			Dead	10.0%

*. Trumbull, Saloon Gulch, Nighthawk, and Bear Mountain.

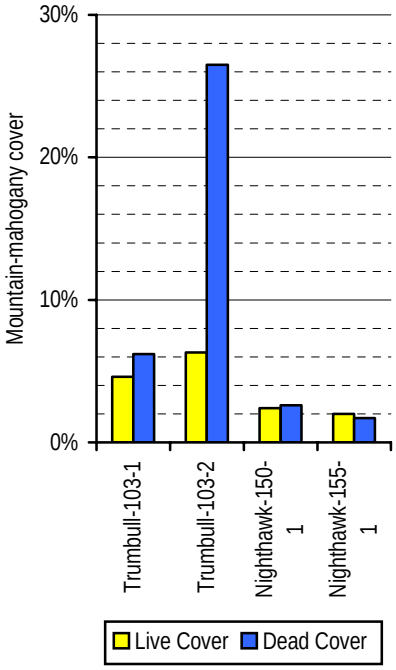

Figure 4-23. Mountain-mahogany cover at four transects in late 2002 and 2003.

Mountain-mahogany (*Cercocarpus montanus*) was another species hit hard by the drought (Table 4-3). Especially in the Trumbull Area, the mortality in mountain-mahogany was great, sometimes whole plants killed (Figure 4-23).

In most areas, effects were also seen in ponderosa pine and Douglas-fir that could be attributed to drought, usually dead or brown leaves without any apparent insect or disease cause. This evidence was usually not certainly assigned to drought, as there could be other, more hidden causes.

Results by Area

Results are presented below for each of the treatment areas. In the tables below, I have shown average cover and frequency for selected species; for all samples and all species, see Appendix B.

Trumbull Area

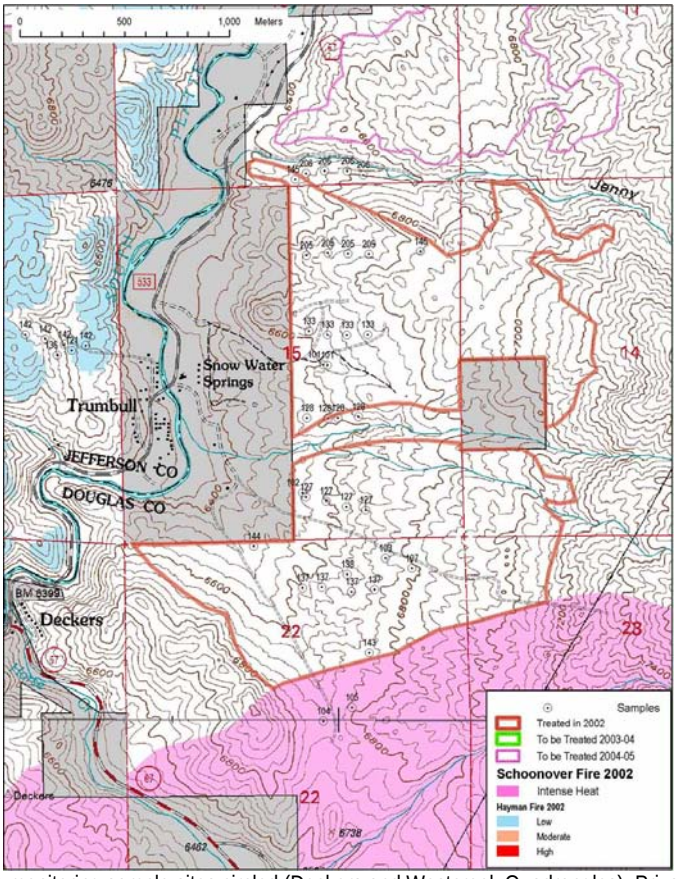

Figure 4-24. The Trumbull Area, with monitoring sample sites circled (Deckers and Westcreek Quadrangles). Private land is shown by gray shading on this and following maps. Four transects with the same numbers in a line, represent a 400 m skipper transect. Whole map is in Geology Map Unit Yp – Granites of Pikes Peak Batholith.

Figure 4-25. Looking east across part of Trumbull town towards the Rampart Range (left) and the saddle to Horse Creek (right). September, 2001.

Figure 4-26. A typical stand in the northern part of the Trumbull Area, sample 146. Early August, 2002 (left), Late July, 2003 (right). Tree cover declined from 78% to 18%, and tree basal area from 147 ft^2/ac to 64 ft^2/ac.

The Trumbull treatment area comprises about 650 acres in two parts, east of Trumbull in Douglas County (Figure 4-24). The area was divided in two parts because the treatment avoided the riparian area of "No-Name Creek," which enters the South Platte opposite Trumbull town.

The area I called "Trumbull West" is the undelineated area west of Trumbull where the control samples were placed; we intended to use these for comparison with the samples east of the river, but part of these were burned in the Hayman Fire of June 2002. They have not been re-sampled, because they are probably no longer useful for comparison.

In May, 2002 the southeastern part of the Trumbull Area burned hot as part of the Schoonover Fire (Figures 2-2, 4-24). Two new samples were located after the fire, but before the 2002 thinning treatment, to replace the two that burned; the two burned ones were re-sampled to demonstrate the effects of wildfire.

In late 2002, stands in the area east of Trumbull were thinned using mechanical equipment (yellow boundaries on Figure 4-24). All woody material was piled by Forest Service hand crews starting in early 2003, and the area closest to Trumbull was opened for personal firewood use. The intention is to burn the remaining woody material in piles, so as to reduce the possibility of insect epidemics. The equipment used in the Trumbull area was a Hydro-Ax (Blount 2004) model, an attachment to a medium-sized front-end loader which shears trees off close to the ground surface. Since the Hydro-Ax did not need roads to access the stands, it was not necessary to build new roads or rebuild old roads. The only woody material that left the site was fuelwood collected by individuals for personal use.

Thinning significantly reduced tree cover (to about half) and tree basal area (two-thirds) in the Trumbull Area (Figure 4-6, 4-7, Table 4-3). Ponderosa pine was reduced to somewhat more than half, and the little Douglas-fir that was in these plots before was reduced to a few individuals in the <1 in class (Figure 4-2). Ponderosa pine of less than 10 in diameter was much reduced, retaining the peaks in the 10-12 in and 16-18 in classes (Figures 4-1, 4-4, 4-5).

After thinning, shrub cover increased to about twice what it had been, especially in kinnikinnick and soapweed (*Yucca*). Two leading graminoid species, Ross sedge and blue grama, increased somewhat, even though total graminoid cover increased only slightly (Figure 4-8, Table 4-4). Forb cover increased significantly, with no one species averaging as much as 1% before or after. After thinning, bare soil and litter both increased a few percent, and all gravel sizes decreased. Fuel in sizes > ¼ in increased, since most of the samples were taken before the left material was piled or burned.

Table 4-4. Average cover and frequency in 42 transects in the Trumbull Area, before and after thinning.
Area Codes are shown in Table 2-2. Data are shown for those species with average cover > 1% in any column.

		Area Code	TR		TRW		TR		
		Sample Timing	Pre-Treat		Pre-Treat		After Thin		
		Number of Samples	36		6		28		
		Species	Cvr	Fre	Cvr	Fre	Cvr	Fre	Common Name
		TREES							
L	PIPO	Pinus ponderosa	51.3	95	45.7	96	28.7	82	ponderosa pine
C	PIPO	Pinus ponderosa	4.2	–	5.4	–	1.7	–	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	2.0	–	3.4	–	1.9	3	ponderosa pine - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	5.1	16	22.7	80	0.4	4	Douglas-fir
C	PSME	Pseudotsuga menziesii	1.6	–	6.3	–	0.4	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	1.0	–	2.7	–	0.4	–	Douglas-fir - dead canopy < 8'
		SHRUBS							
L	ARUV	Arctostaphylos uva-ursi	6.1	14	0.0	–	11.6	12	kinnikinnick
D	CEMO2	Cercocarpus montanus	0.0	2	–	–	1.2	–	true mountain-mahogany - Dead
L	YUGL	Yucca glauca	0.8	3	0.8	3	1.7	3	small soapweed
		GRAMINOIDS							
L	CARO5	Carex rossii	4.6	30	8.7	46	5.6	31	Ross sedge
L	CHGR15	Chondrosum gracile	1.1	10	2.2	15	1.4	10	blue grama
		FORBS							
		GROUND COVER							
	.BARE	bare soil	4.3	43	5.6	59	8.8	50	bare soil
	.LITT	litter and duff	75.3	100	69.4	100	76.5	100	duff litter
	.FIGR	gravel fine	12.2	49	14.3	67	10.0	49	fine gravel
	.MEGR	gravel medium	5.7	41	8.8	61	3.2	34	medium gravel
	.BAVE	live plant bases	1.7	57	1.0	54	0.8	54	live plant bases
	.MOSSON	moss on soil	1.7	14	1.1	16	1.2	11	on soil moss
	.LICHEN	lichen on soil	2.3	27	4.7	46	1.4	22	on soil lichen
	.WOOD00	wood < ¼ in diam.	63.0	96	53.6	98	59.5	99	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	5.3	76	6.0	82	13.2	96	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	1.7	27	1.8	24	4.0	51	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	0.4	4	0.9	4	3.0	14	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	0.2	1	0.4	1	1.9	5	7-10 in diam. wood
		Avg. Elevation, ft	6,673				6,701		
		Avg. Slope, %	21.5				17.5		
		Avg. Tree Basal Area, ft²/ac	132.9				87.3		
		Avg. Tree Cover, %	58.1				29.1		
		Avg. Shrub Cover, %	6.8				13.8		
		Avg. Graminoid Cover, %	9.2				9.3		
		Avg. Forb Cover, %	0.9				1.7		
		Avg. Live Cover, %	75.0				53.9		
		Avg. No. Species	15.4				18.5		

Two of the samples in the Trumbull Area burned hot in the Schoonover fire of May, 2002; one was re-sampled two months later, and both were sampled in 2003, hence the three samples shown after fire in Table 4-5. All trees were killed by this hot wildfire (Figure 4-10). Most of the shrubs were killed, including kinnikinnick, although some sun-loving graminoids and weedy forbs were starting to return in the samples taken a year later (Table 4-5). Bare soil and fine gravel increased significantly, and litter was reduced to less than half what it had been. Moss and lichen were seemingly eliminated, perhaps to return some time later.

Table 4-5. Average cover and frequency in 42 transects in the Trumbull Area, before and after wildfire.
Data are shown for those species with average cover > 1% in any column.

		Area Code	TR		TRW		TR		
		Sample Timing	Pre-Treat		Pre-Treat		After Fire		
		Number of Samples	36		6		3		
		Species	Cvr	Fre	Cvr	Fre	Cvr	Fre	Common Name
		TREES							
L	PIPO	Pinus ponderosa	51.3	95	45.7	96	0.0	–	ponderosa pine
C	PIPO	Pinus ponderosa	4.2	–	5.4	–	–	–	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	2.0	–	3.4	–	–	–	ponderosa pine - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	5.1	16	22.7	80	–	–	Douglas-fir
C	PSME	Pseudotsuga menziesii	1.6	–	6.3	–	–	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	1.0	–	2.7	–	–	–	Douglas-fir - dead canopy < 8'
		SHRUBS							
L	ARUV	Arctostaphylos uva-ursi	6.1	14	0.0	–	0.2	–	kinnikinnick
		GRAMINOIDS							
L	BOCU	Bouteloua curtipendula	0.5	2	0.4	2	1.5	5	side-oats grama
L	CARO5	Carex rossii	4.6	30	8.7	46	0.2	3	Ross sedge
L	CHGR15	Chondrosum gracile	1.1	10	2.2	15	–	–	blue grama
L	ELCA4	Elymus canadensis	–	–	–	–	1.2	12	Canada wildrye
		FORBS							
		GROUND COVER							
	.BARE	bare soil	4.3	43	5.6	59	47.9	90	bare soil

	Area Code	TR		TRW		TR		
	Sample Timing	Pre-Treat		Pre-Treat		After Fire		
	Number of Samples	36		6		3		
	Species	Cvr	Fre	Cvr	Fre	Cvr	Fre	Common Name
.LITT	litter and duff	75.3	100	69.4	100	33.9	95	duff litter
.FIGR	gravel fine	12.2	49	14.3	67	15.1	77	fine gravel
.MEGR	gravel medium	5.7	41	8.8	61	2.9	38	medium gravel
.BAVE	live plant bases	1.7	57	1.0	54	0.1	20	live plant bases
.MOSSON	moss on soil	1.7	14	1.1	16	–	–	on soil moss
.LICHEN	lichen on soil	2.3	27	4.7	46	–	–	on soil lichen
.WOOD00	wood < ¼ in diam.	63.0	96	53.6	98	27.5	87	< 1/4 in diam. wood
.WOOD01	wood 1/4-1 in diam.	5.3	76	6.0	82	0.7	35	¼-1 in diam. wood
.WOOD13	wood 1-3 in diam.	1.7	27	1.8	24	0.9	20	1-3 in diam. wood
.WOOD37	wood 3-7 in diam.	0.4	4	0.9	4	1.3	5	3-7 in diam. wood
	Avg. Elevation, ft	6,673				6,757		
	Avg. Slope, %	21.5				14.0		
	Avg. Tree Basal Area, ft²/ac	132.9				0.0		
	Avg. Tree Cover, %	58.1				0.0		
	Avg. Shrub Cover, %	6.8				0.5		
	Avg. Graminoid Cover, %	9.2				2.9		
	Avg. Forb Cover, %	0.9				0.8		
	Avg. Live Cover, %	75.0				4.2		
	Avg. No. Species	15.4				17.0		

Results from 100 m Skipper Transects in the Trumbull Area

There are seven 400 m transects on National Forest lands in the Trumbull Area; each of those has been broken into four 100 m transects for the purpose of vegetation monitoring. Out of a total of 28 of these 100 m transects, only 27 were sampled before the thinning treatment began, and of that number only 17 were thinned. The other transects were outside the treatment area for some reason, often because they were too close to a riparian area.

Tree cover was reduced to somewhat more than half the pre-treatment amount; shrub cover and graminoid cover stayed about the same, but forb cover increased (Table 4-4A, Figure 4-24A). This is a remarkable result considering that several years of drought intervened between the before-treatment and after-treatment samples. It is very likely that shrub and herbaceous cover will increase dramatically in future years, as we have observed at similar treatments on Denver Water Department lands.

Bare soil increased by 5%, and litter and duff stayed about the same (Table 4-4B, Figure 4-24B). The increase in bare soil was made up by declines in gravel. Moss and lichen declined, expected given the drought in this area. As the amount of herbaceous vegetation increases in future years, bare soil should decline again to pre-treatment levels.

Table 4-6. 100 m skipper transects in the Trumbull area, before and after thinning.

		Before		After		
	Number of transects	27		17		
Code	Species	Cover	Freq	Cover	Freq	Common Name
	TREES					
PIPO	Pinus ponderosa	43.1	94	25.9	81	ponderosa pine
PIPO	Pinus ponderosa	4.5	–	0.8	–	ponderosa pine - live canopy < 8'
PIPO	Pinus ponderosa	2.2	–	1.0	–	ponderosa pine - dead canopy < 8'
PSME	Pseudotsuga menziesii	9.5	27	.5	4	Douglas-fir
PSME	Pseudotsuga menziesii	3.3	–	0.2	–	Douglas-fir - live canopy < 8'
PSME	Pseudotsuga menziesii	1.8	–	0.2	–	Douglas-fir - dead canopy < 8'
	SHRUBS					
ARUV	Arctostaphylos uva-ursi	7.0	16	7.0	16	kinnikinnick
CEMO2	Cercocarpus montanus	0.0	–	0.2	–	true mountain-mahogany
PHMO4	Physocarpus monogynus	0.1	0	.0	0	mountain ninebark
YUGL	Yucca glauca	0.7	3	0.9	3	small soapweed
	GRAMINOIDS					
ACNE9	Achnatherum nelsonii	0.1	1	0.2	1	Nelson's needlegrass
BOCU	Bouteloua curtipendula	0.7	3	0.7	2	side-oats grama
CARO5	Carex rossii	5.2	29	5.6	30	Ross sedge
CHGR15	Chondrosum gracile	1.6	12	1.3	10	blue grama
KOMA	Koeleria macrantha	0.4	5	0.2	3	prairie junegrass
LEKI2	Leucopoa kingii	0.2	2	0.0	–	spike-fescue
MUMO	Muhlenbergia montana	0.7	4	0.6	5	mountain muhly
PSSP6	Pseudoroegneria spicata	0.0	–	0.7	5	bluebunch wheatgrass
SCSC	Schizachyrium scoparium	0.5	5	0.0	–	little bluestem
	FORBS					
ACLA5	Achillea lanulosa	0.1	1	0.1	1	western yarrow
ALAN3	Aletes anisatus	0.0	–	0.1	0	Rocky Mountain Indian parsely
ALCE2	Allium cernuum	0.0	1	0.1	2	nodding onion
ARFR4	Artemisia frigida	0.1	1	0.1	1	fringed sagewort
CARO2	Campanula rotundifolia	0.0	1	0.1	1	common harebell
CHAL7	Chenopodium album	0.0	0	0.5	9	lambs-quarters goosefoot
DRFI3	Drymocallis fissa	0.1	1	0.1	1	bigflower cinquefoil
GECA3	Geranium caespitosum	0.0	2	0.1	2	Fremont geranium
HEVI4	Heterotheca villosa	0.2	4	0.2	2	hairy golden aster
LIPU	Liatris punctata	0.1	2	0.2	2	dotted gayfeather
OLPA	Oligosporus pacificus	0.1	1	0.1	2	sagewort wormwood
PHVI7	Physaria vitulifera	0.1	4	0.0	1	roundtip twinpod
SOSI3	Solidago simplex	0.0	0	0.1	1	Mt. Albert goldenrod
	GROUND COVER					
.BARE	bare soil	6.3	57	11.3	61	bare soil
.LITT	litter and duff	65.9	100	66.9	100	duff litter
.FIGR	gravel fine	16.5	64	14.5	64	fine gravel
.MEGR	gravel medium	8.3	54	4.7	49	medium gravel
.BAVE	live plant bases	1.4	59	0.9	57	live plant bases
.MOSSON	moss on soil	1.5	11	1.5	13	on soil moss
.LICHEN	lichen on soil	3.0	31	1.7	27	on soil lichen
.DEERPE	droppings deer	0.1	5	.1	4	deer droppings
.WOOD00	wood < ¼ in diam.	52.9	95	52.4	98	< 1/4 in diam. wood
.WOOD01	wood 1/4-1 in diam.	5.5	73	9.8	95	1/4-1 in diam. wood
.WOOD13	wood 1-3 in diam.	1.3	21	2.9	42	1-3 in diam. wood
.WOOD37	wood 3-7 in diam.	0.6	3	1.6	8	3-7 in diam. wood
.WOOD71	wood 7-10 in diam.	0.3	1	1.4	4	7-10 in diam. wood
.WOOD10	wood > 10 in diam.	0.0	0	0.1	0	> 10 in diam. wood

Table 4-7. Various characteristics in the 16 resampled skipper transects, before and after thinning.

	N	Tree Cover	Shrub Cover	Graminoid Cover	Forb Cover	Total Live Cover	Total Live Species	Number Layers
Before	27	52.5%	8.0%	9.2%	0.9%	70.6%	16.6	9.1
After	17	26.4%	8.1%	9.2%	1.9%	45.6%	19.8	8.3

	N	Bare	Litter and Duff	Rock Cover	Fine Gravel	Medium Gravel	Coarse Gravel	Moss on Soil	Lichen on Soil	Fuel <¼"	Fuel ¼-1"	Fuel 1-3"	Fuel 3-7"	Fuel 7-10"	Fuel >10"
Before	27	6.3	65.9	25.8	16.5	8.3	0.4	1.8	3.1	52.9	5.5	1.3	1.0	1.8	1.0
After	17	11.3	66.9	20.5	14.5	4.7	0.5	1.6	1.9	52.4	9.8	2.9	2.0	2.4	1.5

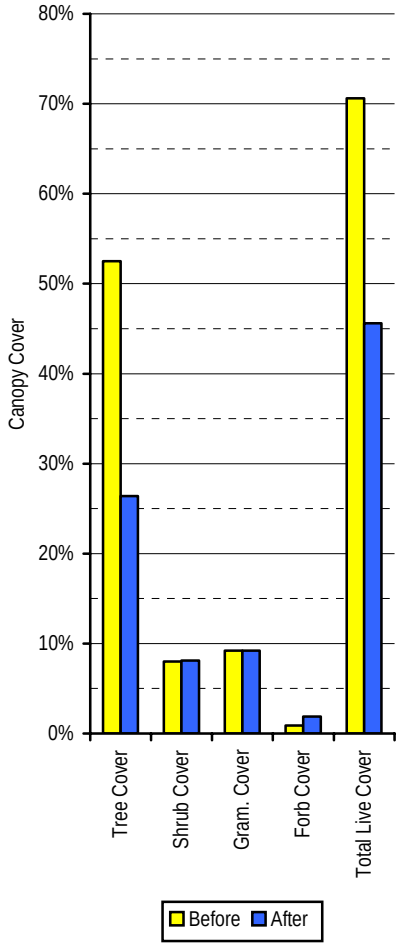

Figure 4-27. Vegetation cover before and after thinning, at 27 pre-thinning transects and 17 resampled transects.

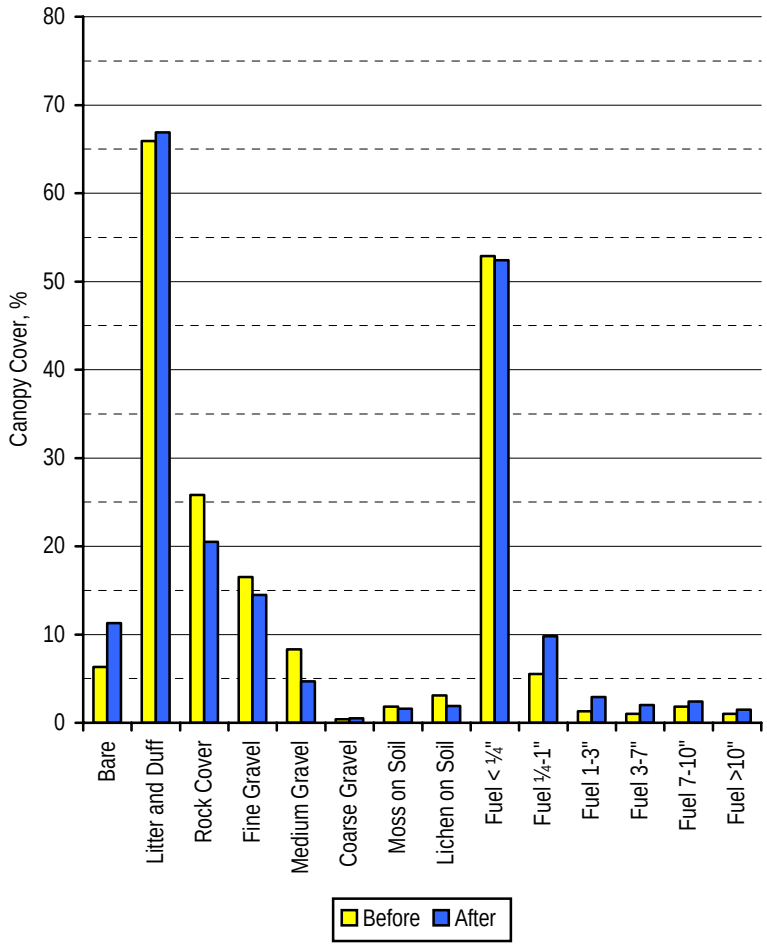

Figure 4-28. Ground cover before and after thinning, at 27 pre-thinning transects and 17 resampled transects.

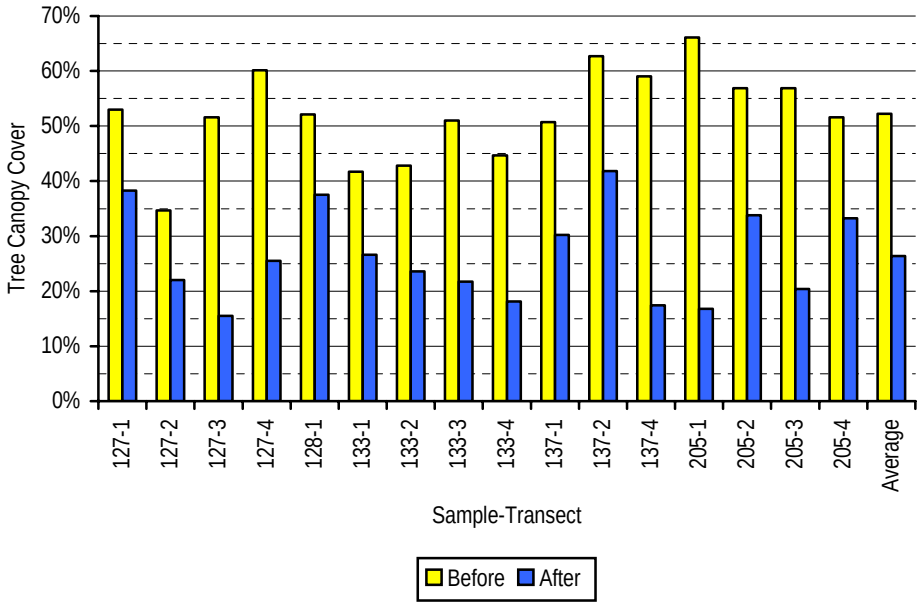

Figure 4-29. Changes in Tree canopy cover after thinning at 16 skipper transects.

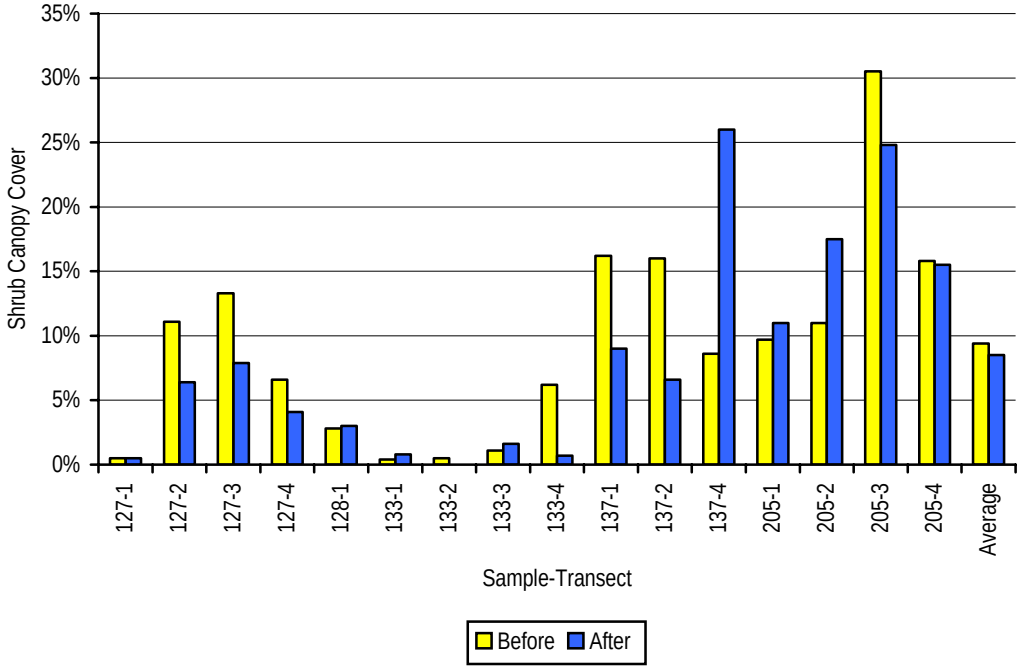

Figure 4-30. Changes in Shrub canopy cover at 16 skipper transects.

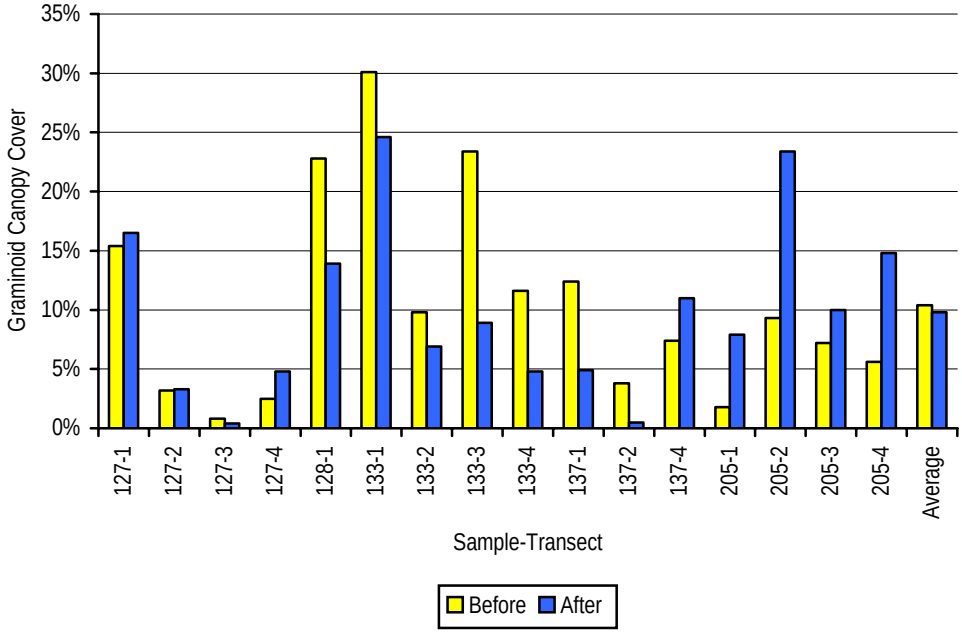

Figure 4-31. Changes in Graminoid canopy cover at 16 skipper transects.

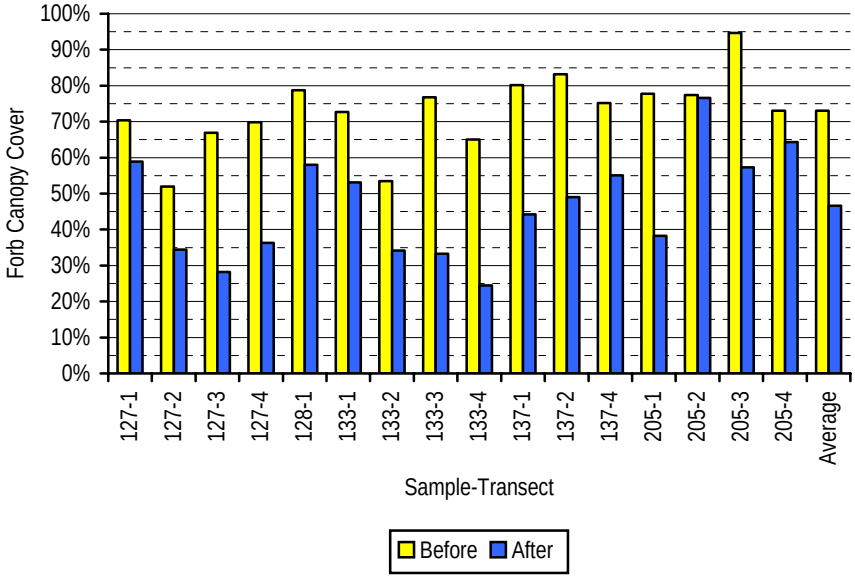

Figure 4-32. Changes in Forb canopy cover at 16 skipper transects.

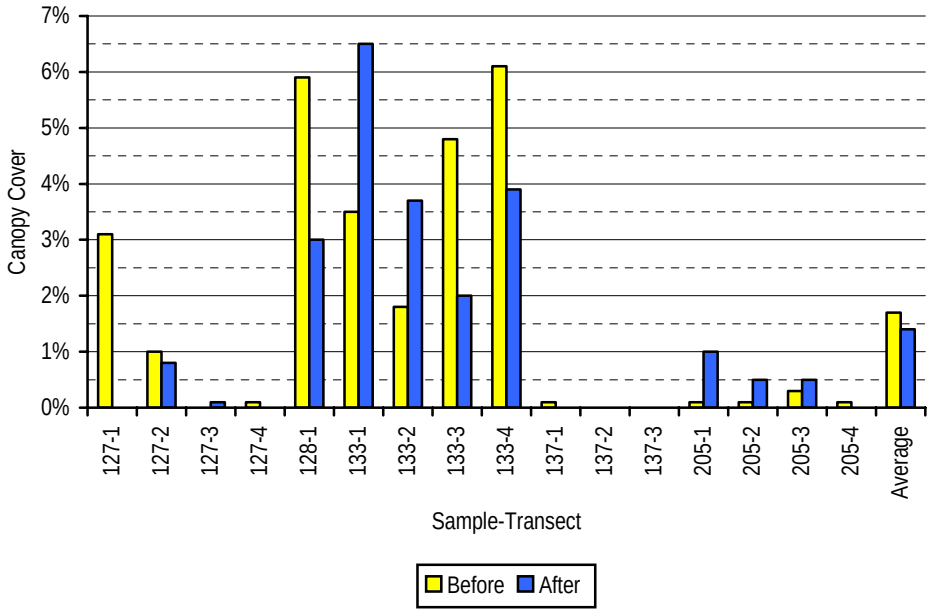

Figure 4-33. Changes in canopy cover of blue grama (*Chondrosum gracile*) at 16 skipper transects.

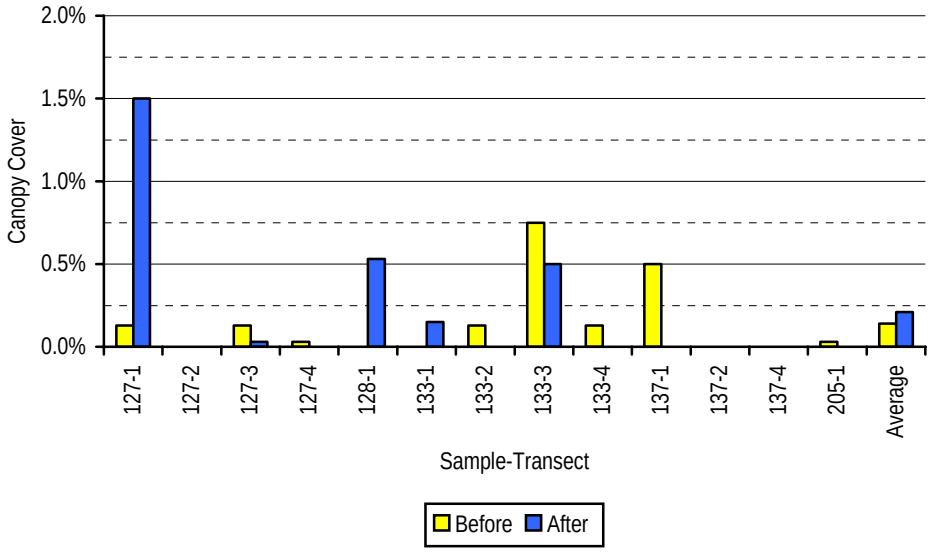

Figure 4-34. Changes in canopy cover of dotted gayfeather (*Liatris punctata*) at 16 skipper transects.

Saloon Gulch, Jenny Creek, and Gunbarrel Areas

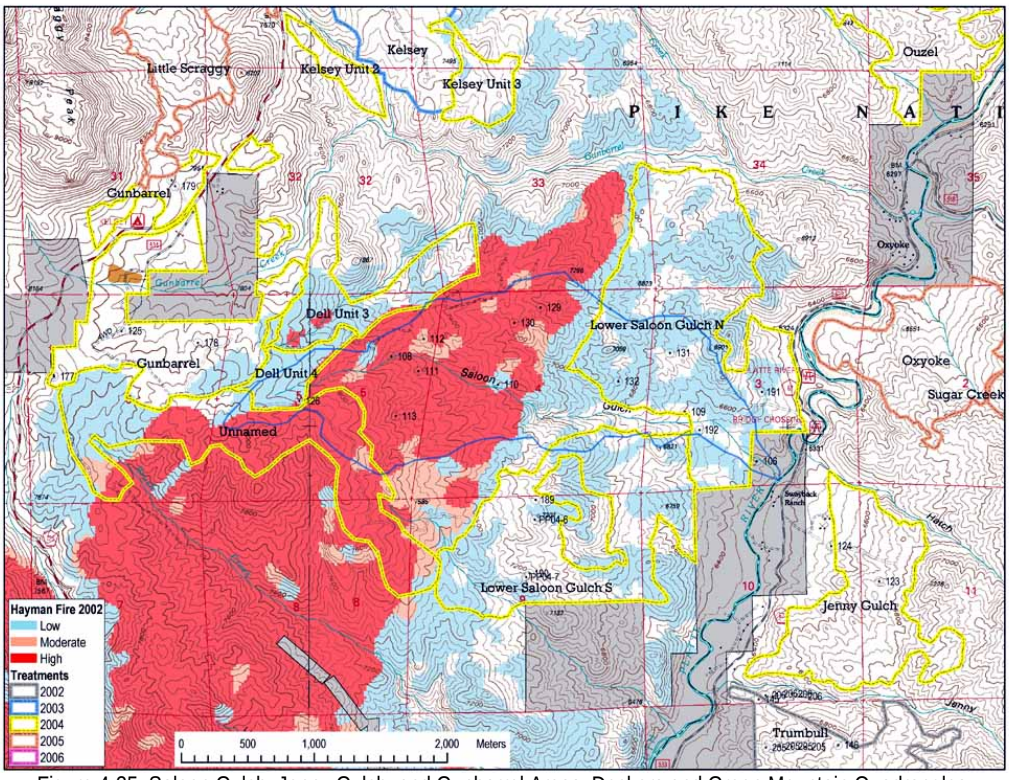

Figure 4-35. Saloon Gulch, Jenny Gulch, and Gunbarrel Areas. Deckers and Green Mountain Quadrangles.
The Saloon Gulch Watershed is outlined in blue. Whole map is in Geology Map Unit Yp – Granites of Pikes Peak Batholith.

Figure 4-36. A typical stand in lower Saloon Gulch, transect 129. Burned low intensity Hayman Fire. Sept. 2001 (left), Sept. 2002 (right).
The currant shrub in the foreground seems to have died.

It was originally planned to treat the entire Saloon Gulch Watershed (Figure 4-35) by thinning the forests, and sampling was designed to cover that whole watershed. The Hayman Fire of June, 2002 burned most of the Saloon Gulch watershed, burning the upper half of the watershed at high intensity, and most of lower Saloon Gulch at low intensity (Figures 2-13, 4-35, 4-36). After that, two new treatment areas were designed, Lower Saloon Gulch including the lower portions of adjacent watersheds, and Gunbarrel including the area around private land at the head of Gunbarrel Creek, west of Saloon Gulch (Figure 4-35). At the same time, the Jenny Gulch treatment area was designed across the South Platte River from lower

Saloon Gulch. None of these areas has been thinned yet, although parts of the Lower Saloon Gulch burned at low intensity.

Most of the sample sites are within the Saloon Gulch Watershed, but there are two in the Jenny Gulch area, and one in the Gunbarrel area. More than half of these have been re-sampled.

All of the nine transects re-sampled are in the Saloon Gulch Watershed; five of them had been severely burned, and usually had all trees and most of the shrubs (especially kinnikinnick) killed and all the litter and duff consumed. Four of the re-sampled transects had been lightly to moderately burned (Figure 4-36), usually consuming some of the litter and duff, and killing many shrubs and smaller trees, the seedlings and saplings.

On average, tree cover was reduced to less than half, with ponderosa pine faring better than Douglas-fir, which was nearly eliminated (Table 4-5, Figure 4-15). Tree basal area was reduced to about one-fifth of pre-fire levels. The extremely varied size-class distributions of ponderosa pine that occurred before fire, saw almost all the smaller size-classes eliminated and larger size-classes significantly depleted (Figures 4-10, 4-11).

Shrub cover was nearly eliminated by fire in Saloon Gulch, both low shrubs such as kinnikinnick and medium to tall shrubs such as currants (Table 4-8, Figure 5-1). Graminoid and forb cover was also reduced considerably. Most of the re-sampling was done in 2002, a few months after the Hayman fire, and didn't expect to see many graminoids and forbs. Several sites were revisited in 2003, and there was very little herbaceous cover besides annual weeds. Ground cover and gravel increased markedly, together covering more than three-quarters of the ground; and litter and duff declined sharply. All fuel sizes decreased significantly.

Table 4-8. Average cover and frequency in 17 transects in the Saloon Gulch (14 samples), Gunbarrel (1), and Jenny Gulch (2) Areas, before and after wildfire. Data are shown for those species with average cover > 1% in any column.

		Area Code	JG		SG – GU		SG		
		Sample Timing	Pre-Treat		Pre-Treat		After Fire		
		Number of Samples	2		15		9		
		Species	Cvr	Fre	Cvr	Fre	Cvr	Fre	Common Name
		TREES							
L	PIPO	Pinus ponderosa	54.5	100	39.6	81	21.2	39	ponderosa pine
D	PIPO	Pinus ponderosa	–	–	–	–	5.7	20	ponderosa pine - Dead
C	PIPO	Pinus ponderosa	–	–	1.4	–	–	–	ponderosa pine - live canopy < 8'
L	PSME	Pseudotsuga menziesii	19.5	53	20.8	44	2.4	6	Douglas-fir
E	PSME	Pseudotsuga menziesii	–	–	1.5	8	–	–	Douglas-fir - Seedling
D	PSME	Pseudotsuga menziesii	0.6	8	5.2	14	1.7	9	Douglas-fir - Dead
C	PSME	Pseudotsuga menziesii	–	–	2.2	–	–	–	Douglas-fir – live canopy < 8'
		SHRUBS							
L	ARUV	Arctostaphylos uva-ursi	7.6	33	4.4	10	0.0	3	kinnikinnick
L	RICE	Ribes cereum	–	–	1.3	3	0.0	1	wax currant
D	RICE	Ribes cereum	–	–	0.0	1	1.6	–	wax currant - Dead
L	RIIN2	Ribes inerme	0.0	–	1.3	3	–	–	whitestem currant
L	SYAL	Symphoricarpos albus	–	–	1.0	4	0.0	–	common snowberry
L	YUGL	Yucca glauca	3.3	13	0.3	1	0.0	–	small soapweed
		GRAMINOIDS							
L	CARO5	Carex rossii	6.5	50	8.6	47	0.5	8	Ross sedge
L	CASI12	Carex siccata	–	–	3.8	14	–	–	silvertop sedge
L	CHGR15	Chondrosum gracile	0.9	15	1.2	8	0.5	4	blue grama
L	KOMA	Koeleria macrantha	0.1	5	2.2	19	0.1	1	prairie junegrass
		FORBS							
		GROUND COVER							
	.BARE	bare soil	0.2	8	0.9	18	47.8	95	bare soil
	.LITT	litter and duff	88.0	100	90.4	100	20.7	98	duff litter
	.FIGR	gravel fine	8.7	30	3.6	25	27.4	93	fine gravel
	.MEGR	gravel medium	0.2	13	2.7	21	3.7	68	medium gravel
	.BAVE	live plant bases	2.2	58	1.9	77	0.3	20	live plant bases
	.MOSSON	moss on soil	2.9	35	2.2	19	0.4	2	on soil moss
	.LICHEN	lichen on soil	4.5	53	2.1	27	0.1	1	on soil lichen
	.WOOD00	wood < ¼ in diam.	79.7	100	64.6	100	8.0	59	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	3.9	80	9.7	88	0.9	28	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	1.5	40	4.6	59	0.4	6	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	–	–	1.9	12	–	–	3-7 in diam. wood
		Avg. Elevation, ft	7,155				7,041		
		Avg. Slope, %	16.1				15.0		
		Avg. Tree Basal Area, ft²/ac	122.1				24.6		
		Avg. Tree Cover, %	62.0				23.6		
		Avg. Shrub Cover, %	11.3				0.0		
		Avg. Graminoid Cover, %	20.0				1.0		
		Avg. Forb Cover, %	4.7				0.2		
		Avg. Live Cover, %	98.0				24.8		
		Avg. No. Species	23.1				8.3		

Spring Creek, Dell, and Kelsey Areas

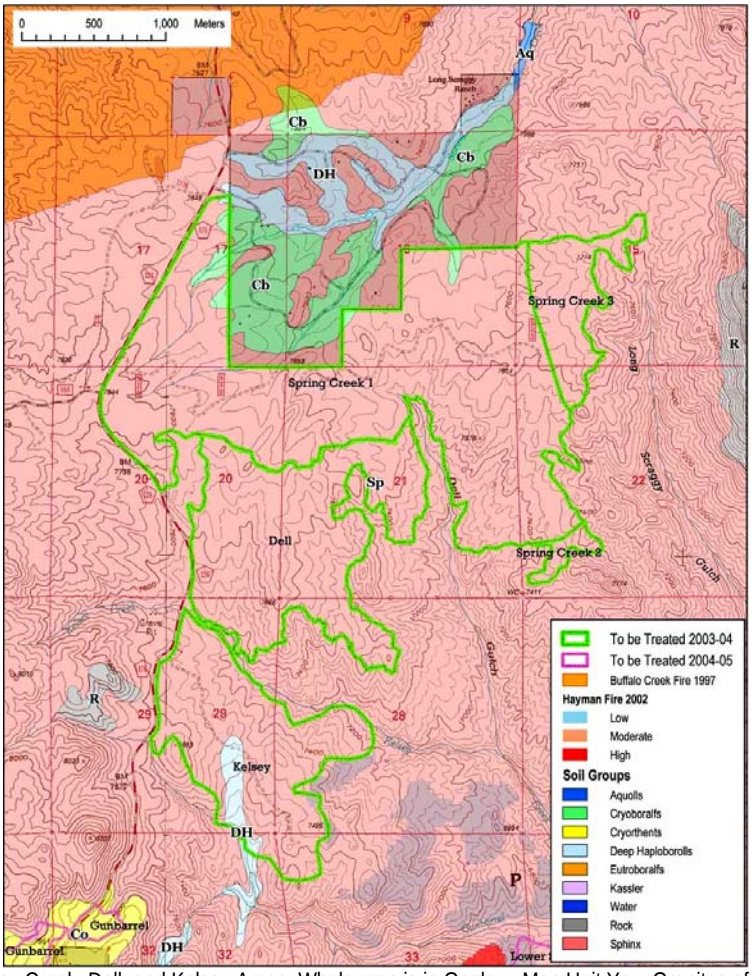

Figure 4-37. The Spring Creek, Dell, and Kelsey Areas. Whole map is in Geology Map Unit Yp – Granites of Pikes Peak Batholith.

The original Spring Creek treatment area, designed in 2000-2001, is shown as "Spring Creek 1" in Figure 4-37. Recently, two small areas have been added to it, labeled "2" and "3" on Figure 4-27. Additionally two new treatment areas have been designed, Dell and Kelsey, south of the Spring Creek Area. All of the samples were placed in the Spring Creek 1 Area, except one that was placed west of Highway 126 to serve as a control. None of these has been re-sampled.

These areas are between the Buffalo Creek Fire to the north and the Hayman Fire to the south, but none of these areas has burned. None of these areas had been thinned as of the end of the field season in 2003, except there had been some hand thinning of fuels around the boundary between the Spring Creek 1 Area and the private land to the north, in late 2002 and early 2003.

These are mixed forests of ponderosa pine and Douglas-fir, with some Rocky Mountain juniper in openings and along forest edges. The Spring Creek Area has been managed to encourage Douglas-fir for public, individual harvest as Christmas trees, so there is a considerable component of Douglas-fir in a wide range of size-classes (Figure 4-40).

Rocky Mountain juniper is well-distributed in the tree plots, though a minor tree throughout, indicating that is a regenerating tree, at least in some stands (Figure 4-28).

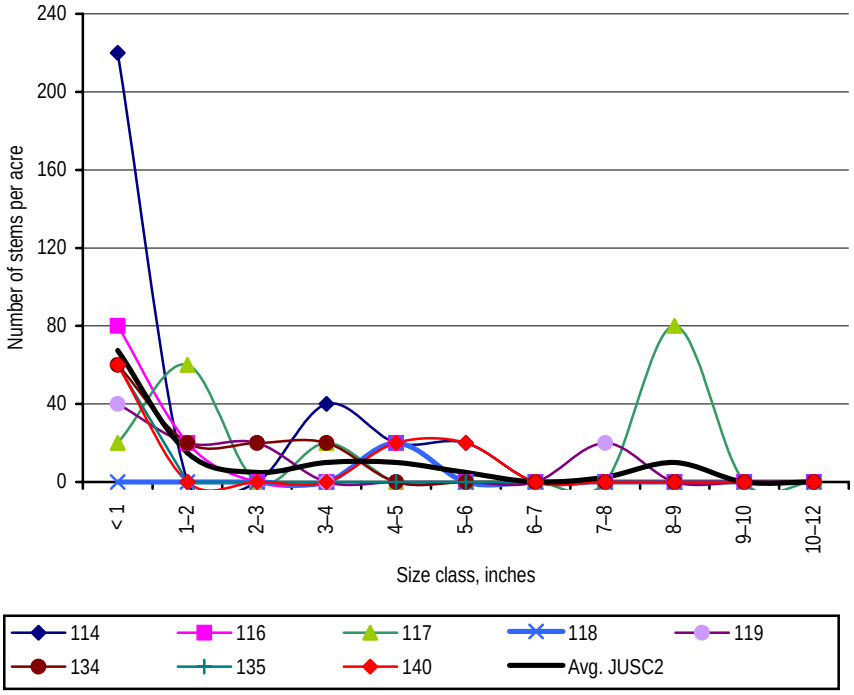

Figure 4-38. Size class distribution of Rocky Mountain juniper in eight plots in the Spring Creek Area. These plots had no stems > 12 in dbh.

Ponderosa pine is apparently reproducing and growing well in these stands (Figure 4-29), most of which belong to a Douglas-fir plant association.

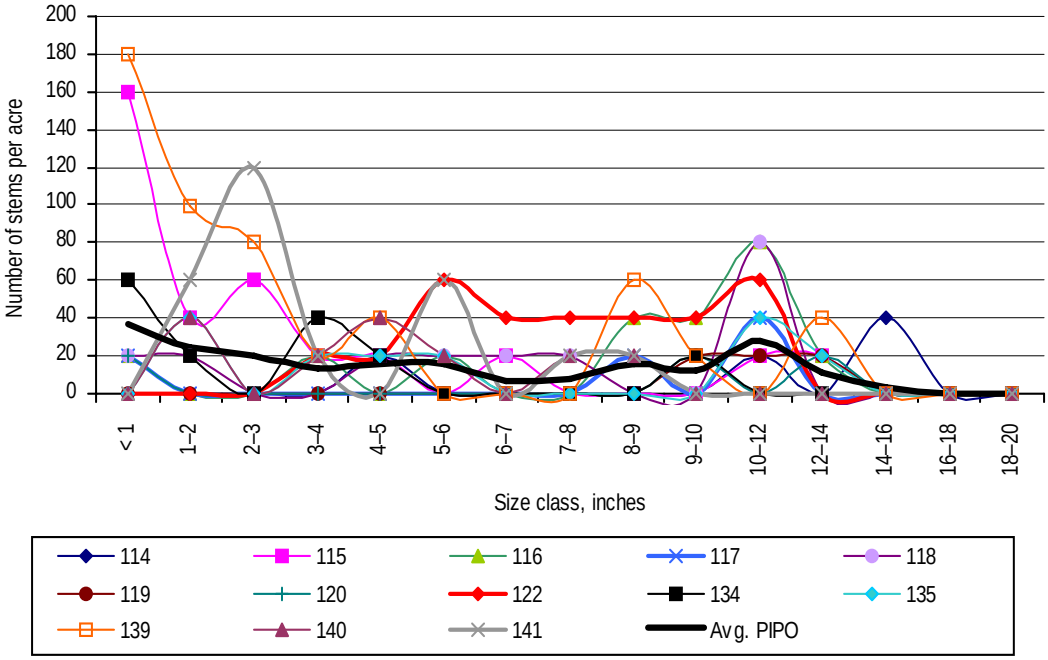

Figure 4-39. Size-class distribution of ponderosa pine in thirteen plots in the Spring Creek Area. There were no stems in these plots > 20 in dbh.

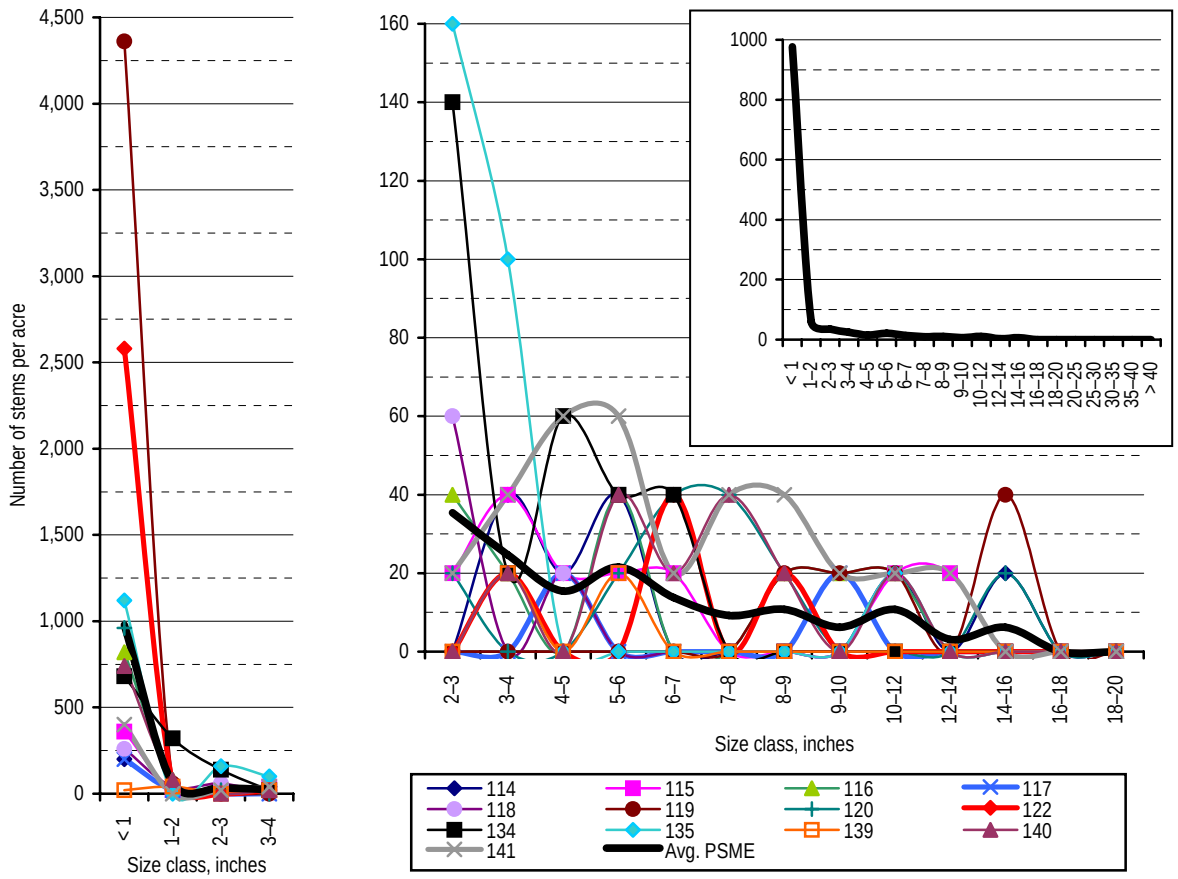

Figure 4-40. Size-class distribution of Douglas-fir in thirteen plots in the Spring Creek Area.
Both figures are part of the same graph: smaller size-classes at left, larger size-classes at right, average whole graph inset.

Douglas-fir is also reproducing and growing very well in the Spring Creek Area (Figure 4-40): the classic inverted-J curve is evident in the average as well as in many of the plots.

Tree cover is high to very high, indicating that the Spring Creek Area is more productive of tree growth than the Trumbull or Saloon Gulch Areas (Table 4-9). Basal area of Douglas-fir is significant, with the basal area typically divided about 60 : 40 between pine : Douglas-fir.

Shrub and graminoid cover is much greater than in the Trumbull or Saloon Gulch Areas (Table 4-9), indicating higher productivity of those plants as well in the Spring Creek Area.

Table 4-9. Average cover and frequency in 13 transects in the Spring Creek Area, before treatment or wildfire. Data are shown for those species with average cover > 1% or average frequency ≥ 0.5%.

		Area Code	SC		
		Sample Timing	Pre-Treat		
		Number of Samples	13		
	M	Species	Cvr	Fre	Common Name
		TREES			
JUSC2	L	Juniperus scopulorum	2.1	7	Rocky Mountain juniper
PIPO	L	Pinus ponderosa	38.8	88	ponderosa pine
PIPO	C	Pinus ponderosa	2.5	–	ponderosa pine - live canopy < 8'
PIPO	X	Pinus ponderosa	2.1	–	ponderosa pine - dead canopy < 8'
PSME	L	Pseudotsuga menziesii	40.0	85	Douglas-fir
PSME	E	Pseudotsuga menziesii	0.1	8	Douglas-fir – Seedling
PSME	C	Pseudotsuga menziesii	9.0	–	Douglas-fir - live canopy < 8'
PSME	X	Pseudotsuga menziesii	4.9	–	Douglas-fir - dead canopy < 8'
		SHRUBS			
ARUV	L	Arctostaphylos uva-ursi	8.5	27	kinnikinnick
JUCO6	L	Juniperus communis	5.9	10	common juniper
ROWO	L	Rosa woodsii	0.5	7	Woods rose
SYAL	L	Symphoricarpos albus	2.1	13	common snowberry
		GRAMINOIDS			
ACNE9	L	Achnatherum nelsonii	0.8	5	Nelson's needlegrass
CAPEH	L	Carex pensylvanica ssp. heliophila	9.5	33	sun sedge
CARO5	L	Carex rossii	9.9	31	Ross sedge
CASI12	L	Carex siccata	4.9	19	silvertop sedge
ELEL5	L	Elymus elymoides	0.4	5	bottlebrush squirreltail
KOMA	L	Koeleria macrantha	1.2	9	prairie junegrass
MUMO	L	Muhlenbergia montana	1.5	8	mountain muhly
		FORBS			
ACLA5	L	Achillea lanulosa	0.2	5	western yarrow
ANRO2	L	Antennaria rosea	1.0	15	rose pussytoes
ERSU2	L	Erigeron subtrinervis	0.3	6	threenerve fleabane
GECA3	L	Geranium caespitosum	0.6	11	Fremont geranium
SOSI3	L	Solidago simplex	0.7	6	Mt. Albert goldenrod
		GROUND COVER			
.BARE		bare soil	0.5	13	bare soil
.LITT		litter and duff	95.9	100	duff litter
.FIGR		gravel fine	0.9	13	fine gravel
.MEGR		gravel medium	0.4	8	medium gravel
.BAVE		live plant bases	2.1	88	live plant bases
.MOSSON		moss on soil	2.6	19	on soil moss
.LICHEN		lichen on soil	2.1	27	on soil lichen
.DEERPE		droppings deer	0.2	7	deer droppings
.WOOD00		wood < ¼ in diam.	56.3	92	< 1/4 in diam. wood
.WOOD01		wood 1/4-1 in diam.	20.1	91	1/4-1 in diam. wood
.WOOD13		wood 1-3 in diam.	3.4	39	1-3 in diam. wood
.WOOD37		wood 3-7 in diam.	0.9	6	3-7 in diam. wood
		Avg. Elevation, ft	7,644		
		Avg. Slope, %	10.8		
		Avg. Tree Basal Area, ft²/ac	93.1		
		Avg. Tree Basal Area – PIPO	52.9		
		Avg. Tree Basal Area – PSME	37.5		
		Avg. Tree Cover, %	81.0		
		Avg. Shrub Cover, %	17.8		
		Avg. Graminoid Cover, %	31.2		
		Avg. Forb Cover, %	5.0		
		Avg. Live Cover, %	134.9		
		Avg. No. Species	23.4		

Nighthawk, Noddle Heads, and Pine Creek Areas

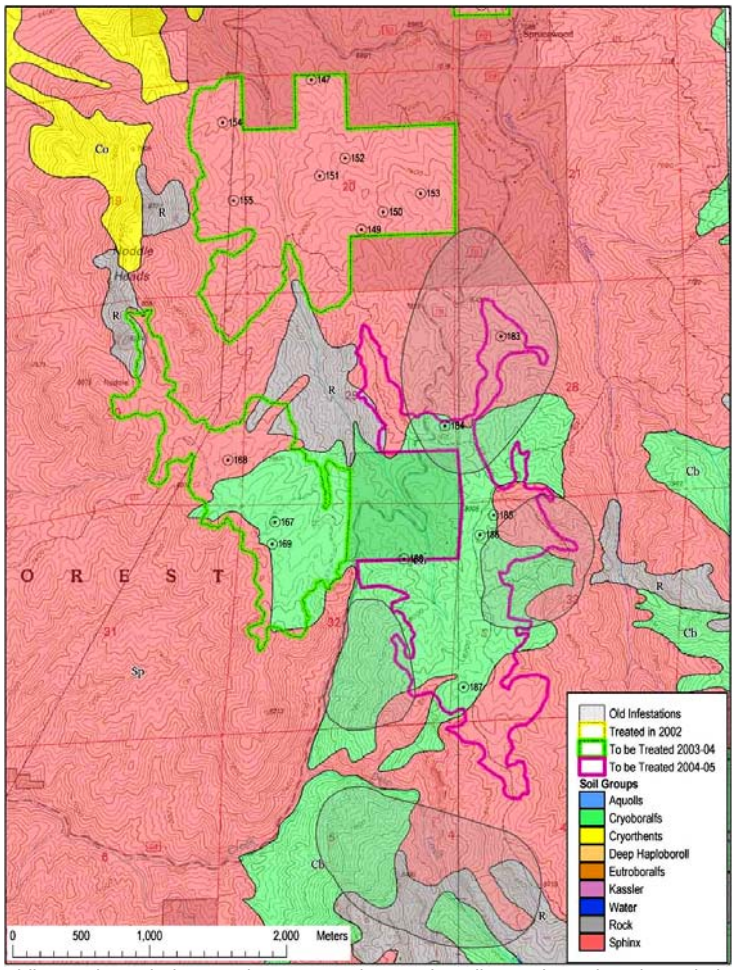

Figure 4-41. The Nighthawk, Noddle Heads, and Pine Creek Areas. Deckers and Devils Head Quadrangles. Whole map is Geology Map Unit Yp – Granites of Pikes Peak Batholith. Large outbreaks of Douglas-fir tussock moth in the early to mid-1990s are shown in gray stipple.

The Nighthawk and Noddle Heads Areas are scheduled for treatment in later 2003 and early 2004, and the Pine Creek Area in 2004-2005. All three are in the drainage of Pine Creek. So far, samples have only been placed in the Nighthawk Area (Figure 4-41).

Tree cover in the Nighthawk area is very great, with both ponderosa pine and Douglas-fir usually prominent. Often total tree cover approaches 100% (Table 4-10). Size-class distributions of both trees clearly show vigorously reproducing populations (Figures 4-42, 4-43). Crowns are often touching, and fuel ladders are everywhere: risk of crown fire is high in most stands (Figure 2-15).

Many of the Douglas-firs in the Nighthawk Area show signs of insect and disease infestations, and mortality is common among Douglas-firs. There are many hazard trees throughout the Nighthawk Area. Patches of dead trees one to two tree-lengths wide are common, apparently caused by Douglas-fir tussock moth mini-outbreaks in the past.

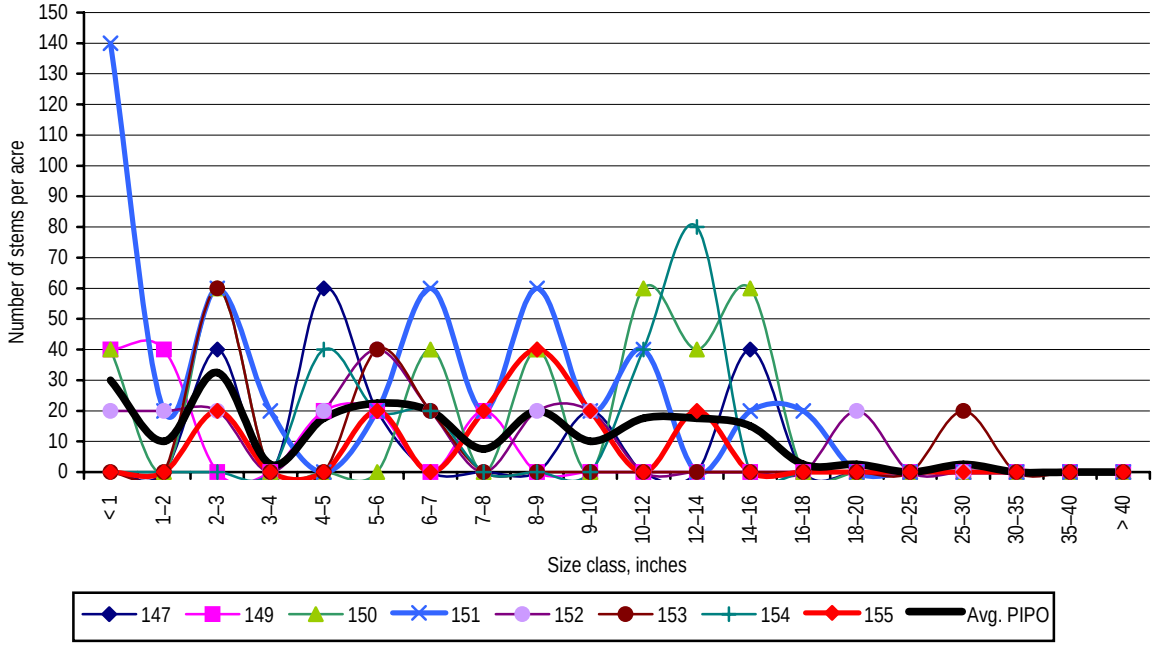

Figure 4-42. Size-class distribution of ponderosa pine in eight plots in the Nighthawk Area.

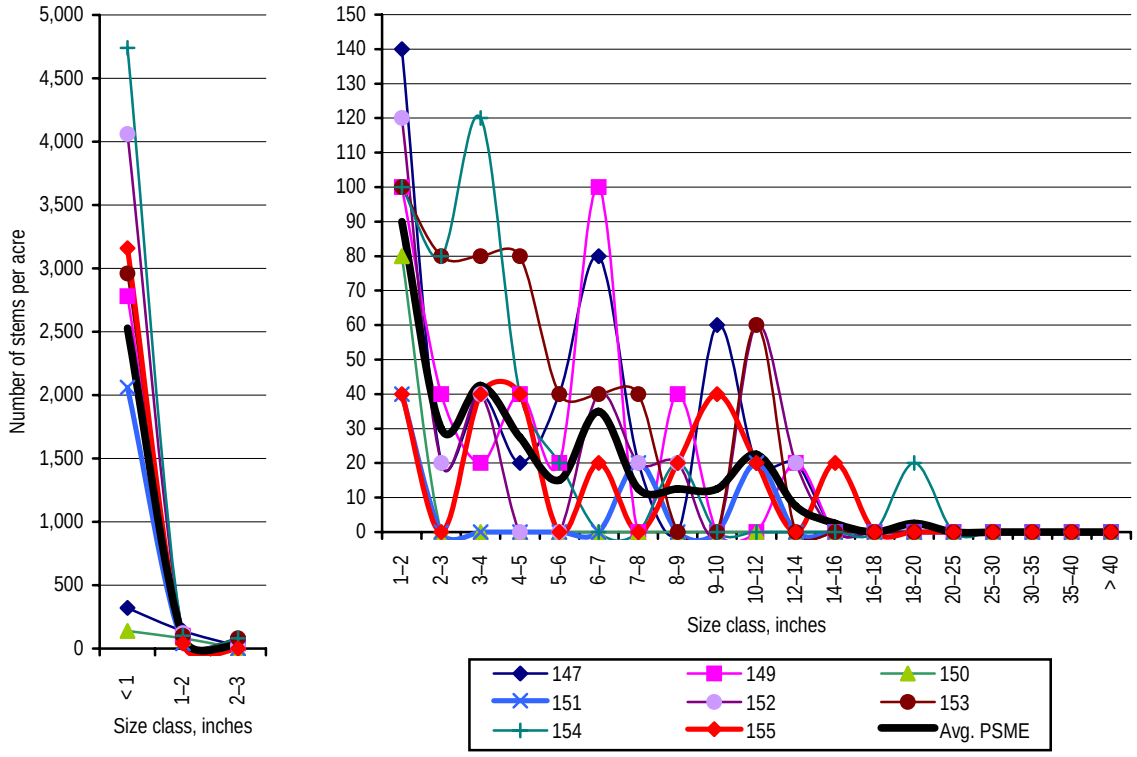

Figure 4-43. Size-class distribution of Douglas-fir in eight plots in the Nighthawk Area.
Both figures are part of the same graph: smaller size-classes at left, larger size-classes at right.

Kinnikinnick is still the most frequently encountered shrub, but common juniper is more prominent here (Table 4-10) than in the South Platte canyon. Shrub, graminoid, and forb cover are more here compared with Trumbull or Saloon Gulch Areas, apparently a reflection that Nighthawk is above the rainshadow from the east and so has more precipitation. The ground surface is usually nearly completely covered by litter and duff; soils are gravelly to very gravelly derived from the same Pikes Peak Granite as at Trumbull or Saloon Gulch, yet little of it shows on the surface, again a testimony to the greater precipitation here.

Table 4-10. Average cover and frequency in 8 transects in the Nighthawk Area, before treatment or wildfire. Data are shown for those species with average cover > 1% or average frequency ≥ 0.5%.

		Area Code	NI		
		Sample Timing	Pre-Treat		
		Number of Samples	8		
	M	Species	Cvr	Fre	Common Name
		TREES			
PIPO	L	Pinus ponderosa	41.6	96	ponderosa pine
POTR5	C	Populus tremuloides	1.0	–	quaking aspen - live canopy < 8'
PSME	L	Pseudotsuga menziesii	51.9	92	Douglas-fir
PSME	C	Pseudotsuga menziesii	17.1	–	Douglas-fir - live canopy < 8'
PSME	X	Pseudotsuga menziesii	14.4	–	Douglas-fir - dead canopy < 8'
		SHRUBS			
ARUV	L	Arctostaphylos uva-ursi	7.9	29	kinnikinnick
ARUV	D	Arctostaphylos uva-ursi	10.0	–	kinnikinnick - Dead
JUCO6	L	Juniperus communis	11.2	18	common juniper
JUCO6	D	Juniperus communis	1.6	–	common juniper - Dead
		GRAMINOIDS			
BRPO5	L	Bromopsis porteri	3.1	8	nodding brome
CARO5	L	Carex rossii	17.9	56	Ross sedge
KOMA	L	Koeleria macrantha	2.1	16	prairie junegrass
PONEI2	L	Poa nemoralis ssp. interior	1.1	3	interior bluegrass
		FORBS			
ACLA5	L	Achillea lanulosa	0.8	13	western yarrow
ANRO2	L	Antennaria rosea	1.0	8	rose pussytoes
APAN2	L	Apocynum androsaemifolium	0.3	6	spreading dogbane
ASLA5	L	Aster laevis	0.2	5	smooth aster
CARO2	L	Campanula rotundifolia	0.3	5	common harebell
CEFO2	L	Cerastium fontanum	0.4	6	mouse-ear
MELA3	L	Mertensia lanceolata	1.3	22	lanceleaf bluebells
SOSI3	L	Solidago simplex	0.9	10	Mt. Albert goldenrod
		GROUND COVER			
.LITT		litter and duff	97.9	100	duff litter
.BAVE		live plant bases	1.5	83	live plant bases
.MOSSON		moss on soil	3.1	18	on soil moss
.LICHEN		lichen on soil	1.2	26	on soil lichen
.WOOD00		wood < ¼ in diam.	90.1	100	< 1/4 in diam. wood
.WOOD01		wood 1/4-1 in diam.	11.2	96	1/4-1 in diam. wood
.WOOD13		wood 1-3 in diam.	2.1	34	1-3 in diam. wood
		Avg. Elevation, ft	7,260		
		Avg. Slope, %	20.6		
		Avg. Tree Basal Area, ft²/ac	149.0		
		Avg. Tree Cover, %	94.5		
		Avg. Shrub Cover, %	21.9		
		Avg. Graminoid Cover, %	26.7		
		Avg. Forb Cover, %	7.2		
		Avg. Live Cover, %	150.3		
		Avg. No. Species	27.3		

Bear Mountain, Russell Ridge, and Bennett Mountain Areas

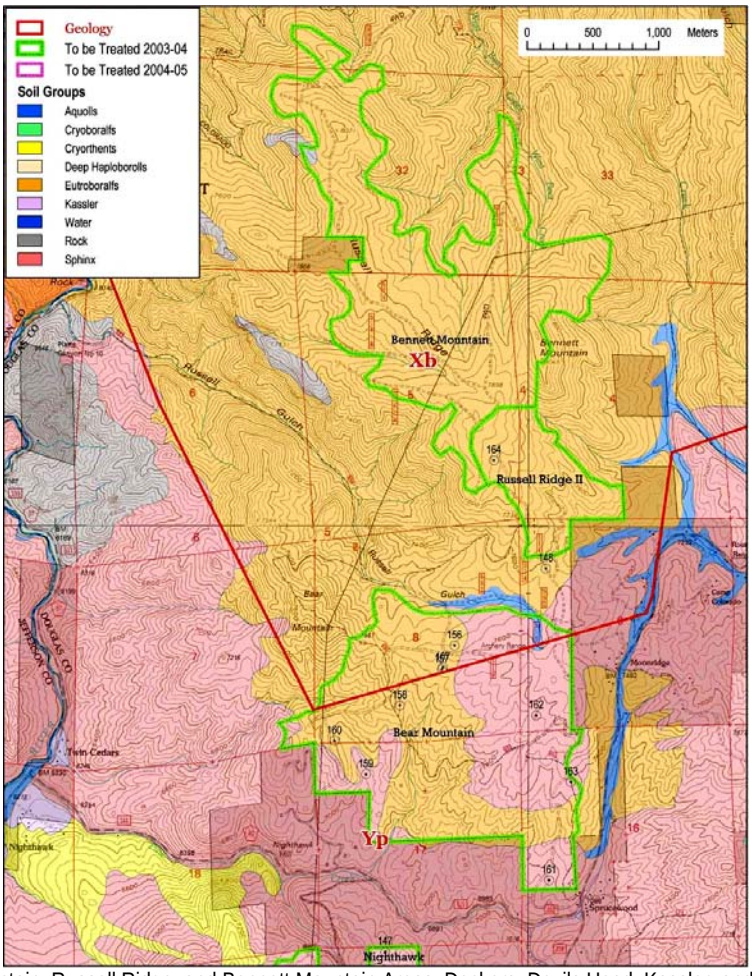

Figure 4-44. The Bear Mountain, Russell Ridge, and Bennett Mountain Areas. Deckers, Devils Head, Kassler, and South Platte Quadrangles. Geology from Tweto (1979) and Green (1992): Yp – Precambrian (Igneous) Granites of Pikes Peak Batholith; Xb – Precambrian (Metamorphic) Biotitic Gneiss, Schist, and Migmatite. Soils grouped as in Table 2-1.

The Russell Ridge Area was thinned in 2002 as the first whole area to be treated in this project, with a hot saw. The Gambel oak that is so common here was cut to the ground surface with a roller-chopper. Three other treatment areas were designed in the same vicinity – Bear Mountain, Russell Ridge II, and Bennett Mountain (Figure 4-44). Most of the samples were placed in the Bear Mountain Area, with one sample placed in the Russell Ridge Area after the thinning had occurred, and one late sample in the Russell Ridge II Area.

These areas are very different from any other part of the project area, because their soils are deeper and much more fine-textured. These soils are derived from Precambrian sedimentary rocks that have been lightly metamorphosed, in sharp contrast with the very gravelly to extremely gravelly Pikes Peak Granite soils common in the rest of the project area. The result is that the vegetation is much more productive in weight, number of layers, and number of species. The boundary between these two different geologies, that make for such different soils, is shown in two forms in Figure 4-44. The red line is taken from the 1:500,000 Geology Map of Colorado (Tweto 1979), converted to electronic form by Green (1995). A much more accurate boundary is shown from the soils map, designed for 1:24,000 scale: the contrast between pink and orange in Figure 4-44.

These areas get a great deal more public use than any of other in the project area, especially from ATV's and motorcycles.

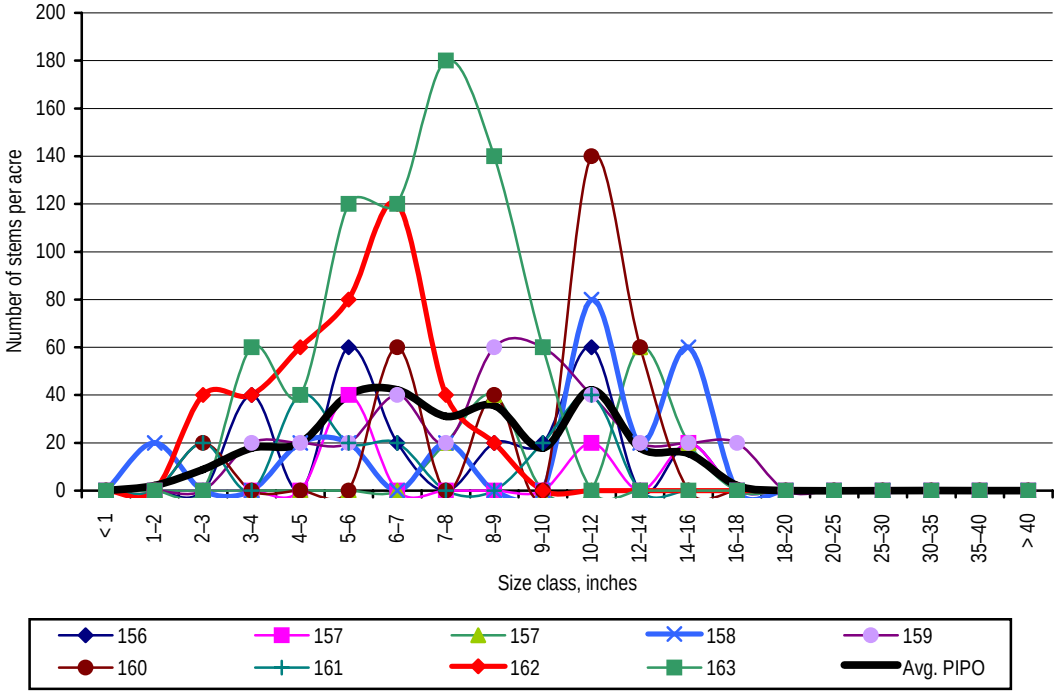

Figure 4-45. Size-class distribution of ponderosa pine in nine plots in the Bear Mountain Area.
Sample 157 had two transects and two tree plots. Plot 163 is a 1950's plantation.

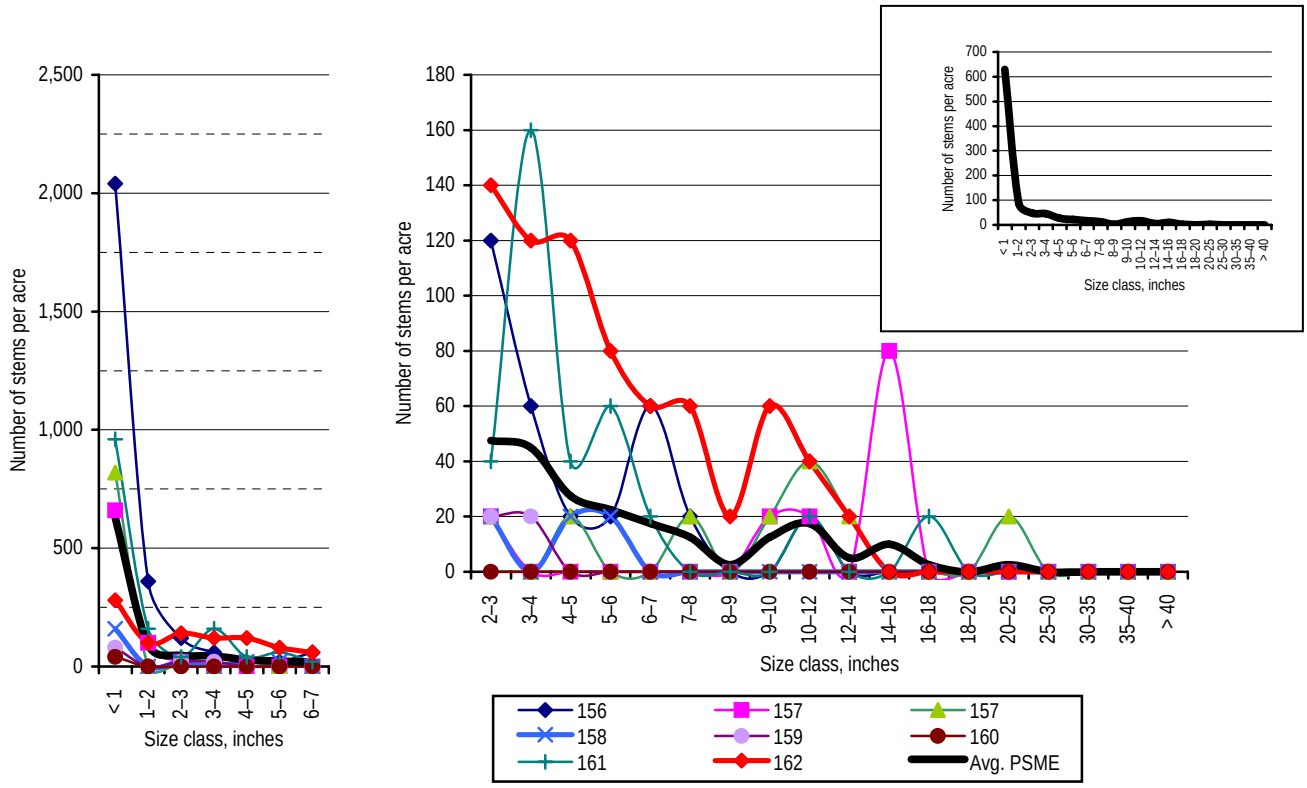

Figure 4-46. Size-class distribution of Douglas-fir in eight plots in the Bear Mountain Area.
Both figures are part of the same graph: smaller size-classes at left, larger size-classes at right; whole graph inset.
Sample 157 had two transects and two tree plots.

In the Bear Mountain Area, tree size-class distributions show vigorously reproducing populations of both ponderosa pine (Figure 4-45) and Douglas-fir (Figure 4-46). Total tree cover often approaches 100%, and tree basal area is usually great (Table 4-11). About one-third of the tree basal area is Douglas-fir.

Most Douglas-firs, and many ponderosa pine trees, are diseased in the Bear Mountain Area, especially at the lower (southern) half of the area (Figure 2-19). Douglas-fir beetle, Douglas-fir tussock moth, and apparently one other insect are evident and sometimes conspicuous. In some areas, notably the slopes above Sprucewood, hazard trees and dead tops are common. There are several apparent infestations of mountain pine beetle in the pines in the same vicinity.

Medium-height to tall shrub layers are usually well represented, with Gambel oak prominent four to eight feet (1–2½ m) tall. A mixture of other medium-height to short shrubs are usually apparent. A variety of graminoid and forb species are usually also present. The ground surface is usually completely covered by litter and duff, made up primarily of fine fuels (Table 4-11).

Table 4-11. Average cover and frequency in transects in the Bear Mountain (9 transects) and Russell Ridge 2 (1) Areas, before treatment or wildfire. Data are shown for those species with average cover > 1% or average frequency ≥ 0.5%.

		Area Code	BEM – RR2		
		Sample Timing	Pre-Treat		
		Number of Samples	10		
	M	Species	Cvr	Fre	Common Name
		TREES			
PIPO	L	Pinus ponderosa	52.7	100	ponderosa pine
PIPO	X	Pinus ponderosa	6.9	--	ponderosa pine - dead canopy < 8'
POTR5	L	Populus tremuloides	1.6	8	quaking aspen
POTR5	X	Populus tremuloides	1.1	--	quaking aspen - dead canopy < 8'
PSME	L	Pseudotsuga menziesii	41.4	75	Douglas-fir
PSME	C	Pseudotsuga menziesii	11.6	--	Douglas-fir - live canopy < 8'
PSME	X	Pseudotsuga menziesii	8.6	--	Douglas-fir - dead canopy < 8'
		SHRUBS			
ARUV	L	Arctostaphylos uva-ursi	5.8	22	kinnikinnick
ARUV	D	Arctostaphylos uva-ursi	5.8	--	kinnikinnick – Dead
JUCO6	L	Juniperus communis	3.0	4	common juniper
MARE11	L	Mahonia repens	3.8	17	Oregon-grape
QUGA	L	Quercus gambelii	19.7	34	scrub oak
QUGA	D	Quercus gambelii	13.2	--	scrub oak - Dead
ROWO	L	Rosa woodsii	0.9	9	Woods rose
SYAL	L	Symphoricarpos albus	1.0	5	common snowberry
		GRAMINOIDS			
ACNE9	L	Achnatherum nelsonii	1.1	5	Nelson's needlegrass
BRPO5	L	Bromopsis porteri	1.5	5	nodding brome
CARO5	L	Carex rossii	16.5	44	Ross sedge
CASI12	L	Carex siccata	5.3	13	silvertop sedge
POPR	L	Poa pratensis	1.1	4	Kentucky bluegrass
PSSP6	L	Pseudoroegneria spicata	1.5	8	bluebunch wheatgrass
		FORBS			
ACLA5	L	Achillea lanulosa	0.3	5	western yarrow
ASLA5	L	Aster laevis	0.6	7	smooth aster
CEFO2	L	Cerastium fontanum	0.9	9	mouse-ear
GASE6	L	Galium septentrionale	1.6	6	northern bedstraw
LIPO	L	Ligusticum porteri	3.4	9	osha
		GROUND COVER			
.LITT		litter and duff	98.1	100	duff litter
.BAVE		live plant bases	1.8	81	live plant bases
.MOSSON		moss on soil	0.8	9	on soil moss
.LICHEN		lichen on soil	0.8	16	on soil lichen
.WOOD00		wood < ¼ in diam.	92.5	100	< 1/4 in diam. wood
.WOOD01		wood 1/4-1 in diam.	8.2	90	1/4-1 in diam. wood
.WOOD13		wood 1-3 in diam.	2.9	33	1-3 in diam. wood
.WOOD37		wood 3-7 in diam.	1.0	7	3-7 in diam. wood
		Avg. Elevation, ft	7,423		
		Avg. Slope, %	18.8		
		Avg. Basal Area – PIPO, ft²/ac	113.9		
		Avg. Basal Area – PSME, ft²/ac	63.1		
		Avg. Tree Basal Area, ft²/ac	170.4		
		Avg. Tree Cover, %	95.6		
		Avg. Shrub Cover, %	35.5		
		Avg. Graminoid Cover, %	24.9		
		Avg. Forb Cover, %	12.0		
		Avg. Live Cover, %	168.1		
		Avg. No. Species	25.1		

In Table 4-12, I have compared the samples taken in the Russell Ridge I and Russell Ridge II Areas, to estimate effects of the treatment in Russell Ridge I; the two stands are probably not strictly comparable, but I don't know what the original stand looked like at 148 (see Figure 2-20).

Tree cover was significantly reduced, especially Douglas-fir (Table 4-12). Shrub, graminoid, and forb cover are difficult to compare because of the different species on the two sites.

Table 4-12. Cover and frequency, comparing one transect in the Russell Ridge 2 Area (No. 164) before thinning, with one transect in the Russell Ridge Area (No. 148), after thinning. See Figure 2-20. Data are shown for those species with cover > 1% in any column.

		Area Code	RR2		RR1		
		Sample Timing	Pre-Treat		After Thin		
		Number of Samples	1		1		
		Species	Cvr	Fre	Cvr	Fre	Common Name
		TREES					
L	PIPO	Pinus ponderosa	35.0	100	49.5	100	ponderosa pine
X	POTR5	Populus tremuloides	1.8	–	–	–	quaking aspen - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	54.3	100	4.8	90	Douglas-fir
C	PSME	Pseudotsuga menziesii	17.9	–	–	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	8.6	–	–	–	Douglas-fir - dead canopy < 8'
		SHRUBS					
L	ARUV	Arctostaphylos uva-ursi	0.2	–	21.0	60	kinnikinnick
L	JUCO6	Juniperus communis	0.0	–	14.4	30	common juniper
L	MARE11	Mahonia repens	23.2	90	0.0	–	Oregon-grape
L	PAVI11	Padus virginiana	8.4	20	–	–	common chokecherry
L	QUGA	Quercus gambelii	38.1	80	26.6	55	scrub oak
D	QUGA	Quercus gambelii	36.2	–	–	–	scrub oak – Dead
L	ROWO	Rosa woodsii	7.0	65	1.6	20	Woods rose
L	SYAL	Symphoricarpos albus	5.6	20	0.0	–	common snowberry
		GRAMINOIDS					
L	ACNE9	Achnatherum nelsonii	6.5	10	1.0	10	Nelson's needlegrass
L	BRPO5	Bromopsis porteri	14.6	45	0.0	–	nodding brome
L	CARO5	Carex rossii	1.5	10	1.0	10	Ross sedge
L	CASI12	Carex siccata	15.0	35	39.8	85	silvertop sedge
L	POPR	Poa pratensis	10.0	30	8.6	25	Kentucky bluegrass
		FORBS					
L	ASAL7	Astragalus alpinus	1.0	10	0.1	5	alpine milkvetch
L	ERPE3	Erigeron peregrinus	1.0	5	–	–	peregrine fleabane
L	GASE6	Galium septentrionale	15.6	60	0.9	25	northern bedstraw
L	GECA3	Geranium caespitosum	–	–	2.1	15	Fremont geranium
L	LIPO	Ligusticum porteri	33.6	85	–	–	osha
L	MAST4	Maianthemum stellatum	1.5	5	0.1	5	star Solomon-plume
L	THDI4	Thermopsis divaricarpa	2.5	10	0.0	–	golden banner
		GROUND COVER					
	.BARE	bare soil	0.0	–	2.3	25	bare soil
	.LITT	litter and duff	98.4	100	96.4	100	duff litter
	.BAVE	live plant bases	1.6	100	1.4	95	live plant bases
	.MOSSON	moss on soil	3.5	15	–	–	on soil moss
	.WOOD00	wood < ¼ in diam.	71.7	100	81.4	100	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	12.7	90	14.8	95	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	7.8	60	4.3	55	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	4.0	15	1.5	5	3-7 in diam. wood
		Elevation, ft	7,840		7,570		
		Slope, %	18		10		
		Tree Cover, %	89.3		54.3		
		Shrub Cover, %	82.6		63.6		
		Graminoid Cover, %	47.6		50.4		
		Forb Cover, %	56.5		4.5		
		Total Live Cover, %	275.9		172.8		
		No. Species	28		38		

Long Scraggy and Ouzel Areas

Long Scraggy and Ouzel Areas are two recently-designed treatment areas, both located in the lower canyon of the South Platte River, and both having gravelly Sphinx soils derived from Pikes Peak Granite. No samples have been placed in either area.

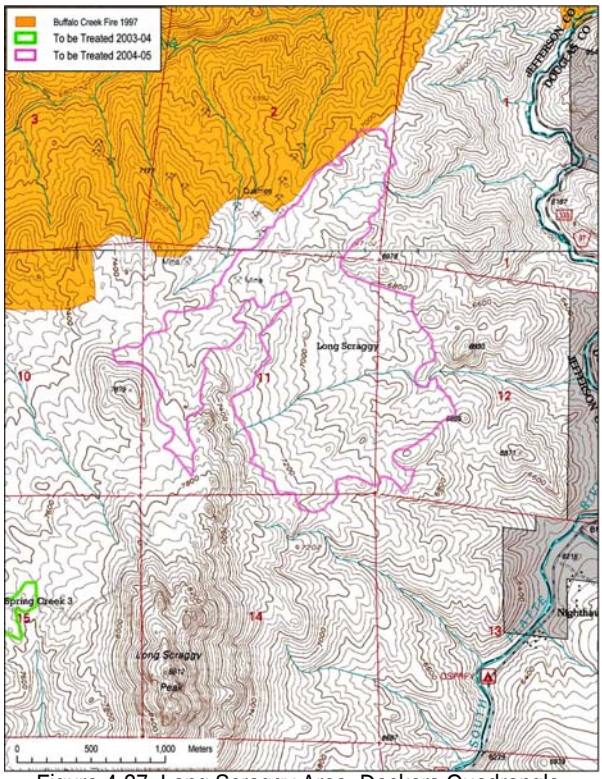

Figure 4-37. Long Scraggy Area, Deckers Quadrangle.
All in Geology Map Unit Yp – Granites of Pikes Peak Batholith.

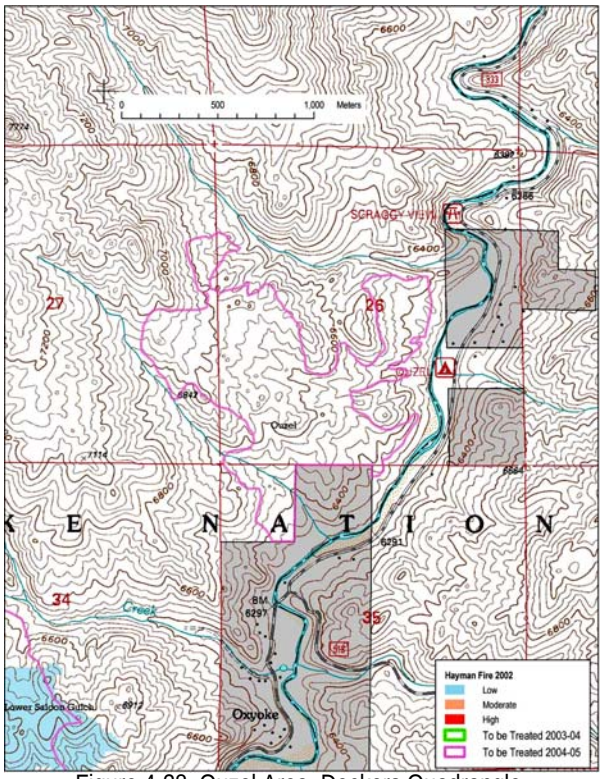

Figure 4-38. Ouzel Area, Deckers Quadrangle.
All in Geology Map Unit Yp – Granites of Pikes Peak Batholith.

5. Discussion, Summary, and Conclusions

Discussion

Thinning

The thinning treatments that have occurred in the Trumbull and Russell Ridge Areas have resulted in significant reductions in crown fire risk. Canopy cover of trees has been reduced to less than half, 60% to 28% (Figure 4-6, Table 5-3), and cover in the tallest tree layers has been reduced to about half (Table 5-1).

Table 5-1. Two tallest tree layers and shorter tree layers compared pre-treatment and after thinning.

Area	No. Transects	Layers	Layer Height	Layer Canopy Cover, % Pre-Treatment	Thinned	Percent of Pre-Treatment
Russell Ridge	2	T1-T2	> 15 m	104.5	49.4	47.3%
		T3-5	< 15 m	68.1	16.2	23.8%
Trumbull	28	T1-2	> 12 m	47.6	26.1	54.8%
		T3-7	< 12 m	44.1	16.8	38.1%

Basal area of trees has also been significantly reduced to about two-thirds by thinning, from 131.5 ft^2/ac to 87.3 ft^2/ac (Figure 4-7, Table 5-3). Cover of lower tree layers has been reduced to about one-third (Table 5-1).

Most trees less than 10 inches dbh have been removed, especially Douglas-firs. Cover of fuel ladders has been reduced markedly, especially ponderosa pine at Trumbull (Table 5-2).

Table 5-2. Fuel ladders before and after thinning.

Area	Species		NT[a]	Cover < 8 ft above surface Pre-Treat	Thinned
Russell Ridge	PIPO	Live	1	0.0%	0.0%
		Dead	1	0.0%	0.0%
	PSME	Live	1	17.9%	0.0%
		Dead	1	8.6%	0.0%
Trumbull	PIPO	Live	13	10.1%	1.7%
		Dead	12	4.8%	1.3%
	PSME	Live	4	4.7%	3.1%
		Dead	4	2.8%	3.1%

a. NT = Number of Transects.

Shrub cover has also increased in the Trumbull treatment area, increasing about twice (Figure 4-8, Tables 5-4, 5-7). Shrub cover decreased significantly at the Russell Ridge Area, because part of the treatment was to reduce oak cover.

Cover of graminoids (grasses and sedges) and forbs, and in the grass-forb layer increased somewhat at Trumbull (Figure 4-8, Tables 5-3 & 5-4), a good result when you consider that many of the post-treatment samples were taken less than a year after the treatment, and at the end of a drought period. I expect cover of graminoids and forbs to increase dramatically in future years, as it has done in earlier treatment areas on private lands (Figure 2-9). The layer is not shown at Russell Ridge in Table 5-3, because the sites are not comparable for grasses and forbs – the species are very different.

Table 5-3. Canopy cover in the grass-forb layer compared pre-treatment and after thinning.
Numbers at the Russell Ridge Area not shown because the sites are not comparable for this layer.

Area	No. Transects	Canopy cover in Grass-forb layer Pre-Treatment	Thinned
Trumbull	28	10.0%	10.7%

Table 5-4. Aerial cover and basal area in the Trumbull Area compared pre-treatment and after thinning.
In the last column, the calculated tree basal area is halved, to approximate Regional calculation methods.

	No. Trans-ects	Tree Cover	Shrub Cover	Gram. Cover	Forb Cover	Total Live Cover	No. Live Species	No. Layers	Tree Basal Area	Half of Previous Column
Untreated	42	58.1%	6.8%	9.2%	0.9%	75.0%	15.4	8.6	131.5 ft^2/ac	65 ft^2/ac
Thinned	29	29.1%	13.8%	9.3%	1.7%	53.9%	18.5	7.6	87.3 ft^2/ac	44 ft^2/ac

Table 5-5. Ground cover in the Trumbull Area compared pre-treatment and after thinning.

	No. Trans-ects	Cover, %							
		Bare	Litter & Duff	Rock	Fine Gravel	Medium Gravel	Coarse Gravel	Moss on Soil	Lichen on Soil
Untreated	42	4.5	74.4	19.4	12.5	6.2	0.3	1.6	2.7
Thinned	29	8.8	76.5	14.1	10.0	3.2	0.3	1.2	1.4

Table 5-6. Ground fuels cover in the Trumbull Area compared pre-treatment and after thinning.

No. Transects	Fuel Size →	Cover of fuels on ground surface, %					
		< ¼"	¼ - 1"	1 – 3"	3 – 7"	7 – 10"	> 10"
42	Untreated	61.7	5.4	1.7	0.5	0.2	0.0
29	Thinned	59.5	13.2	4.0	3.0	1.9	0.1

Changes in ground cover due to thinning at Trumbull were generally within acceptable limits. Bare soil increased somewhat, but did not approach erosion limits of about 12% on these slopes, especially since total coarse-fragment cover declined and litter and duff cover did not decline, but increased slightly. The declines in fine gravel and medium gravel are due to their being covered by wood fragments from the thinning operation (Table 5-5).

Moss and lichen cover both declined (Table 5-5). There are a number of reasons why this might have happened; perhaps they are still there but are obscured by wood fragments from thinning. More likely, they actually did decline due to drying of their micro-habitats from partial removal of tree canopy combined with advancing drought. The coverage of moss and lichen is not very large in any case in these dry climates. I believe these species will increase in future years in these sites.

Surface fuels stayed about the same in the < ¼ inch category (Table 5-6). Surface fuel increased in all categories > ¼ inch, expected due to the wood fragments from the thinning equipment.

Wildfire

Wildfire caused great damage to the ecosystems in upper Saloon Gulch burned severely by the Hayman Fire, and in the portion of the Trumbull Area overrun by the Schoonover Fire. In the severely burned areas of these fires, all trees were killed (Figures 4-12, 4-13, 4-16); in moderately-severely burned areas of the Hayman Fire, most trees were killed, especially those in smaller size-classes (Figures 4-10, 4-11, 4-14, 4-15).

Changes in ground cover due to wildfire will have profound consequences for decades to come. Bare soil plus gravel now covers more than three-quarters of the ground surface, making the soil much more mobile with water, as is evident by the increases in the delta of Saloon Gulch (Figure 2-12). Most of the litter has been burned, and what remains has had much of its organic matter reduced to inorganic compounds. In effect, what little organic matter these soils had before has been eliminated.

Table 5-7. Canopy cover of kinnikinnick compared before and after thinning and wildfire.
Numbers at the Russell Ridge Area not shown because the sites are not comparable for this layer.

Area	No. Transects	Treatment	Cover of ARUV, %
Trumbull	23	Pre-treatment	7.1
		Thinned	14.1
Saloon Gulch	5	Pre-treatment	11.6
		Wildfire	0.0
Trumbull	2	Pre-treatment	1.5
		Wildfire	0.3

Particularly significant is the decline of kinnikinnick (*Arctostaphylos uva-ursi*) with wildfire (Table 5-7, Figure 5-1). Kinnikinnick is apparently killed by hot ground fire, which occurred throughout areas burned severely or moderately, and in patches in areas burned lightly. This low, semi-evergreen shrub species is intimately associated with the litter and duff layer, and most of its woody growth is above the soil surface within the litter and duff. Apparently kinnikinnick functions to stabilize this layer, while contributing to the layer a little by contributing its own litter. Kinnikinnick is vital for maintaining tree nutrition in these soils, since the litter and duff layer represents a large proportion of the organic nutrition available to trees.

Figure 5-1. The beginning of Transect 110. August, 2000 (left), September, 2002 (right).

Monitoring

Refer to Table 1-3 for the desired outcomes from the Upper South Platte Project, the vegetation categories repeated below (in italics) with discussion of whether the project has met these outcomes so far.

Bare soil cover: No increase or increase of < 5%, by transect. Seventeen transects at Trumbull met this expected outcome, but ten did not (Table 5-8). This result is an artefact of sampling so soon after treatment, and at the end of an extended drought period. I expect bare soil will decrease markedly in the next few years,

Table 5-8. Comparing bare soil cover in 27 transects in the Trumbull Area, before and after thinning.

Sam	T	Cover, % Pre-treat	Thinned	Change	Outcome Met	Not
101	1	0.1	4.2	+ 4.1	✓	
101	2	1.2	15.1	+ 13.9		✓
102	1	0.0	0.0	+ 0.0	✓	
103	1	1.8	5.3	+ 3.5	✓	
103	2	3.7	7.4	+ 3.7	✓	
107	1	0.8	10.9	+ 10.1		✓
127	1	0.9	5.5	+ 4.6	✓	
127	2	7.5	18.6	+ 11.1		✓
127	3	2.3	9.3	+ 7.0		✓
127	4	1.1	3.9	+ 2.8	✓	
128	1	6.4	18.3	+ 11.9		✓
133	1	2.5	13.9	+ 11.4		✓
133	2	3.3	19.2	+ 15.9		✓

Sam	T	Cover, % Pre-treat	Thinned	Change	Outcome Met	Not
133	3	7.7	19.7	+ 12.0		✓
133	4	14.6	33.3	+ 18.7		✓
137	1	4.1	4.5	+ 0.4	✓	
137	2	1.6	5.6	+ 4.0	✓	
137	4	1.5	8.2	+ 6.7		✓
138	1	0.1	4.3	+ 4.2	✓	
143	1	0.1	1.3	+ 1.2	✓	
144	1	0.0	2.0	+ 2.0	✓	
145	1	1.0	0.6	– 0.4	✓	
146	1	1.6	2.4	+ 0.8	✓	
205	1	1.1	4.7	+ 3.6	✓	
205	2	3.7	7.0	+ 3.3	✓	
205	3	9.8	5.9	– 3.9	✓	
205	4	5.9	4.9	– 1.0	✓	
		3.1	8.7	+ 5.6	17	10

Fuel ladders: Reduce cover in tree layers shorter than 8 ft by half or to 5% cover. This expected outcome was clearly met overall, and in almost all of the individual transects as well (Tables 5-9, 5-10). The data for Douglas fir at Sample 205, Transect 4, must be a sampling error; Douglas-fir cover <8 ft clearly could not double in just two years.

Table 5-9. Comparing ponderosa pine cover < 8 ft above surface in 13 transects in the Trumbull Area, before and after thinning. Numbers at the Russell Ridge Area not shown because the sites are not comparable for this layer.

Sam	T	Live Pre-Treat	Live Thinned	Dead Pre-Treat	Dead Thinned	Total Pre-Treat	Thinned	Difference	Met	Not
133	3	8.7%	4.3%	4.5%	10.3%	13.2%	14.6%	1.4%		✓
133	4	11.2%	5.7%	4.9%	0.0%	16.1%	5.7%	-10.4%	✓	
137	1	8.2%	0.0%	2.5%	0.0%	10.7%	0.0%	-10.7%	✓	
137	2	4.9%	0.0%	2.6%	0.0%	7.5%	0.0%	-7.5%	✓	
138	1	6.8%	0.0%	3.8%	0.0%	10.6%	0.0%	-10.6%	✓	
143	1	14.5%	3.3%	5.9%	0.0%	20.4%	3.3%	-17.1%	✓	
144	1	11.7%	0.0%	0.0%	0.0%	11.7%	0.0%	-11.7%	✓	
145	1	15.1%	0.0%	8.7%	0.0%	23.8%	0.0%	-23.8%	✓	
146	1	11.1%	0.0%	9.9%	0.0%	21.0%	0.0%	-21.0%	✓	
205	1	13.1%	0.0%	7.3%	5.2%	20.4%	5.2%	-15.2%	✓	
205	2	6.9%	2.5%	1.3%	0.0%	8.2%	2.5%	-5.7%	✓	
205	3	10.3%	1.1%	1.7%	0.0%	12.0%	1.1%	-10.9%	✓	
205	4	8.2%	5.6%	4.3%	0.0%	12.5%	5.6%	-6.9%	✓	
		10.1%	1.7%	4.8%	1.3%	14.9%	3.0%	-11.9%	12	1

Table 5-10. Comparing Douglas-fir cover < 8 ft above surface in 4 transects in the Trumbull Area, before and after thinning. Numbers at the Russell Ridge Area not shown because the sites are not comparable for this layer.

Sam	T	Live Pre-Treat	Live Thinned	Dead Pre-Treat	Dead Thinned	Total Pre-Treat	Thinned	Difference	Met	Not
137	2	0.6%	0.0%	0.0%	0.0%	0.6%	0.0%	-0.6%	✓	
205	1	0.0%	0.0%	2.0%	0.0%	2.0%	0.0%	-2.0%	✓	
205	2	10.4%	2.7%	3.4%	0.0%	13.8%	2.7%	-11.1%	✓	
205	3	2.4%	0.3%	1.3%	0.0%	3.7%	0.3%	-3.4%	✓	
205	4	5.6%	9.3%	4.6%	12.4%	10.2%	21.7%	11.5%		✓
		4.7%	3.1%	2.8%	3.1%	7.5%	6.2%	-1.3%	4	1

Cover by species: No increase in noxious weed cover or increase of < 5%, by transect. No noxious weeds were found in any of the transects before or after thinning. I have observed noxious weeds along a few roadsides in other treatment areas (besides Trumbull and Russell Ridge), and on private lands below the Forest, however.

Cover by species: Increase total herbaceous cover by 10% cover, by transect. This expected outcome has clearly not yet been met (Table 5-11), but it likely will be met in the next few years. This is an artefact of sampling so soon after treatment, and sampling at the end of an extended drought period.

Table 5-11. Comparing herbaceous canopy cover in 27 transects in the Trumbull Area, before and after thinning. Numbers at the Russell Ridge Area not shown because the sites are not comparable for this layer.

Sam	Tra	Pre-Treat Gram. Cover	Pre-Treat Forb Cover	Thinned Gram. Cover	Thinned Forb Cover	Pre-Treat Gram+Forb	Thinned Gram+Forb	Difference	Met	Not
101	1	5.9%	2.3%	17.4%	5.6%	8.3%	23.0%	+ 14.7%	✓	
101	2	11.3%	1.0%	12.6%	2.2%	12.3%	14.8%	+ 2.5%		✓
102	1	14.5%	0.0%	17.3%	1.5%	14.5%	18.8%	+ 4.3%		✓
103	1	20.7%	1.5%	17.7%	0.1%	22.2%	17.8%	– 4.4%		✓
103	2	18.1%	0.1%	10.6%	0.5%	18.2%	11.1%	– 7.1%		✓
107	1	6.6%	6.2%	3.9%	0.7%	12.8%	4.6%	– 8.2%		✓
127	1	15.4%	1.6%	16.5%	3.6%	17.0%	20.1%	+ 3.1%		✓
127	2	3.2%	3.0%	3.3%	2.7%	6.2%	6.1%	– 0.1%		✓
127	3	0.8%	1.3%	0.4%	4.4%	2.0%	4.8%	+ 2.8%		✓
127	4	2.5%	0.6%	4.8%	1.9%	3.1%	6.7%	+ 3.6%		✓
128	1	22.8%	1.1%	13.9%	3.6%	23.8%	17.5%	– 6.3%		✓
133	1	30.1%	0.6%	24.6%	1.1%	30.7%	25.7%	– 5.0%		✓
133	2	9.8%	0.4%	6.9%	3.7%	10.2%	10.6%	+ 0.4%		✓
133	3	23.4%	1.3%	8.9%	1.2%	24.7%	10.1%	– 14.6%		✓
133	4	11.6%	2.5%	4.8%	0.9%	14.1%	5.7%	– 8.4%		✓
137	1	12.4%	0.9%	4.9%	0.1%	13.3%	5.0%	– 8.3%		✓
137	2	3.8%	0.7%	0.5%	0.1%	4.4%	0.6%	– 3.8%		✓
137	4	7.4%	0.1%	11.0%	0.8%	7.6%	11.8%	+ 4.2%		✓
138	1	7.2%	2.5%	1.5%	0.2%	9.7%	1.7%	– 8.0%		✓
143	1	2.6%	0.0%	3.9%	0.9%	2.6%	4.8%	+ 2.2%		✓
144	1	10.5%	0.0%	1.0%	0.0%	10.5%	1.0%	– 9.5%		✓
145	1	6.0%	0.0%	10.6%	0.7%	6.0%	11.3%	+ 5.3%		✓
146	1	5.2%	0.0%	6.4%	3.2%	5.2%	9.6%	+ 4.4%		✓
205	1	1.8%	0.3%	7.9%	2.6%	2.1%	10.5%	+ 8.4%		✓
205	2	9.3%	0.2%	23.4%	1.9%	9.5%	25.3%	+ 15.8%	✓	
205	3	7.2%	0.2%	10.0%	2.1%	7.3%	12.1%	+ 4.8%		✓
205	4	5.6%	0.0%	14.8%	0.9%	5.6%	15.6%	+ 10.0%	✓	
		10.2%	1.1%	9.6%	1.7%	11.3%	11.3%	0.0%	3	24

Cover by species: Increase Total Live Cover by 10% cover, by transect. This expected outcome has clearly not yet been met (Table 5-12), but it likely will be met in the next few years. This is an artefact of sampling so soon after treatment, and sampling at the end of an extended drought period.

Table 5-12. Comparing total live cover in 27 transects in the Trumbull Area, before and after thinning. Numbers at the Russell Ridge Area not shown because the sites are not comparable for this layer.

Sam	T	Total Live Cover Pre-Treat	Thinned	Difference	Outcome Met	Not
101	1	57.9%	84.8%	+ 26.9%	✓	
101	2	72.3%	48.8%	– 23.5%		✓
102	1	83.0%	68.8%	– 14.2%		✓
103	1	86.8%	40.9%	– 45.9%		✓
103	2	67.7%	55.4%	– 12.3%		✓
107	1	89.5%	52.9%	– 36.6%		✓
127	1	70.6%	60.1%	– 10.5%		✓
127	2	51.8%	49.3%	– 2.5%		✓
127	3	66.9%	46.7%	– 20.2%		✓
127	4	69.9%	45.6%	– 24.3%		✓
128	1	78.7%	65.0%	– 13.7%		✓
133	1	72.7%	55.0%	– 17.7%		✓
133	2	53.5%	34.2%	– 19.3%		✓

Sam	T	Total Live Cover Pre-Treat	Thinned	Difference	Outcome Met	Not
133	3	76.8%	37.0%	– 39.8%		✓
133	4	65.0%	26.2%	– 38.8%		✓
137	1	80.2%	44.2%	– 36.0%		✓
137	2	83.2%	49.0%	– 34.2%		✓
137	4	75.2%	55.1%	– 20.1%		✓
138	1	91.7%	59.8%	– 31.9%		✓
143	1	94.8%	40.9%	– 53.9%		✓
144	1	95.5%	16.3%	– 79.2%		✓
145	1	84.7%	15.6%	– 69.1%		✓
146	1	95.0%	30.7%	– 64.3%		✓
205	1	78.1%	63.9%	– 14.2%		✓
205	2	77.4%	117.5%	+ 40.1%	✓	
205	3	94.7%	115.3%	+ 20.6%	✓	
205	4	73.0%	100.4%	+ 27.4%	✓	
		77.3%	54.8%	– 22.5%	4	23

Cover of coarse fragments: No increase or increase of < 5%, by transect. In general, this expected outcome has been met in all but three transects. These three were all on steeper south-facing slopes, where the thinning equipment would be expected to have some impact. I believe these three will meet the expected outcome in a few years of plant growth.

Table 5-13. Comparing cover of coarse fragments in 27 transects in the Trumbull Area, before and after thinning. Numbers at the Russell Ridge Area not shown because the sites are not comparable for this layer.

		Litter & Duff		Fine Gravel		Medium Gravel		Coarse Gravel		Total Coarse Fragments				
Sam	T	Pre-Treat	Thinned	Pre-Treat	Thinned	Pre-Treat	Thinned	Pre-Treat	Thinned	Pre-Treat	Thinned	Difference	Met	Not
101	1	94.4	91.4	3.9	2.6	0.3	1.0			4.2	3.6	– 0.6	✓	
101	2	88.7	79.8	5.7	6.5	1.0	1.5			6.7	8.1	+ 1.4	✓	
102	1	96.1	98.9							0.0	0.0	+ 0.0	✓	
103	1	92.7	91.6	2.3	2.2	0.3	0.1			2.6	2.3	– 0.3	✓	
103	2	61.8	67.9	15.4	17.9	12.9	5.9	1.7		29.9	23.8	– 6.1	✓	
107	1	92.3	88.0	2.4	0.6	4.3	0.3			6.7	0.9	– 5.8	✓	
127	1	80.5	78.7	17.6	10.5	0.1	3.4	0.0		17.6	13.9	– 3.7	✓	
127	2	40.3	47.5	39.4	22.2	12.0	12.3			51.3	34.4	– 16.9	✓	
127	3	66.0	69.7	17.2	14.8	11.3	4.4	0.5	0.1	29.5	20.3	– 9.2	✓	
127	4	78.0	85.7	6.5	7.8	13.3	0.8	0.0	0.1	19.8	8.7	– 11.1	✓	
128	1	61.8	47.7	15.4	22.4	14.0	9.7	0.3	0.2	29.8	32.3	+ 2.5	✓	
133	1	59.9	53.5	16.3	13.8	7.1	3.7	1.6	2.7	37.6	31.8	– 5.8	✓	
133	2	65.4	39.4	23.8	28.1	6.6	12.5		0.5	30.4	41.1	+ 10.7		✓
133	3	57.7	48.1	24.0	27.4	8.9	4.0	0.2	0.1	33.0	31.6	– 1.4	✓	
133	4	63.6	38.0	16.7	21.8	2.5	5.8	0.1	0.2	19.3	28.3	+ 9.0		✓
137	1	74.1	75.9	9.7	13.9	10.6	4.5	0.0	0.5	20.3	18.8	– 1.5	✓	
137	2	90.5	82.0	4.0	10.0	2.6	2.0	0.0		6.7	12.0	+ 5.3		✓
137	4	85.8	77.9	7.4	9.6	2.2	3.5	0.2	0.3	9.8	13.3	+ 3.5	✓	
138	1	96.8	94.3	0.3	0.2	0.5				0.8	0.2	– 0.6	✓	
143	1	97.9	96.3	0.6	1.3	0.2	0.8			0.8	2.1	+ 1.3	✓	
144	1	99.0	97.5		0.4		0.0			0.0	0.4	+ 0.4	✓	
145	1	90.4	97.7	7.1	0.2	1.1	1.3			8.1	1.5	– 6.6	✓	
146	1	93.2	95.4	2.5	1.4	0.1	0.0	0.1		2.9	1.4	– 1.5	✓	
205	1	86.3	86.7	9.7	3.8	0.7	2.3	0.6	0.7	11.0	7.3	– 3.7	✓	
205	2	82.2	83.6	12.2	5.7	0.5	1.6		1.0	12.7	8.2	– 4.5	✓	
205	3	72.1	80.0	13.1	10.0	1.5	2.2			14.6	12.2	– 2.4	✓	
205	4	67.8	81.5	19.7	9.7	2.9	1.5	0.1	0.3	23.7	12.5	– 11.2	✓	
		79.1	76.8	7.0	9.4	2.8	3.0	0.1	0.2	15.9	13.7	– 2.2	24	3

Crown cover: Reduce to 25% in forested portions of treated areas. At Trumbull, cover in the two tallest tree layers was reduced to 26.1%, very close to the expected outcome (Table 5-1). The numbers from Russell Ridge should not be considered, because there was only one sample in each treatment for comparison, and the two sites used may not be comparable.

Dead and down fuel loading: Reduce post-treatment fuel loads to < 12 Tons/ac. I did not measure this.

Number of openings: Openings comprising 20–25% of treated areas. I did not measure this.

Size class distribution of trees: Reduce number of Douglas-fir trees in size classes < 8 in dbh by half or to 10 trees/ac. This expected outcome was clearly met in all stands (Table 5-15), as well as for ponderosa pine (Table 5-14).

Table 5-14. Comparing number of ponderosa pine stems < 8 in dbh in 9 transects in the Trumbull Area, before and after thinning.

Se	Area	Species	No. of Stems < 8 in dbh Pre-Treat	Thinned	Difference	Met	Not
101	TR	PIPO	30	30	0	✓	
102	TR	PIPO	390	0	-390	✓	
103	TR	PIPO	100	20	-80	✓	
107	TR	PIPO	120	20	-100	✓	
138	TR	PIPO	420	0	-420	✓	
143	TR	PIPO	1,000	0	-1,000	✓	
144	TR	PIPO	700	60	-640	✓	
145	TR	PIPO	1,380	40	-1,340	✓	
146	TR	PIPO	780	0	-780	✓	
			547	19	-528	9	0

Table 5-15. Comparing number of Douglas-fir stems < 8 in dbh in 9 transects in the Trumbull Area, before and after thinning.

Se	Area	Species	No. of Stems < 8 in dbh Pre-Treat	Thinned	Difference	Met	Not
101	TR	PSME	10	10	0	✓	
107	TR	PSME	20	0	-20	✓	
143	TR	PSME	40	20	-20	✓	
146	TR	PSME	20	0	-20	✓	
			23	8	-15	4	0

Size of openings: 80-90% of openings < 5 ac in size. I did not measure this.

Size of openings: No created or enhanced openings > 40 ac in size. I did not measure this.

Tree density: Reduce basal area of trees to < 60 ft²/ac averaged across forested portions of treated areas. Average tree basal area was reduced to approximately 44 ft²/ac, clearly meeting the expected outcome (Table 5-4).

Summary

Thus far in the four years of this project, there have been 91 transects placed for monitoring vegetation, of which 71 have tree plots associated with them (Tables 5-16, 5-17).

Table 5-16. Transects and tree plots read by area.

Area	Transects Placed and Initially Read	Transects with Tree Plots	Transects Reread after Thinning	Transects Reread after Wildfire
Trumbull & Trumbull West	42	24	29	3
Saloon Gulch & Gunbarrel	15	14		9
Spring Creek	13	13		
Bear Mountain	9	9		
Nighthawk	8	8		
Jenny Gulch	2	2		
Russell Ridge	2	1	1	
Totals	91	71	30	12

Table 5-17. Transects and tree plots read by calendar year.

Calendar Year	New Transects Placed and Read	Transects Reread	Total Transects	Tree Plots Read
2000	24		24	23
2001	35		35	18
2002	13	19	32	16
2003	19	23	42	24
Totals	91	42	133	81

The thinning treatments that have occurred in the Trumbull and Russell Ridge Areas have resulted in significant reductions in crown fire risk. Canopy cover of trees has been reduced, and cover in the tallest tree layers has been reduced to about half. Basal area of trees has also been significantly reduced to about two-thirds, from about 65 ft²/ac to about 44 ft²/ac. Cover of lower tree layers has been reduced to about one-third. Most trees less than 10 inches dbh have been removed, especially Douglas-firs. Cover of fuel ladders has been reduced markedly, especially ponderosa pine.

Shrub cover has also increased in the Trumbull treatment area, increasing about twice. Shrub cover decreased significantly at the Russell Ridge Area, because part of the treatment was to reduce oak cover.

Cover of graminoids (grasses and sedges) and forbs, and in the grass-forb layer increased somewhat at Trumbull, a good result when you consider that many of the post-treatment samples were taken less than a year after the treatment, and at the end of a drought period. I expect cover of graminoids and forbs to increase dramatically in future years.

Changes in ground cover due to thinning were generally within acceptable limits. However, moss and lichen cover both declined on fairly small numbers. Surface fuels stayed about the same in the < ¼ inch category. Surface fuel increased in all categories > ¼ inch.

Wildfire caused great damage to the ecosystems in upper Saloon Gulch burned severely by the Hayman Fire, and in the portion of the Trumbull Area overrun by the Schoonover Fire. Most to all trees were killed in these areas, and bare soil plus gravel now covers more than three-quarters of the ground surface. Most of the litter has been burned in these areas.

Desired outcomes from thinning treatment were met for fuel ladders, noxious weeds, crown cover, size class distribution, and tree density. Desired outcomes for bare soil, herbaceous cover, total live cover, and coarse fragments will likely be met in the next few years as these sites recover. Desired outcomes for fuel loading and openings were not measured by me.

Since all the desired outcomes measured by me have been met or will be in the next few years, the thinning treatments seem to have been a success, pending re-measurement of the quantities that do not yet meet desired outcomes in a few years.

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Appendix A. Plant species observed and mentioned

Code[a]	Name[b]	GF[c]	Family	Common Name(s)[d]
	TREES	T		
JUSC2	*Juniperus scopulorum*	T	Cupressaceae	Rocky Mountain juniper
PIPU	*Picea pungens*	T	Pinaceae	blue spruce, Colorado blue spruce
PIPO	*Pinus ponderosa*	T	Pinaceae	ponderosa pine, western yellow pine
POAN3	*Populus angustifolia*	T	Salicaceae	narrowleaf cottonwood
POTR5	*Populus tremuloides*	T	Salicaceae	quaking aspen
PSME	*Pseudotsuga menziesii*	T	Pinaceae	Douglas-fir
	SHRUBS	S		
ACGL	*Acer glabrum*	S	Aceraceae	Rocky Mountain maple
AMAL2	*Amelanchier alnifolia*	S	Rosaceae	Saskatoon serviceberry
ARUV	*Arctostaphylos uva-ursi*	S	Ericaceae	kinnikinnick, bearberry
CEFE	*Ceanothus fendleri*	S	Rhamnaceae	buckbrush, Fendler ceanothus
CEMO2	*Cercocarpus montanus*	S	Rosaceae	true mountain-mahogany, alderleaf mountain-mahogany
CHNA2	*Chrysothamnus nauseosus*	S	Asteraceae	rubber rabbitbrush, golden rabbitbrush
COVI9	*Coryphantha vivipara*	S	Cactaceae	pincushion cactus, coryphantha, spinystar
HODI	*Holodiscus discolor*	S	Rosaceae	ocean-spray, bush rock-spirea
JAAM	*Jamesia americana*	S	Hydrangeaceae	waxflower, cliff jamesia, cliffbush
JUCO6	*Juniperus communis*	S	Cupressaceae	common juniper
LEPU	*Leptodactylon pungens*	S	Polemoniaceae	granite gilia, prickly phlox, granite prickly-gilia
MARE11	*Mahonia repens*	S	Berberidaceae	Oregon-grape, creeping mahonia
OPPO	*Opuntia polyacantha*	S	Cactaceae	plains prickly-pear, starvation cholla
PAVI11	*Padus virginiana*	S	Rosaceae	common chokecherry
PAMY	*Paxistima myrsinites*	S	Celastraceae	mountain-lover, myrtle pachistima, boxleaf myrtle
PESI	*Pediocactus simpsonii*	S	Cactaceae	Simpson hedgehog cactus
PHMO4	*Physocarpus monogynus*	S	Rosaceae	mountain ninebark
QUGA	*Quercus gambelii*	S	Fagaceae	scrub oak, Gambel oak
RHART	*Rhus aromatica* ssp. *trilobata*	S	Anacardiaceae	skunkbrush, skunkbrush sumac
RICE	*Ribes cereum*	S	Grossulariaceae	wax currant
RIIN2	*Ribes inerme*	S	Grossulariaceae	whitestem currant, whitestem gooseberry
RILE	*Ribes leptanthum*	S	Grossulariaceae	trumpet gooseberry
ROWO	*Rosa woodsii*	S	Rosaceae	Woods rose, pearhip rose
RUDE	*Rubus deliciosus*	S	Rosaceae	delicious raspberry
RUID	*Rubus idaeus*	S	Rosaceae	American red raspberry
SYAL	*Symphoricarpos albus*	S	Caprifoliaceae	common snowberry
SYRO	*Symphoricarpos rotundifolius*	S	Caprifoliaceae	mountain snowberry, whortle-leaf snowberry, roundleaf snowberry
YUGL	*Yucca glauca*	S	Agavaceae	small soapweed, yucca
	GRAMINOIDS	G		
ACHY	*Achnatherum hymenoides*	G	Poaceae	Indian ricegrass
ACNE9	*Achnatherum nelsonii*	G	Poaceae	Nelson's needlegrass
AGCR	*Agropyron cristatum*	G	Poaceae	crested wheatgrass
AGGI2	*Agrostis gigantea*	G	Poaceae	redtop
ANTE6	*Anisantha tectorum*	G	Poaceae	cheatgrass, cheatgrass brome
ANOD	*Anthoxanthum odoratum*	G	Poaceae	sweetgrass
BOCU	*Bouteloua curtipendula*	G	Poaceae	side-oats grama
BRCA10	*Bromopsis canadensis*	G	Poaceae	fringed brome, Canadian brome
BRIN7	*Bromopsis inermis*	G	Poaceae	smooth brome
BRPO5	*Bromopsis porteri*	G	Poaceae	nodding brome
BRJA	*Bromus japonicus*	G	Poaceae	Japanese brome
CAMI7	*Carex microptera*	G	Cyperaceae	smallwing sedge
CAPEH	*Carex pensylvanica* ssp. *heliophila*	G	Cyperaceae	sun sedge
CARO5	*Carex rossii*	G	Cyperaceae	Ross sedge
CASI12	*Carex siccata*	G	Cyperaceae	silvertop sedge, dryspike sedge
CAXE	*Carex xerantica*	G	Cyperaceae	dryland sedge, whitescale sedge
CHGR15	*Chondrosum gracile*	G	Poaceae	blue grama
CRBR12	*Critesion brachyantherum*	G	Poaceae	little barley, meadow barley
CRJU2	*Critesion jubatum*	G	Poaceae	foxtail barley
DASP2	*Danthonia spicata*	G	Poaceae	poverty oatgrass
ELCA4	*Elymus canadensis*	G	Poaceae	Canada wildrye
ELEL5	*Elymus elymoides*	G	Poaceae	bottlebrush squirreltail
ELGL	*Elymus glaucus*	G	Poaceae	blue wildrye
ELTR7	*Elymus trachycaulus*	G	Poaceae	slender wheatgrass
ELRE3	*Elytrigia repens*	G	Poaceae	creeping quackgrass
HECO26	*Hesperostipa comata*	G	Poaceae	needle-and-thread
KOMA	*Koeleria macrantha*	G	Poaceae	prairie junegrass
LEKI2	*Leucopoa kingii*	G	Poaceae	spike-fescue
MUFI	*Muhlenbergia filiculmis*	G	Poaceae	slimstem muhly
MUMO	*Muhlenbergia montana*	G	Poaceae	mountain muhly
NAVI4	*Nassella viridula*	G	Poaceae	green needlegrass
OREX	*Oryzopsis exigua*	G	Poaceae	little ricegrass
PIMI7	*Piptatherum micranthum*	G	Poaceae	littleseed ricegrass
POFE	*Poa fendleriana*	G	Poaceae	muttongrass, mutton bluegrass
PONEI2	*Poa nemoralis* ssp. *interior*	G	Poaceae	interior bluegrass, woods bluegrass, inland bluegrass
POPR	*Poa pratensis*	G	Poaceae	Kentucky bluegrass
PSSP6	*Pseudoroegneria spicata*	G	Poaceae	bluebunch wheatgrass, bearded bluebunch wheatgrass

Code[a]	Name[b]	GF[c]	Family	Common Name(s)[d]
SCSC	*Schizachyrium scoparium*	G	Poaceae	little bluestem
VUOC	*Vulpia octoflora*	G	Poaceae	six-weeks fescue, slender fescue
	FORBS	F		
ACLA5	*Achillea lanulosa*	F	Asteraceae	western yarrow
ACDI3	*Acosta diffusa*	F	Asteraceae	tumble knapweed, white knapweed
ACAL10	*Acrolasia albicaulis*	F	Loasaceae	whitestem blazing-star, whiteleaf blazing-star
ACDI2	*Acrolasia dispersa*	F	Loasaceae	bushy blazing-star
AGAU2	*Agoseris aurantiaca*	F	Asteraceae	false-dandelion, orange agoseris
ALAN3	*Aletes anisatus*	F	Apiaceae	Rocky Mountain Indian parsely
ALAC4	*Allium acuminatum*	F	Alliaceae	tapertip onion
ALCE2	*Allium cernuum*	F	Alliaceae	nodding onion
AMLA6	*Amerosedum lanceolatum*	F	Crassulaceae	yellow stonecrop, wormleaf stonecrop, spearleaf stonecrop
ANSE4	*Androsace septentrionalis*	F	Primulaceae	northern rock-jasmine, pygmyflower rock-jasmine
ANMU	*Anemone multifida*	F	Ranunculaceae	Hudsonian anemone, Pacific anemone
ANPA	*Anemone parviflora*	F	Ranunculaceae	arctic anemone, smallflowered anemone
ANHO	*Antennaria howellii*	F	Asteraceae	Howell's pussytoes
ANRO2	*Antennaria rosea*	F	Asteraceae	rose pussytoes
APAN2	*Apocynum androsaemifolium*	F	Apocynaceae	spreading dogbane
APCA	*Apocynum cannabinum*	F	Apocynaceae	Indian hemp, hemp dogbane
AQCO	*Aquilegia coerulea*	F	Helleboraceae	Colorado columbine, Colorado blue columbine
ARFR4	*Artemisia frigida*	F	Asteraceae	fringed sagewort
ASFO	*Aster foliaceus*	F	Asteraceae	leafybract aster, alpine leafybract aster
ASLA5	*Aster laevis*	F	Asteraceae	smooth aster
ASSP16	*Aster spathulatus*	F	Asteraceae	western aster
ASTRA	*Astragalus*	F	Fabaceae	milkvetch, loco
ASAL7	*Astragalus alpinus*	F	Fabaceae	alpine milkvetch, purple milkvetch
ASMI9	*Astragalus miser*	F	Fabaceae	weedy milkvetch
ASMI10	*Astragalus missouriensis*	F	Fabaceae	Missouri milkvetch
ASTE5	*Astragalus tenellus*	F	Fabaceae	pulse milkvetch, looseflower milkvetch
BADI	*Bahia dissecta*	F	Asteraceae	ragleaf bahia
BODR	*Boechera drummondii*	F	Brassicaceae	false-arabis, Drummond rock cress
BOFE	*Boechera fendleri*	F	Brassicaceae	false-arabis, Fendler rock cress
CARO2	*Campanula rotundifolia*	F	Campanulaceae	common harebell, bluebell bellflower
CANU4	*Carduus nutans*	F	Asteraceae	musk thistle, nodding plumeless-thistle
CEFO2	*Cerastium fontanum*	F	Alsinaceae	mouse-ear, big cerastium, common chickweed
CHDO	*Chaenactis douglasii*	F	Asteraceae	pincushion, Douglas false-yarrow, Douglas' dustymaiden
CHDA2	*Chamerion danielsii*	F	Onagraceae	fireweed
CHAL7	*Chenopodium album*	F	Chenopodiaceae	lambs-quarters goosefoot, pigweed, lambsquarters
CICA11	*Cirsium canescens*	F	Asteraceae	prairie thistle
COPA3	*Collinsia parviflora*	F	Scrophulariaceae	smallflower blue-eyed Mary, littleflower collinsia
COLI2	*Collomia linearis*	F	Polemoniaceae	slender-leaf collomia, narrowleaf mountain-trumpet
DAPU5	*Dalea purpurea*	F	Fabaceae	violet prairie-clover
DRAR8	*Drymocallis arguta*	F	Rosaceae	sticky cinquefoil, sharp-toothed cinquefoil, tall cinquefoil
DRFI3	*Drymocallis fissa*	F	Rosaceae	bigflower cinquefoil
DRFI2	*Dryopteris filix-mas*	F	Aspidiaceae	shield fern, male fern
ERIGE2	*Erigeron*	F	Asteraceae	fleabane, wild daisy
ERCO4	*Erigeron compositus*	F	Asteraceae	fernleaf fleabane, cut-leaved daisy
ERDI4	*Erigeron divergens*	F	Asteraceae	spreading fleabane, diffuse fleabane
EREX4	*Erigeron eximius*	F	Asteraceae	forest fleabane, sprucefir fleabane
ERFL	*Erigeron flagellaris*	F	Asteraceae	trailing fleabane
ERME2	*Erigeron melanocephalus*	F	Asteraceae	blackhead fleabane
ERPE3	*Erigeron peregrinus*	F	Asteraceae	peregrine fleabane, subalpine daisy
ERSU2	*Erigeron subtrinervis*	F	Asteraceae	threenerve fleabane, three-veined fleabane
ERVE2	*Erigeron vetensis*	F	Asteraceae	early bluetop fleabane
FACO	*Fallopia convolvulus*	F	Polygonaceae	hedge cornbind, black bindweed
FRVE	*Fragaria vesca*	F	Rosaceae	European strawberry, woods strawberry
FRVI	*Fragaria virginiana*	F	Rosaceae	Virginia strawberry, blue elf strawberry
GASE6	*Galium septentrionale*	F	Rubiaceae	northern bedstraw
GATR3	*Galium triflorum*	F	Rubiaceae	fragrant bedstraw, sweet-scented bedstraw
GADR3	*Gastrolychnis drummondii*	F	Caryophyllaceae	alpine campion, Drummond campion
GECA3	*Geranium caespitosum*	F	Geraniaceae	Fremont geranium, pineywoods geranium
GIPI	*Gilia pinnatifida*	F	Polemoniaceae	sticky gilia
GRSQ	*Grindelia squarrosa*	F	Asteraceae	curly-cup gumweed, curly-top gumweed
HEFU3	*Heterotheca fulcrata*	F	Asteraceae	golden aster, rocky-scree false golden aster
HEVI4	*Heterotheca villosa*	F	Asteraceae	hairy golden aster
HEPA11	*Heuchera parvifolia*	F	Saxifragaceae	littleleaf alumroot
IPAG	*Ipomopsis aggregata*	F	Polemoniaceae	trumpet gilia, scarlet gilia, skyrocket gilia
LASE	*Lactuca serriola*	F	Asteraceae	prickly lettuce
LIPU	*Liatris punctata*	F	Asteraceae	dotted gayfeather, blazing star
LIPO	*Ligusticum porteri*	F	Apiaceae	osha, Porter ligusticum, Porter's licorice-root
LIBO3	*Linnaea borealis*	F	Caprifoliaceae	American twinflower
LIIN2	*Lithospermum incisum*	F	Boraginaceae	puccoon, yellow gromwell, narrowleaf gromwell
LIMU3	*Lithospermum multiflorum*	F	Boraginaceae	puccoon, many-flower gromwell
LUAR3	*Lupinus argenteus*	F	Fabaceae	silvery lupine
LYJU	*Lygodesmia juncea*	F	Asteraceae	rush skeleton-plant
MABI	*Machaeranthera bigelovii*	F	Asteraceae	spiny aster, Bigelow tansy-aster, Bigelow's tansy-aster

Code[a]	Name[b]	GF[c]	Family	Common Name(s)[d]
MAST4	*Maianthemum stellatum*	F	Convallariaceae	star Solomon-plume, starry false-Solomon's-seal
MEDI7	*Melandrium dioicum*	F	Caryophyllaceae	white campion, evening campion, red catchfly
MENTH	*Mentha*	F	Lamiaceae	mint
MEAR4	*Mentha arvensis*	F	Lamiaceae	field mint, corn mint, wild mint
MELA3	*Mertensia lanceolata*	F	Boraginaceae	lanceleaf bluebells
MOFI	*Monarda fistulosa*	F	Lamiaceae	horse mint, wild-bergamot beebalm
NOMO2	*Noccaea montana*	F	Brassicaceae	candytuft, alpine pennycress
NURU	*Nuttallia rusbyi*	F	Loasaceae	creamy blazing star, mentzelia, Rusby's blazing-star
OLDR	*Oligosporus dracunculus*	F	Asteraceae	wild tarragon, wormwood
OLPA	*Oligosporus pacificus*	F	Asteraceae	sagewort wormwood, Pacific wormwood
ORVI4	*Oreocarya virgata*	F	Boraginaceae	miners-candle
ORLI	*Orogenia linearifolia*	F	Apiaceae	turkey-peas, Great Basin Indian-potato
OXHI2	*Oxybaphus hirsutus*	F	Nyctaginaceae	hairy four-o'clock
OXLA3	*Oxytropis lambertii*	F	Fabaceae	Lambert crazyweed
PACKE	*Packera*	F	Asteraceae	groundsel
PAFE4	*Packera fendleri*	F	Asteraceae	Fendler groundsel, Fendler's ragwort
PANE7	*Packera neomexicana*	F	Asteraceae	New Mexico groundsel
PAJA	*Paronychia jamesii*	F	Alsinaceae	James nailwort
PEBA2	*Penstemon barbatus*	F	Scrophulariaceae	beardtongue, beardlip penstemon
PESE11	*Penstemon secundiflorus*	F	Scrophulariaceae	Fendler penstemon, sidebells penstemon
PEVI3	*Penstemon virens*	F	Scrophulariaceae	Front Range beardtongue
PHHE2	*Phacelia heterophylla*	F	Hydrophyllaceae	scorpion weed, varileaf phacelia
PHVI7	*Physaria vitulifera*	F	Brassicaceae	roundtip twinpod
PLMA2	*Plantago major*	F	Plantaginaceae	common plantain, rippleseed plantain
POEF	*Potentilla effusa*	F	Rosaceae	Saskatchewan cinquefoil, branched cinquefoil
POHI6	*Potentilla hippiana*	F	Rosaceae	horse cinquefoil, woolly cinquefoil
PSMO	*Pseudocymopterus montanus*	F	Apiaceae	mountain parsely, pseudocymopterus, alpine false springparsley
PSJA2	*Pseudostellaria jamesiana*	F	Alsinaceae	tuber starwort
PTAL3	*Pterogonum alatum*	F	Polygonaceae	winged buckwheat
PYPI2	*Pyrola picta*	F	Pyrolaceae	white-veined wintergreen
RUHI2	*Rudbeckia hirta*	F	Asteraceae	black-eyed Susan
SCBR3	*Scutellaria brittonii*	F	Lamiaceae	Britton's skullcap
SENEC	*Senecio*	F	Asteraceae	groundsel, butterweed
SESP3	*Senecio spartioides*	F	Asteraceae	broom groundsel
SISC7	*Silene scouleri*	F	Caryophyllaceae	moss campion, Scouler's campion
SOLID	*Solidago*	F	Asteraceae	goldenrod
SOMI2	*Solidago missouriensis*	F	Asteraceae	Missouri goldenrod
SOSI3	*Solidago simplex*	F	Asteraceae	Mt. Albert goldenrod
TAOF	*Taraxacum officinale*	F	Asteraceae	common dandelion
THFE	*Thalictrum fendleri*	F	Thalictraceae	Fendler meadow-rue
THDI4	*Thermopsis divaricarpa*	F	Fabaceae	golden banner, spreadfruit goldenbanner
TIES	*Tithymalus esula*	F	Euphorbiaceae	leafy spurge, esula spurge, wolf's-milk
TOEX2	*Townsendia exscapa*	F	Asteraceae	Easter-daisy, stemless Townsendia
TOVE2	*Toxicoscordion venenosum*	F	Melanthaceae	meadow death camas, deadly zigadenus
TROC	*Tradescantia occidentalis*	F	Commelinaceae	spiderwort
TRRE3	*Trifolium repens*	F	Fabaceae	white Dutch clover, white clover
TUGL	*Turritis glabra*	F	Brassicaceae	tower mustard, tower rockcress
UNAL	*Unamia alba*	F	Asteraceae	prairie aster, sneezewort aster
VETH	*Verbascum thapsus*	F	Scrophulariaceae	flannel mullein, common mullein
VIOLA	*Viola*	F	Violaceae	violet
VINU2	*Viola nuttallii*	F	Violaceae	Nuttall violet, yellow prairie violet
VIAS2	*Virgulaster ascendens*	F	Asteraceae	Chile aster
FORB	forb unknown	F		unknown forb

GROUND COVER

.BARE	bare soil	.MOSSON	moss on soil	.WOOD00	wood < ¼ in diam.
.LITT	litter and duff	.LICHEN	lichen on soil	.WOOD01	wood ¼-1 in diam.
.FIGR	gravel fine	.FUNGI	fungi on soil	.WOOD13	wood 1-3 in diam.
.MEGR	gravel medium	.ALGAE	algae on soil	.WOOD37	wood 3-7 in diam.
.COGR	gravel coarse	.DEERPE	droppings deer	.WOOD71	wood 7-10 in diam.
.COBB	cobble 10-25 cm	.ELKPEL	droppings elk	.WOOD10	wood > 10 in diam.
.STON	stone > 25 cm	.RABBIT	droppings rabbit		
.BOUL	boulder > 60 cm	.BEAR	droppings bear		
.BEDR	bedrock exposed				
.BAVE	live plant bases				

a. Codes from USDA NRCS 2004.
b. Plant species names (nomenclature) following Weber and Wittmann (2001).
c. Typical growth form: T = Tree, S = Shrub (including subshrub), G = graminoid, F = Forb.
d. Taken from various sources, including Nickerson and others (1976) and USDA NRCS (2004).

Appendix B. Vegetation cover and frequency by sample

Table B-1. Vegetation cover and frequency for the samples from group BRRB – Bear Mountain, Russell Ridge, and Bennett Mountain, First Reading (Before Treatment) except No. 148. N = 11

		Sample	156		157		157		158		159		160		161		162		163		148†		164				
		Transect No.	1		1		2		1		1		1		1		1		1		1		1				
		Reading No.	1		1		1		1		1		1		1		1		1		1		1				
		Area†	BEM		BEM		BEM		BEM		BEM		BEM		BEM		BEM		BEM		RR1		RR2				
		Date	09/15		09/16		09/16		09/17		09/18		09/18		10/01		10/02		10/02		07/25		10/03				
		Year	2003		2003		2003		2003		2003		2003		2003		2003		2003		2003		2003				
		Treatment Code*	O		O		O		O		O		O		O		O		O		T01*		O				
		Elevation, ft	7590		7520		7520		7330		7060		7200		7180		7560		7430		7570		7840				
		Aspect, °M	239		216		216		074		167		053		284		319		194		235		040				
		Slope, %	17.0		18.0		18.0		21.0		9.0		22.0		20.0		23.0		22.0		10.0		18.0		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																									
L	PIPO	Pinus ponderosa	38.1	100	24.8	100	42.5	100	72.4	100	69.0	100	60.0	100	63.0	100	32.6	100	89.1	100	49.5	100	35.0	100	52.4	100	ponderosa pine
C	PIPO	Pinus ponderosa	–	–	–	–	–	–	0.6	–	1.7	–	–	–	–	–	3.7	–	–	–	–	–	–	–	0.6	--	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	–	–	–	–	–	–	7.8	–	2.4	–	–	–	–	–	–	–	58.6	–	–	–	–	–	6.3	--	ponderosa pine - dead canopy < 8'
L	POTR5	Populus tremuloides	16.3	75	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	1.5	7	quaking aspen
C	POTR5	Populus tremuloides	0.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	--	quaking aspen - live canopy < 8'
X	POTR5	Populus tremuloides	9.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.8	–	1.0	--	quaking aspen - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	54.6	100	64.9	100	63.9	100	20.2	65	12.3	90	0.0	–	65.7	95	77.7	100	–	–	4.8	90	54.3	100	38.0	76	Douglas-fir
C	PSME	Pseudotsuga menziesii	25.2	–	13.1	–	8.2	–	20.2	–	–	–	–	–	21.1	–	10.8	–	–	–	–	–	17.9	–	10.6	--	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	7.6	–	–	–	17.6	–	–	–	3.9	–	–	–	33.3	–	15.3	–	–	–	–	–	8.6	–	7.9	--	Douglas-fir - dead canopy < 8'
		SHRUBS																									
L	AMAL2	Amelanchier alnifolia	0.0	5	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Saskatoon serviceberry
L	ARUV	Arctostaphylos uva-ursi	0.2	5	5.5	20	10.2	35	7.5	25	3.1	10	17.0	60	0.4	10	0.0	–	13.9	50	21.0	60	0.2	–	7.2	25	kinnikinnick
D	ARUV	Arctostaphylos uva-ursi	–	–	5.3	–	7.8	–	16.9	–	1.0	–	14.4	–	1.9	–	–	–	11.0	–	–	–	–	–	5.3	--	kinnikinnick - Dead
L	CEFE	Ceanothus fendleri	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	0.0	–	–	–	–	–	0.0	--	buckbrush
L	CEMO2	Cercocarpus montanus	–	–	0.0	–	0.4	–	0.0	–	–	–	0.3	5	–	–	0.0	–	–	–	–	–	–	–	0.1	0	true mountain-mahogany
L	JUCO6	Juniperus communis	30.3	35	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	14.4	30	0.0	–	4.1	6	common juniper
D	JUCO6	Juniperus communis	9.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.9	--	common juniper - Dead
L	MARE11	Mahonia repens	15.1	80	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	23.2	90	3.5	15	Oregon-grape
L	PAVI11	Padus virginiana	–	–	–	–	–	–	0.0	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	8.4	20	0.8	2	common chokecherry
L	QUGA	Quercus gambelii	0.4	10	26.8	55	11.9	20	46.3	70	29.2	40	44.0	60	0.0	–	0.0	–	0.0	–	26.6	55	38.1	80	20.3	35	scrub oak
D	QUGA	Quercus gambelii	2.2	–	11.0	–	13.8	–	27.4	–	18.5	–	23.0	–	–	–	–	–	–	–	–	–	36.2	–	12.0	--	scrub oak - Dead
L	RICE	Ribes cereum	–	–	–	–	–	–	–	–	0.0	–	3.0	5	–	–	–	–	–	–	–	–	–	–	0.3	0	wax currant
L	ROWO	Rosa woodsii	0.7	15	0.2	–	0.0	–	0.3	–	0.0	–	0.6	5	–	–	–	–	0.3	5	1.6	20	7.0	65	1.0	10	Woods rose
L	SYAL	Symphoricarpos albus	0.0	–	0.0	–	0.0	–	0.3	–	3.2	10	1.3	20	–	–	0.0	–	–	–	0.0	–	5.6	20	0.9	5	common snowberry
D	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	1.3	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	--	common snowberry - Dead
		GRAMINOIDS																									
L	ACNE9	Achnatherum nelsonii	–	–	2.4	30	0.0	–	2.0	5	–	–	–	–	0.0	–	0.0	–	–	–	1.0	10	6.5	10	1.1	5	Nelson's needlegrass
L	BRPO5	Bromopsis porteri	–	–	0.5	5	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	14.6	45	1.4	5	nodding brome
L	CARO5	Carex rossii	4.2	40	31.0	65	16.1	60	6.0	35	60.8	75	12.9	55	23.7	65	9.0	30	0.1	5	1.0	10	1.5	10	15.1	41	Ross sedge
L	CASI12	Carex siccata	–	–	9.0	20	20.5	50	6.0	10	0.0	–	–	–	0.0	–	2.5	10	–	–	39.8	85	15.0	35	8.4	19	silvertop sedge
L	CHGR15	Chondrosum gracile	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	blue grama
L	ELEL5	Elymus elymoides	0.5	5	0.0	–	1.5	5	0.0	–	0.0	–	3.6	15	0.0	–	0.0	–	0.1	5	0.0	–	–	–	0.5	3	bottlebrush squirreltail
L	KOMA	Koeleria macrantha	0.1	5	0.0	–	0.7	15	0.0	–	0.0	–	0.1	10	0.0	–	0.5	5	0.1	5	0.0	–	0.0	–	0.1	4	prairie junegrass
L	LEKI2	Leucopoa kingii	2.0	15	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	0.2	2	spike-fescue
L	POPR	Poa pratensis	–	–	–	–	1.0	10	–	–	–	–	–	–	–	–	0.0	–	–	–	8.6	25	10.0	30	1.8	6	Kentucky bluegrass
L	PSSP6	Pseudoroegneria spicata	–	–	3.0	15	6.6	30	3.0	10	–	–	0.0	–	0.0	–	0.0	–	2.5	20	–	–	–	–	1.4	7	bluebunch wheatgrass
		FORBS																									
L	ACDI3	Acosta diffusa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	tumble knapweed
L	ACLA5	Achillea lanulosa	–	–	0.5	5	0.6	10	1.1	10	–	–	0.7	20	–	–	0.0	–	0.0	–	0.6	10	0.1	5	0.3	5	western yarrow
L	AGAU2	Agoseris aurantiaca	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	false-dandelion
L	ALAN3	Aletes anisatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	0.0	0	Rocky Mountain Indian parsely
L	ALCE2	Allium cernuum	–	–	–	–	0.1	5	0.0	5	0.0	–	0.0	–	0.5	5	–	–	–	–	–	–	–	–	0.1	1	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	yellow stonecrop
L	ANMU	Anemone multifida	–	–	–	–	–	–	0.1	15	–	–	0.1	5	0.0	–	–	–	–	–	–	–	–	–	0.0	2	Hudsonian anemone
L	ANRO2	Antennaria rosea	0.0	–	0.5	5	2.0	5	0.5	5	0.0	–	0.0	–	1.0	15	–	–	–	–	0.0	–	–	–	0.4	3	rose pussytoes
L	APAN2	Apocynum androsaemifolium	–	–	–	–	0.0	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	spreading dogbane
L	AQCO	Aquilegia coerulea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	0.0	0	Colorado columbine
L	ASAL7	Astragalus alpinus	0.7	15	0.1	5	–	–	0.0	–	–	–	0.0	–	–	–	0.0	–	–	–	0.1	5	1.0	10	0.2	3	alpine milkvetch
L	ASLA5	Aster laevis	–	–	–	–	2.1	20	0.7	15	2.0	10	0.6	10	0.3	10	–	–	0.0	–	–	–	0.1	5	0.5	6	smooth aster
L	BOFE	Boechera fendleri	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	false-arabis
L	CANU4	Carduus nutans	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	musk thistle
L	CARO2	Campanula rotundifolia	–	–	–	–	–	–	–	–	–	–	0.5	5	0.1	5	–	–	–	–	0.0	–	–	–	0.1	1	common harebell
L	CEFO2	Cerastium fontanum	–	–	0.0	5	3.5	30	0.5	5	0.0	–	0.6	10	3.6	25	1.0	10	–	–	–	–	–	–	0.8	8	mouse-ear
L	CHAL7	Chenopodium album	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	lambs-quarters goosefoot
L	COLI2	Collomia linearis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	slender-leaf collomia
L	DRFI3	Drymocallis fissa	–	–	0.1	10	–	–	–	–	0.0	–	0.5	10	–	–	–	–	0.5	5	0.5	5	–	–	0.2	3	bigflower cinquefoil
L	ERME2	Erigeron melanocephalus	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	blackhead fleabane
L	ERPE3	Erigeron peregrinus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.0	5	0.1	0	peregrine fleabane
L	FACO	Fallopia convolvulus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	hedge cornbind

†Area Codes

Code	Area Name	Group
BEM	Bear Mountain	BRRB
BEN	Bennett Mountain	BRRB
DG	Dell Gulch	SCDK
GU	Gunbarrel	SJG
JG	Jenny Gulch	SJG
KE	Kelsey	SCDK
LS	Long Scraggy	LSOU
NH	Noddle Heads	NNHP
NI	Nighthawk	NNHP
OU	Ouzel	LSOU
PC	Pine Creek	NNHP
RR1	Russell Ridge I	BRRB
RR2	Russell Ridge II	BRRB
SC	Spring Creek	SCDK
SG	Saloon Gulch	SJG
TR	Trumbull	TRUM
TRW	Trumbull West	TRUM

*Treatment Codes

Code	Treatment, resample timing
F11	Fire, light, first year
F12	Fire, light, second year
F21	Fire, moderate, first year
F22	Fire, moderate, second year
F31	Fire, severe, first year
F32	Fire, severe, second year
O	Original, pretreatment reading
T01	Thinning, first year
T11	Thinning and piling, first year

M	Code	Sample	156		157		157		158		159		160		161		162		163		148		164				
		Transect No.	1		1		2		1		1		1		1		1		1		1		1				
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		Avg	Avg	
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	FORB	forb unknown	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	unknown forb
L	FRVI	Fragaria virginiana	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Virginia strawberry
L	GADR3	Gastrolychnis drummondii	–	–	–	–	–	–	–	–	0.0	–	–	–	0.5	5	–	–	0.0	–	–	–	–	–	0.0	0	alpine campion
L	GASE6	Galium septentrionale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.9	25	15.6	60	1.5	8	northern bedstraw
L	GATR3	Galium triflorum	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	fragrant bedstraw
L	GECA3	Geranium caespitosum	–	–	0.1	5	0.5	5	0.1	5	0.0	–	0.0	–	–	–	–	–	0.0	–	2.1	15	–	–	0.3	3	Fremont geranium
L	HEVI4	Heterotheca villosa	–	–	0.0	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	hairy golden aster
L	LASE	Lactuca serriola	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	0.0	--	prickly lettuce
L	LIIN2	Lithospermum incisum	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	puccoon
L	LIPO	Ligusticum porteri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	33.6	85	3.1	8	osha
L	LUAR3	Lupinus argenteus	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	--	silvery lupine
L	MAST4	Maianthemum stellatum	–	–	–	–	0.1	5	0.0	–	–	–	–	–	–	–	–	–	–	–	0.1	5	1.5	5	0.2	1	star Solomon-plume
L	MEAR4	Mentha arvensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	--	field mint
L	MELA3	Mertensia lanceolata	–	–	0.1	5	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	1	lanceleaf bluebells
L	MOFI	Monarda fistulosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	horse mint
L	OLDR	Oligosporus dracunculus	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	wild tarragon
L	OLPA	Oligosporus pacificus	–	–	–	–	0.0	–	–	–	0.0	–	0.0	–	0.0	–	–	–	0.0	–	–	–	–	–	0.0	--	sagewort wormwood
L	PEVI3	Penstemon virens	–	–	3.0	20	0.0	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	2	Front Range beardtongue
L	PTAL3	Pterogonum alatum	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	winged buckwheat
L	PYPI2	Pyrola picta	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	white-veined wintergreen
L	SOSI3	Solidago simplex	0.0	–	0.7	15	0.8	15	–	–	–	–	0.0	–	0.0	–	0.1	5	0.0	–	0.0	–	–	–	0.1	3	Mt. Albert goldenrod
L	THDI4	Thermopsis divaricarpa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	2.5	10	0.2	1	golden banner
L	THFE	Thalictrum fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	0.0	0	Fendler meadow-rue
L	UNAL	Unamia alba	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	prairie aster
L	VETH	Verbascum thapsus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	flannel mullein
L	VIOLA	Viola	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	violet
		GROUND COVER																									
	.BARE	bare soil	0.0	–	0.0	–	0.1	5	0.1	5	0.0	–	0.5	5	0.0	–	0.0	–	0.0	–	2.3	25	0.0	–	0.3	4	bare soil
	.LITT	litter and duff	99.1	100	97.0	100	98.0	100	96.8	100	97.6	100	97.6	100	98.2	100	99.4	100	98.8	100	96.4	100	98.4	100	97.9	100	duff litter
	.FIGR	gravel fine	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	0.0	0	fine gravel
	.MEGR	gravel medium	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	5	–	–	–	–	–	–	–	–	0.0	1	medium gravel
	.COGR	gravel coarse	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	coarse gravel
	.BAVE	live plant bases	0.9	80	3.0	95	1.8	95	3.1	85	2.4	80	1.6	100	1.8	80	0.6	35	1.2	60	1.4	95	1.6	100	1.7	82	live plant bases
	.MOSSON	moss on soil	0.4	20	0.1	5	1.5	10	–	–	–	–	–	–	1.0	25	0.1	5	1.0	5	–	–	3.5	15	0.7	8	on soil moss
	.LICHEN	lichen on soil	1.7	35	0.7	15	0.3	10	2.1	30	1.3	35	–	–	1.0	10	0.5	5	0.6	10	0.1	5	0.0	5	0.7	15	on soil lichen
	.DEERPE	droppings deer	0.8	20	–	–	0.1	5	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	0.1	3	deer droppings
	.WOOD00	wood < ¼ in diam.	94.9	100	87.2	100	94.3	100	96.8	100	95.0	100	96.2	100	95.4	100	94.8	100	98.4	100	81.4	100	71.7	100	91.4	100	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	13.0	100	6.4	90	6.3	95	2.7	85	3.6	100	5.8	70	8.0	100	19.5	100	3.9	70	14.8	95	12.7	90	8.8	90	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	4.2	40	2.1	25	1.1	20	1.2	30	5.6	35	1.1	15	1.3	25	4.5	55	0.4	20	4.3	55	7.8	60	3.1	35	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	1.0	10	–	–	0.0	5	–	–	2.5	15	–	–	1.0	5	1.1	15	–	–	1.5	5	4.0	15	1.0	6	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	0.5	5	–	–	–	–	–	–	1.0	5	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	3.0	5	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	0.3	1	> 10 in diam. wood

	156	157	157	158	159	160	161	162	163	148	164
Sample	156	157	157	158	159	160	161	162	163	148	164
Transect No.	1	1	2	1	1	1	1	1	1	1	1
Reading No.	1	1	1	1	1	1	1	1	1	1	1
Tree Cover, %	109.1	89.7	106.4	92.7	81.3	60.0	128.7	110.3	89.1	54.3	89.3
Shrub Cover, %	46.8	32.5	22.5	54.4	35.5	66.2	0.4	0.0	14.2	63.6	82.6
Graminoid Cover, %	6.8	14.9	46.4	17.0	61.3	16.7	23.7	12.0	2.9	50.4	47.6
Forb Cover, %	0.9	36.2	10.2	3.5	2.0	3.1	6.0	1.1	0.5	4.5	56.5
Total Live Cover, %	163.5	173.3	185.4	167.5	180.0	146.0	158.8	123.4	106.7	172.8	275.9
No. Live Species	19	27	31	32	25	27	23	20	19	38	28
Tree Basal Area, ft²/ac	145.7	171.5	215.6	154.0	174.9	170.4	116.2	196.6	188.9	62.8	

†. Sample No. 148 from the Russell Ridge I Area.

Table B-2. Vegetation cover and frequency for the samples from group NNHP – Nighthawk, Noddle Heads, and Pine Creek, First Reading (Before Treatment), N = 8.
Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	147		149		150		151		152		153		154		155				
		Transect No.	1		1		1		1		1		1		1		1				
		Reading No.	1		1		1		1		1		1		1		1				
		Area†	NI		NI		NI		NI		NI		NI		NI		NI				
		Date	06/20		08/13		08/13		08/14		08/14		08/27		08/28		08/29				
		Year	2003		2003		2003		2003		2003		2003		2003		2003				
		Treatment Code*	O		O		O		O		O		O		O		O				
		Elevation, ft	7060		7320		7400		7220		7300		7390		7150		7240				
		Aspect, °M	357		355		286		309		338		022		297		017				
		Slope, %	25.0		24.0		23.0		14.0		20.0		21.0		21.0		17.0		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																			
L	PIPO	Pinus ponderosa	40.5	95	14.1	90	66.5	100	67.0	100	21.8	90	49.5	100	52.0	100	21.8	95	41.6	96	ponderosa pine
C	PIPO	Pinus ponderosa	–	–	1.7	–	1.2	–	4.9	–	–	–	–	–	–	–	–	–	1.0	--	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	–	–	–	–	0.6	–	–	–	–	–	–	–	–	–	–	–	0.1	--	ponderosa pine - dead canopy < 8'
L	POTR5	Populus tremuloides	–	–	7.5	35	–	–	–	–	–	–	–	–	–	–	–	–	0.9	4	quaking aspen
C	POTR5	Populus tremuloides	–	–	8.1	–	–	–	–	–	–	–	–	–	–	–	–	–	1.0	--	quaking aspen - live canopy < 8'
X	POTR5	Populus tremuloides	–	–	0.4	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	--	quaking aspen - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	65.3	95	73.4	100	5.3	50	36.8	90	49.0	100	54.0	100	61.0	100	70.5	100	51.9	92	Douglas-fir
C	PSME	Pseudotsuga menziesii	17.7	–	25.3	–	3.0	–	15.1	–	7.6	–	21.8	–	20.2	–	26.0	–	17.1	--	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	39.4	–	9.4	–	–	–	11.4	–	6.6	–	6.7	–	19.0	–	22.3	–	14.4	--	Douglas-fir - dead canopy < 8'
		SHRUBS																			
L	AMAL2	Amelanchier alnifolia	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	Saskatoon serviceberry
L	ARUV	Arctostaphylos uva-ursi	0.3	10	6.5	30	25.8	85	21.5	60	0.0	–	0.2	5	7.1	35	1.8	10	7.9	29	kinnikinnick
D	ARUV	Arctostaphylos uva-ursi	–	–	–	–	24.3	–	35.4	–	–	–	2.5	–	16.1	–	1.6	–	10.0	--	kinnikinnick - Dead
L	CEFE	Ceanothus fendleri	–	–	0.0	–	–	–	0.0	–	0.0	–	–	–	0.4	5	–	–	0.1	1	buckbrush
L	CEMO2	Cercocarpus montanus	0.0	–	–	–	2.4	10	–	–	–	–	–	–	0.0	–	2.0	5	0.6	2	true mountain-mahogany
D	CEMO2	Cercocarpus montanus	–	–	–	–	2.6	–	–	–	–	–	–	–	–	–	1.7	–	0.5	--	true mountain-mahogany - Dead
L	JUCO6	Juniperus communis	5.7	10	21.5	20	1.3	5	19.7	30	24.6	55	9.8	10	2.7	5	4.1	10	11.2	18	common juniper
D	JUCO6	Juniperus communis	–	–	–	–	–	–	7.4	–	2.2	–	–	–	–	–	3.4	–	1.6	--	common juniper - Dead
L	MARE11	Mahonia repens	0.0	–	–	–	–	–	–	–	1.3	20	0.0	–	–	–	0.0	–	0.2	3	Oregon-grape
L	PAVI11	Padus virginiana	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	0.0	--	common chokecherry
L	QUGA	Quercus gambelii	5.2	5	0.0	5	–	–	–	–	0.0	–	0.0	–	0.0	–	0.0	–	0.7	1	scrub oak
D	QUGA	Quercus gambelii	2.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	--	scrub oak - Dead
L	RICE	Ribes cereum	4.8	5	–	–	0.0	–	2.2	5	0.0	–	0.0	–	–	–	0.1	5	0.9	2	wax currant
L	ROWO	Rosa woodsii	0.0	–	0.0	–	0.0	–	0.9	10	0.4	–	0.0	–	–	–	–	–	0.2	1	Woods rose
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	common snowberry
L	YUGL	Yucca glauca	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	–	3.0	5	0.4	1	small soapweed
		GRAMINOIDS																			
L	ACNE9	Achnatherum nelsonii	–	–	–	–	0.0	–	–	–	–	–	2.5	15	–	–	–	–	0.3	2	Nelson's needlegrass
L	ANTE6	Anisantha tectorum	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	--	cheatgrass
L	BRPO5	Bromopsis porteri	–	–	24.6	60	–	–	0.5	5	0.0	–	–	–	–	–	–	–	3.1	8	nodding brome
L	CARO5	Carex rossii	10.8	65	21.8	80	27.1	65	18.5	55	17.6	45	40.5	80	1.6	20	5.0	35	17.9	56	Ross sedge
L	CASI12	Carex siccata	–	–	3.5	10	–	–	–	–	–	–	–	–	–	–	–	–	0.4	1	silvertop sedge
L	ELEL5	Elymus elymoides	–	–	1.0	10	0.0	–	0.6	10	0.0	–	0.0	–	–	–	0.0	–	0.2	3	bottlebrush squirreltail
L	KOMA	Koeleria macrantha	0.1	10	2.0	10	5.3	40	3.4	25	0.0	–	0.1	5	3.1	20	3.1	20	2.1	16	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	1.0	5	–	–	6.5	20	–	–	–	–	–	–	0.9	3	spike-fescue
L	MUMO	Muhlenbergia montana	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.5	5	0.1	1	mountain muhly
L	PONEI2	Poa nemoralis ssp. interior	2.0	10	–	–	6.5	15	0.0	–	–	–	–	–	–	–	–	–	1.1	3	interior bluegrass
L	POPR	Poa pratensis	–	–	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	Kentucky bluegrass
L	PSSP6	Pseudoroegneria spicata	–	–	0.0	–	–	–	–	–	–	–	–	–	4.0	20	–	–	0.5	3	bluebunch wheatgrass
		FORBS																			
L	ACLA5	Achillea lanulosa	1.0	10	2.1	30	0.7	20	2.1	30	0.0	–	0.0	5	0.5	10	–	–	0.8	13	western yarrow
L	ALCE2	Allium cernuum	0.5	5	0.0	–	0.0	–	0.0	–	–	–	–	–	0.0	–	–	–	0.1	1	nodding onion
L	AMLA6	Amerosedum lanceolatum	0.0	–	0.0	5	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	1	yellow stonecrop
L	ANHO	Antennaria howellii	–	–	1.0	5	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	Howell's pussytoes
L	ANMU	Anemone multifida	–	–	1.0	10	0.1	5	0.0	–	1.0	5	0.5	5	0.1	5	–	–	0.3	4	Hudsonian anemone
L	ANPA	Anemone parviflora	0.1	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	2	arctic anemone
L	ANRO2	Antennaria rosea	1.0	5	4.5	35	0.0	–	1.0	5	1.0	5	0.6	10	–	–	0.0	–	1.0	8	rose pussytoes
L	APAN2	Apocynum androsaemifolium	0.0	–	2.0	15	0.3	10	0.1	10	–	–	0.0	5	0.1	5	0.0	–	0.3	6	spreading dogbane
L	AQCO	Aquilegia coerulea	–	–	0.1	10	–	–	–	–	0.0	5	0.0	–	–	–	–	–	0.0	2	Colorado columbine
L	ASAL7	Astragalus alpinus	–	–	0.5	5	0.5	5	–	–	–	–	–	–	–	–	–	–	0.1	1	alpine milkvetch
L	ASLA5	Aster laevis	–	–	–	–	–	–	–	–	0.0	5	0.9	30	0.5	5	0.0	–	0.2	5	smooth aster
L	CARO2	Campanula rotundifolia	–	–	2.2	35	–	–	0.0	5	–	–	–	–	–	–	–	–	0.3	5	common harebell
L	CEFO2	Cerastium fontanum	–	–	–	–	–	–	0.1	10	0.5	10	2.1	20	–	–	0.1	5	0.4	6	mouse-ear
L	CHAL7	Chenopodium album	0.1	5	0.0	–	–	–	–	–	–	–	0.6	10	–	–	0.0	5	0.1	3	lambs-quarters goosefoot
L	COPA3	Collinsia parviflora	0.7	25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	3	smallflower blue-eyed Mary
L	DRFI2	Dryopteris filix-mas	–	–	–	–	–	–	1.1	20	–	–	–	–	–	–	–	–	0.1	3	shield fern
L	DRFI3	Drymocallis fissa	–	–	2.6	20	–	–	–	–	0.0	–	0.0	–	0.0	–	0.5	10	0.4	4	bigflower cinquefoil

		Sample	147		149		150		151		152		153		154		155				
		Transect No.	1		1		1		1		1		1		1		1				
		Reading No.	1		1		1		1		1		1		1		1		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	EREX4	Erigeron eximius	–	–	–	–	–	–	–	–	0.6	10	–	–	–	–	–	–	0.1	1	forest fleabane
L	ERME2	Erigeron melanocephalus	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	blackhead fleabane
L	ERPE3	Erigeron peregrinus	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	peregrine fleabane
L	ERSU2	Erigeron subtrinervis	–	–	0.1	5	–	–	0.0	5	–	–	–	–	–	–	–	–	0.0	1	threenerve fleabane
L	FRVE	Fragaria vesca	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	European strawberry
L	FRVI	Fragaria virginiana	–	–	1.1	20	–	–	–	–	–	–	–	–	–	–	–	–	0.1	3	Virginia strawberry
L	GADR3	Gastrolychnis drummondii	–	–	0.5	5	–	–	0.0	–	–	–	–	–	0.0	–	–	–	0.1	1	alpine campion
L	GECA3	Geranium caespitosum	0.0	–	0.0	5	0.0	–	0.1	10	0.1	10	–	–	0.0	–	–	–	0.0	3	Fremont geranium
L	GRSQ	Grindelia squarrosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	--	curly-cup gumweed
L	HEPA11	Heuchera parvifolia	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	0.0	1	littleleaf alumroot
L	LASE	Lactuca serriola	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	prickly lettuce
L	LIIN2	Lithospermum incisum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	1	puccoon
L	LIPU	Liatris punctata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	--	dotted gayfeather
L	MAST4	Maianthemum stellatum	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	star Solomon-plume
L	MELA3	Mertensia lanceolata	3.6	80	0.2	15	0.5	5	0.5	10	4.5	40	1.0	15	0.1	10	–	–	1.3	22	lanceleaf bluebells
L	OLPA	Oligosporus pacificus	–	–	–	–	0.5	10	–	–	–	–	0.0	–	–	–	0.0	–	0.1	1	sagewort wormwood
L	PEVI3	Penstemon virens	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Front Range beardtongue
L	SOSI3	Solidago simplex	0.5	5	3.5	50	0.6	10	2.6	15	0.0	–	0.0	–	0.0	–	–	–	0.9	10	Mt. Albert goldenrod
L	VINU2	Viola nuttallii	–	–	0.1	10	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	Nuttall violet
		GROUND COVER																			
	.BARE	bare soil	0.0	–	0.1	5	0.0	–	1.5	10	0.6	10	0.0	–	0.0	–	1.0	10	0.4	4	bare soil
	.LITT	litter and duff	97.6	100	98.0	100	98.5	100	96.9	100	97.7	100	98.6	100	98.8	100	97.3	100	97.9	100	duff litter
	.FIGR	gravel fine	–	–	0.1	5	–	–	0.0	10	–	–	–	–	–	–	0.2	10	0.0	3	fine gravel
	.MEGR	gravel medium	–	–	0.2	15	–	–	–	–	–	–	–	–	–	–	0.5	10	0.1	3	medium gravel
	.BAVE	live plant bases	2.4	90	1.3	85	1.5	90	1.6	95	1.7	75	1.4	90	1.2	70	0.9	65	1.5	83	live plant bases
	.MOSSON	moss on soil	0.5	10	17.5	60	–	–	2.1	15	2.3	25	0.5	5	1.1	10	0.8	15	3.1	18	on soil moss
	.LICHEN	lichen on soil	0.3	15	4.0	75	–	–	1.8	35	0.6	25	0.4	15	0.6	10	2.0	35	1.2	26	on soil lichen
	.DEERPE	droppings deer	–	–	–	–	–	–	0.6	15	0.1	5	–	–	–	–	–	–	0.1	3	deer droppings
	.ELKPEL	droppings elk	–	–	1.1	15	–	–	–	–	–	–	–	–	–	–	–	–	0.1	2	elk droppings
	.RABBIT	droppings rabbit	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	rabbit droppings
	.WOOD00	wood < ¼ in diam.	90.7	100	88.1	100	95.9	100	90.6	100	79.1	100	93.3	100	91.2	100	92.2	100	90.1	100	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	15.1	100	8.2	95	7.4	90	9.5	90	17.6	100	9.8	100	10.4	95	11.3	100	11.2	96	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	2.3	40	3.6	25	0.8	45	2.7	30	2.1	15	1.4	25	2.3	50	1.7	40	2.1	34	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	0.1	5	–	–	–	–	–	–	0.1	5	1.0	5	–	–	–	–	0.2	2	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	0.1	1	7-10 in diam. wood

	147	149	150	151	152	153	154	155
Sample	147	149	150	151	152	153	154	155
Transect No.	1	1	1	1	1	1	1	1
Reading No.	1	1	1	1	1	1	1	1
Tree Cover, %	105.8	95.0	71.8	103.8	70.8	103.5	113.0	92.2
Shrub Cover, %	16.0	28.1	29.5	44.3	25.9	10.0	10.3	11.0
Graminoid Cover, %	13.0	52.9	39.9	23.0	24.1	43.1	8.8	8.7
Forb Cover, %	7.6	22.0	3.8	8.0	8.0	5.9	1.4	0.8
Total Live Cover, %	142.3	198.0	145.0	179.0	129.2	162.6	133.4	112.6
No. Live Species	26	35	26	28	31	26	22	24
Tree Basal Area, ft²/ac	167.7	74.9	167.1	159.0	153.2	162.7	172.4	134.7

Table B-3. Vegetation cover and frequency for the samples from group SCDK – Spring Creek, Dell, and Kelsey, First Reading (Before Treatment), N = 13. Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	114		115		116		117		118		119		120		122		134		135		139		140		141			
		Transect No.	1		1		1		1		1		1		1		1		1		1		1		1		1			
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1			
		Area†	SC		SC		SC		SC		SC		SC		SC		SC		SC		SC		SC		SC		SC			
		Date	09/21		10/02		10/03		10/03		10/04		10/04		10/05		09/05		09/27		09/27		10/04		10/04		10/10			
		Year	2000		2000		2000		2000		2000		2000		2000		2001		2001		2001		2001		2001		2001			
		Treatment Code*	O		O		O		O		O		O		O		O		O		O		O		O		O			
		Elevation, ft	7560		7730		7640		7540		7600		7600		7790		7580		7540		7645		7838		7580		7724			
		Aspect, °M	016		002		108		043		113		310		015		335		357		319		071		087		230			
		Slope, %	14.0		5.0		14.0		8.0		12.0		6.0		9.0		18.0		7.0		9.0		9.0		16.0		14.0		Avg	Avg
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																													
L	JUSC2	Juniperus scopulorum	0.5	5	–	–	6.1	15	11.6	25	0.0	–	7.8	30	–	–	–	–	0.0	–	0.6	10	–	–	0.5	5	–	–	2.1	7	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	33.8	100	33.1	95	54.3	100	35.6	75	56.5	100	21.1	75	21.8	70	67.0	100	4.6	55	44.1	100	69.0	100	29.3	100	34.5	80	38.8	88	ponderosa pine
C	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9.6	–	2.8	–	19.5	–	2.5	--	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	13.0	–	2.1	–	11.6	–	2.1	--	ponderosa pine - dead canopy < 8'
L	POTR5	Populus tremuloides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	0.0	--	quaking aspen
L	PSME	Pseudotsuga menziesii	–	–	43.4	95	35.4	100	35.7	75	10.9	55	58.0	100	38.3	95	44.8	95	49.5	95	58.4	100	18.6	90	62.6	100	64.8	100	40.0	85	Douglas-fir
E	PSME	Pseudotsuga menziesii	1.1	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	8	Douglas-fir - Seedling
C	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	26.4	–	31.0	–	11.4	–	43.1	–	4.8	–	9.0	--	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	17.6	–	9.8	–	–	–	17.0	–	19.0	–	4.9	--	Douglas-fir - dead canopy < 8'
		SHRUBS																													
L	ARUV	Arctostaphylos uva-ursi	0.0	–	7.7	40	–	–	16.8	65	6.0	15	6.1	15	18.4	50	2.8	35	0.8	5	11.4	30	32.1	70	2.0	–	6.5	25	8.5	27	kinnikinnick
L	CEFE	Ceanothus fendleri	0.2	5	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	–	–	–	–	–	0.0	–	–	–	0.0	–	0.0	1	buckbrush
L	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	0.0	--	true mountain-mahogany
L	JUCO6	Juniperus communis	8.7	10	9.5	15	1.3	5	19.9	25	0.0	5	11.9	15	5.3	15	0.1	5	7.1	5	12.4	20	0.0	–	–	–	0.1	5	5.9	10	common juniper
L	RICE	Ribes cereum	0.1	5	0.0	–	0.0	–	0.0	–	0.0	–	1.0	5	4.8	10	–	–	–	–	–	–	–	–	–	–	–	–	0.5	2	wax currant
L	RIIN2	Ribes inerme	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	2.2	5	0.0	–	1.1	10	1.2	5	0.0	–	0.3	2	whitestem currant
L	ROWO	Rosa woodsii	0.2	10	–	–	2.4	25	0.5	10	0.0	–	0.1	5	0.5	5	–	–	0.1	5	–	–	2.2	30	–	–	–	–	0.5	7	Woods rose
L	SYAL	Symphoricarpos albus	–	–	–	–	10.4	40	–	–	–	–	3.6	30	–	–	–	–	7.8	55	5.5	40	–	–	–	–	–	–	2.1	13	common snowberry
		GRAMINOIDS																													
L	ACNE9	Achnatherum nelsonii	–	–	–	–	0.6	10	4.6	20	0.0	–	1.5	15	0.5	5	–	–	2.0	15	–	–	–	–	–	–	0.5	5	0.8	5	Nelson's needlegrass
L	ANOD	Anthoxanthum odoratum	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	sweetgrass
L	BRCA10	Bromopsis canadensis	–	–	–	–	–	–	–	–	–	–	–	–	5.5	20	–	–	–	–	–	–	–	–	–	–	–	–	0.4	2	fringed brome
L	BRIN7	Bromopsis inermis	–	–	–	–	–	–	–	–	0.0	–	5.1	30	–	–	–	–	0.1	5	–	–	0.0	–	–	–	–	–	0.4	3	smooth brome
L	BRPO5	Bromopsis porteri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	0.0	1	nodding brome
L	CAPEH	Carex pensylvanica ssp. heliophila	11.8	45	20.3	60	28.9	70	11.4	45	17.6	55	18.0	55	15.4	95	–	–	–	–	–	–	–	–	–	–	–	–	9.5	33	sun sedge
L	CARO5	Carex rossii	–	–	0.1	10	0.1	5	–	–	–	–	2.0	5	0.0	–	3.6	40	46.5	85	14.4	60	18.4	65	13.6	60	30.1	75	9.9	31	Ross sedge
L	CASI12	Carex siccata	3.3	20	–	–	–	–	14.1	45	7.9	35	4.6	30	6.1	25	3.6	15	–	–	16.4	60	8.0	20	–	–	–	–	4.9	19	silvertop sedge
L	CAXE	Carex xerantica	–	–	–	–	–	–	–	–	–	–	–	–	0.6	10	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	dryland sedge
L	CHGR15	Chondrosum gracile	0.0	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	15	2.8	20	–	–	0.2	3	blue grama
L	CRJU2	Critesion jubatum	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	foxtail barley
L	ELEL5	Elymus elymoides	–	–	0.0	–	1.3	20	0.8	15	0.5	5	–	–	–	–	–	–	2.1	15	1.0	10	0.0	–	–	–	–	–	0.4	5	bottlebrush squirreltail
L	HECO26	Hesperostipa comata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10.4	15	–	–	–	–	–	–	–	–	0.8	1	needle-and-thread
L	KOMA	Koeleria macrantha	–	–	0.8	15	1.0	5	0.5	5	0.6	10	0.0	–	5.8	30	0.0	–	2.6	25	–	–	2.5	15	2.1	15	0.0	–	1.2	9	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4.5	10	–	–	–	–	0.0	–	–	–	–	–	0.3	1	spike-fescue
L	MUMO	Muhlenbergia montana	1.1	20	0.7	15	0.6	10	9.5	30	0.0	–	–	–	–	–	0.1	5	–	–	0.0	–	5.6	15	0.0	–	1.6	15	1.5	8	mountain muhly
L	OREX	Oryzopsis exigua	–	–	–	–	0.1	5	0.1	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	little ricegrass
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.0	15	4.5	10	–	–	1.0	5	–	–	–	–	0.6	2	littleseed ricegrass
L	POPR	Poa pratensis	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Kentucky bluegrass
L	SCSC	Schizachyrium scoparium	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	0.0	0	little bluestem
		FORBS																													
L	ACDI2	Acrolasia dispersa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	bushy blazing-star
L	ACLA5	Achillea lanulosa	–	–	0.0	–	0.0	–	0.5	5	0.4	15	0.1	10	0.1	5	0.0	5	0.6	10	–	–	0.6	10	0.5	10	–	–	0.2	5	western yarrow
L	ALCE2	Allium cernuum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.1	5	–	–	0.0	1	nodding onion
L	ANMU	Anemone multifida	0.1	5	–	–	0.0	5	0.7	20	–	–	0.1	10	0.0	5	–	–	0.0	–	–	–	–	–	0.3	10	–	–	0.1	4	Hudsonian anemone
L	ANRO2	Antennaria rosea	0.6	10	1.3	25	0.6	10	1.6	20	1.0	10	0.6	10	3.3	30	0.0	5	0.6	10	–	–	2.4	30	0.4	20	0.3	15	1.0	15	rose pussytoes
L	APAN2	Apocynum androsaemifolium	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	0.0	0	spreading dogbane
L	ARFR4	Artemisia frigida	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	--	fringed sagewort
L	ASFO	Aster foliaceus	–	–	0.0	–	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	leafybract aster
L	ASSP16	Aster spathulatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	–	–	–	–	–	–	–	–	–	–	0.0	1	western aster
L	ASTE5	Astragalus tenellus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.4	20	0.0	–	–	–	4.1	15	–	–	0.5	3	pulse milkvetch
L	ASTRA	Astragalus	–	–	–	–	0.1	5	1.5	5	2.1	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	2	milkvetch
L	CARO2	Campanula rotundifolia	–	–	0.0	5	0.5	5	0.1	10	0.0	–	–	–	–	–	0.0	–	–	–	–	–	0.1	5	0.6	10	0.0	–	0.1	3	common harebell
L	CHAL7	Chenopodium album	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	lambs-quarters goosefoot
L	DRFI3	Drymocallis fissa	–	–	0.0	–	0.5	5	0.1	5	–	–	0.0	–	2.5	15	0.0	–	–	–	–	–	0.5	5	0.0	–	0.0	5	0.3	3	bigflower cinquefoil
L	EREX4	Erigeron eximius	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	forest fleabane
L	ERFL	Erigeron flagellaris	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	trailing fleabane
L	ERPE3	Erigeron peregrinus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	10	1.1	15	0.3	10	0.3	10	–	–	0.1	3	peregrine fleabane
L	ERSU2	Erigeron subtrinervis	0.8	15	0.1	10	0.1	5	2.8	40	0.1	5	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	6	threenerve fleabane
L	FRVE	Fragaria vesca	–	–	–	–	–	–	0.0	5	–	–	–	–	1.0	10	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	European strawberry
L	FRVI	Fragaria virginiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	0.3	10	–	–	–	–	0.0	1	Virginia strawberry

		Sample	114		115		116		117		118		119		120		122		134		135		139		140		141				
		Transect No.	1		1		1		1		1		1		1		1		1		1		1		1		1				
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	GASE6	Galium septentrionale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.9	20	0.0	–	–	–	–	–	–	–	0.1	2	northern bedstraw
L	GECA3	Geranium caespitosum	–	–	–	–	0.5	25	0.0	–	0.1	10	0.5	5	1.4	25	0.0	5	0.3	10	0.3	10	4.0	30	0.8	15	0.5	5	0.6	11	Fremont geranium
L	HEVI4	Heterotheca villosa	–	–	0.0	–	0.1	5	0.0	–	0.2	15	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	–	–	0.0	–	0.0	2	hairy golden aster
L	LIIN2	Lithospermum incisum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	–	–	–	–	–	–	–	0.0	0	puccoon
L	LIMU3	Lithospermum multiflorum	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	puccoon
L	MAST4	Maianthemum stellatum	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	star Solomon-plume
L	OLPA	Oligosporus pacificus	–	–	–	–	0.1	10	0.0	5	–	–	–	–	0.0	–	–	–	0.0	–	–	–	0.1	5	0.1	5	–	–	0.0	2	sagewort wormwood
L	ORLI	Orogenia linearifolia	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	turkey-peas
L	OXLA3	Oxytropis lambertii	–	–	–	–	–	–	–	–	2.6	10	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.2	1	Lambert crazyweed
L	PESE11	Penstemon secundiflorus	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Fendler penstemon
L	PEVI3	Penstemon virens	–	–	0.0	–	–	–	–	–	1.1	35	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	3	Front Range beardtongue
L	POEF	Potentilla effusa	–	–	–	–	–	–	–	–	0.1	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	0.0	0	horse cinquefoil
L	SISC7	Silene scouleri	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	moss campion
L	SOMI2	Solidago missouriensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	Missouri goldenrod
L	SOSI3	Solidago simplex	–	–	0.1	5	0.5	5	–	–	–	–	–	–	0.1	5	–	–	6.0	25	–	–	1.0	5	1.3	25	0.5	5	0.7	6	Mt. Albert goldenrod
L	VIAS2	Virgulaster ascendens	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Chile aster
		GROUND COVER																													
	.BARE	bare soil	0.5	30	0.0	–	0.0	–	0.8	15	1.0	40	0.0	–	1.0	10	0.0	5	0.2	10	0.0	–	0.6	25	2.2	30	0.1	5	0.5	13	bare soil
	.LITT	litter and duff	97.0	100	96.3	100	97.3	100	94.1	100	93.1	100	98.0	100	96.1	100	98.4	100	98.0	100	98.1	100	94.8	100	89.1	100	96.6	100	95.9	100	duff litter
	.FIGR	gravel fine	0.8	15	0.1	10	–	–	1.5	20	4.0	45	0.0	5	0.6	10	–	–	–	–	–	–	0.9	25	2.9	35	0.5	5	0.9	13	fine gravel
	.MEGR	gravel medium	0.1	5	–	–	–	–	0.3	20	0.3	30	0.1	10	–	–	–	–	–	–	–	–	0.2	10	4.0	25	0.1	5	0.4	8	medium gravel
	.BAVE	live plant bases	0.8	65	2.8	75	2.5	95	3.2	100	1.0	85	1.7	90	1.9	95	1.3	70	1.9	95	1.9	100	3.5	100	1.9	85	2.7	85	2.1	88	live plant bases
	.MOSSON	moss on soil	1.3	20	6.5	40	–	–	2.6	25	1.5	20	3.1	15	1.8	30	6.8	40	1.3	20	–	–	6.6	25	2.1	10	–	–	2.6	19	on soil moss
	.LICHEN	lichen on soil	2.3	45	1.6	30	–	–	7.0	35	3.1	35	0.8	15	0.9	35	2.3	50	3.5	25	–	–	3.6	40	2.3	35	0.1	10	2.1	27	on soil lichen
	.FUNGI	fungi on soil	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	0.0	0	on soil fungi
	.DEERPE	droppings deer	0.5	20	–	–	0.3	10	1.0	25	–	–	0.6	10	–	–	0.1	5	0.4	15	–	–	–	–	0.3	10	–	–	0.2	7	deer droppings
	.WOOD00	wood < ¼ in diam.	55.0	100	52.0	100	62.0	100	47.4	100	63.5	100	52.5	100	46.5	95	–	–	66.3	100	70.2	100	67.5	100	63.0	100	86.2	100	56.3	92	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	18.0	100	20.9	100	17.9	95	3.8	65	12.9	80	15.9	100	16.9	95	74.3	100	21.6	100	15.0	95	12.9	75	21.0	100	9.6	80	20.1	91	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	0.8	15	1.9	45	1.1	15	2.0	35	2.3	20	3.2	40	0.9	25	8.0	95	4.4	55	7.8	50	5.9	35	4.4	50	1.6	30	3.4	39	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	1.0	5	–	–	1.5	10	–	–	0.0	5	2.6	15	–	–	4.0	15	–	–	0.6	10	1.0	5	0.5	5	0.5	5	0.9	6	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	–	–	–	–	–	–	–	–	4.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	0	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	–	–	–	–	–	–	–	–	3.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	0	> 10 in diam. wood

Sample	114	115	116	117	118	119	120	122	134	135	139	140	141
Transect No.	1	1	1	1	1	1	1	1	1	1	1	1	1
Reading No.	1	1	1	1	1	1	1	1	1	1	1	1	1
Tree Cover, %	35.4	76.5	95.8	82.9	67.4	86.9	60.1	111.8	54.1	103.1	87.6	92.4	99.3
Shrub Cover, %	9.2	17.2	14.1	37.2	6.1	22.7	29.2	2.9	18.1	29.3	35.4	3.1	6.6
Graminoid Cover, %	16.2	21.9	32.7	41.0	26.6	31.8	33.9	13.9	68.6	31.8	35.8	19.0	32.3
Forb Cover, %	1.5	1.5	3.2	7.9	8.0	1.6	8.7	0.2	11.4	1.5	9.4	8.5	1.3
Total Live Cover, %	62.3	117.1	145.8	169.0	108.0	142.9	131.9	128.8	152.1	165.7	168.2	123.0	139.4
No. Live Species	16	20	28	28	25	23	24	20	32	19	31	22	16
Tree Basal Area, ft²/ac	118.0	85.5	150.6	55.6	76.3	123.6	88.0	124.3	38.6	69.1	82.6	75.1	123.3

Table B-4. Vegetation cover and frequency for the samples from group SJG – Saloon Gulch, Jenny Creek, and Gunbarrel, First Reading (Before Treatment), N = 17.
Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	123		124		106		106		108		109		110		111		112		113		125		125		126		129		130		131		132				
		Transect No.	1		1		1		2		1		1		1		1		1		1		1		2		1		1		1		1		1				
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1				
		Area†	JG		JG		SG		SG		SG		SG		SG		SG		SG		SG		SG		SG		SG		SG		SG		SG				
		Date	09/06		09/06		07/13		07/13		07/26		07/27		08/09		08/09		08/10		08/11		09/11		09/12		09/12		09/19		09/19		09/20		09/20				
		Year	2001		2001		2000		2000		2000		2000		2000		2000		2000		2000		2001		2001		2001		2001		2001		2001		2001				
		Treatment Code*	O		O		O		O		O		O		O		O		O		O		O		O		O		O		O		O		O				
		Elevation, ft	6710		6520		6360		6360		7490		6520		7190		7360		7480		7640		7920		7920		7971		7300		7308		6738		6843				
		Aspect, °M	308		281		101		101		056		079		017		081		051		074		329		329		020		022		075		059		105				
		Slope, %	15.0		11.0		9.0		9.0		8.0		9.0		21.0		13.0		17.0		25.0		18.0		18.0		17.0		25.0		24.0		17.0		17.0		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																																					
L	JUSC2	Juniperus scopulorum	0.0	–	–	–	–	–	–	–	–	–	0.0	–	0.0	5	–	–	0.0	–	0.1	5	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	0.0	1	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	39.7	100	69.2	100	48.3	100	66.4	100	17.5	100	70.0	100	43.0	100	57.0	100	44.6	100	–	–	13.9	70	20.9	40	0.1	10	53.0	100	32.9	100	73.6	100	53.3	100	41.4	84	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.6	90	–	–	–	–	0.1	20	–	–	–	–	–	–	–	–	0.0	6	ponderosa pine - Seedling
D	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	ponderosa pine - Dead
C	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.4	–	–	–	18.7	–	2.6	–	1.3	--	ponderosa pine - live canopy < 8'
D	PIPU	Picea pungens	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	blue spruce - Dead
L	PSME	Pseudotsuga menziesii	39.0	90	0.1	15	–	–	–	–	67.0	100	0.0	–	39.5	100	–	–	27.2	75	8.5	15	81.7	100	24.3	70	13.2	40	7.0	55	19.7	45	0.0	–	24.5	65	20.7	45	Douglas-fir
E	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	3.8	10	0.4	50	–	–	–	–	–	–	–	–	18.8	60	–	–	–	–	–	–	–	–	1.4	7	Douglas-fir - Seedling
D	PSME	Pseudotsuga menziesii	1.1	15	–	–	–	–	–	–	–	–	–	–	–	–	19.5	35	–	–	14.2	90	–	–	–	–	–	–	44.8	85	–	–	–	–	–	–	4.7	13	Douglas-fir - Dead
C	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6.5	–	16.7	–	–	–	10.5	–	2.0	--	Douglas-fir - live canopy < 8'
		SHRUBS																																					
L	ACGL	Acer glabrum	–	–	–	–	–	–	–	–	11.5	20	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.7	1	Rocky Mountain maple
D	ACGL	Acer glabrum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Rocky Mountain maple - Dead
L	ARUV	Arctostaphylos uva-ursi	11.0	40	4.3	25	0.0	–	0.0	–	–	–	–	–	48.6	85	9.1	40	–	–	–	–	0.0	–	8.3	30	0.0	–	–	–	–	–	0.0	–	–	–	4.8	13	kinnikinnick
L	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.2	5	3.7	10	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	0.0	–	0.2	1	true mountain-mahogany
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	pincushion cactus
L	HODI	Holodiscus discolor	–	–	–	–	–	–	–	–	4.5	15	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	1	ocean-spray
L	JAAM	Jamesia americana	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	waxflower
L	JUCO6	Juniperus communis	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	0.0	–	11.0	20	0.3	10	0.0	–	–	–	–	–	–	–	0.7	2	common juniper
L	OPPO	Opuntia polyacantha	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	plains prickly-pear
L	PAVI11	Padus virginiana	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	common chokecherry
L	PHMO4	Physocarpus monogynus	–	–	–	–	0.0	–	0.0	5	0.5	15	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	mountain ninebark
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	–	–	–	–	2.7	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	1	skunkbrush
L	RICE	Ribes cereum	–	–	–	–	–	–	0.9	–	4.4	5	–	–	1.2	15	1.2	5	5.1	10	6.6	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.1	2	wax currant
D	RICE	Ribes cereum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	wax currant - Dead
L	RIIN2	Ribes inerme	–	–	0.0	–	0.0	–	0.0	–	5.0	10	14.5	30	0.0	–	0.5	5	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	0.0	–	1.2	3	whitestem currant
D	RIIN2	Ribes inerme	–	–	–	–	–	–	–	–	–	–	0.0	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	2	whitestem currant - Dead
L	RILE	Ribes leptanthum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	trumpet gooseberry
L	ROWO	Rosa woodsii	–	–	–	–	–	–	–	–	2.0	20	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	Woods rose
L	RUDE	Rubus deliciosus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.0	10	–	–	–	–	–	–	–	–	–	–	0.1	1	delicious raspberry
L	RUID	Rubus idaeus	–	–	–	–	–	–	–	–	1.6	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	American red raspberry
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	14.3	20	0.4	10	–	–	–	–	–	–	–	–	0.3	10	0.5	20	–	–	–	–	–	–	–	–	–	–	0.9	4	common snowberry
L	SYRO	Symphoricarpos rotundifolius	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	mountain snowberry
L	YUGL	Yucca glauca	6.5	25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	2.6	10	0.0	–	2.1	5	0.7	2	small soapweed
		GRAMINOIDS																																					
L	ACNE9	Achnatherum nelsonii	–	–	–	–	–	–	–	–	2.8	15	–	–	1.1	35	2.6	10	0.0	–	0.0	–	–	–	1.0	10	0.1	10	0.0	–	–	–	–	–	–	–	0.4	5	Nelson's needlegrass
L	AGGI2	Agrostis gigantea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	0.0	1	redtop
L	BOCU	Bouteloua curtipendula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.0	5	0.0	–	–	–	0.1	0	side-oats grama
L	BRIN7	Bromopsis inermis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4.0	30	–	–	–	–	–	–	–	–	–	–	0.2	2	smooth brome
L	BRJA	Bromus japonicus	–	–	–	–	2.1	10	0.0	–	–	–	2.9	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	2	Japanese brome
L	BRPO5	Bromopsis porteri	–	–	–	–	–	–	–	–	2.1	20	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	nodding brome
L	CAMI7	Carex microptera	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	0.0	1	smallwing sedge
L	CARO5	Carex rossii	3.6	50	9.5	50	6.4	35	7.9	40	2.5	5	4.3	30	6.3	50	22.4	70	5.4	55	3.6	45	12.6	60	6.3	70	9.3	60	17.8	60	19.6	75	5.4	40	0.1	10	8.4	47	Ross sedge
L	CASI12	Carex siccata	–	–	–	–	–	–	–	–	40.6	100	–	–	–	–	–	–	–	–	–	–	2.4	25	13.6	60	1.1	30	–	–	–	–	–	–	–	–	3.4	13	silvertop sedge
L	CAXE	Carex xerantica	–	–	–	–	–	–	–	–	0.1	5	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	dryland sedge
L	CHGR15	Chondrosum gracile	0.6	10	1.3	20	5.2	20	1.5	15	–	–	–	–	–	–	0.7	15	1.0	10	6.5	30	–	–	–	–	–	–	0.0	–	0.1	5	2.1	20	0.5	5	1.1	9	blue grama
L	CRBR12	Critesion brachyantherum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.3	20	–	–	–	–	–	–	–	–	–	–	0.1	1	little barley
L	DASP2	Danthonia spicata	–	–	–	–	–	–	–	–	6.5	25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.4	1	poverty oatgrass
L	ELEL5	Elymus elymoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.6	10	0.0	–	–	–	–	–	0.1	1	bottlebrush squirreltail
L	ELGL	Elymus glaucus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	0.0	1	blue wildrye
L	ELRE3	Elytrigia repens	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	creeping quackgrass
L	KOMA	Koeleria macrantha	0.1	5	0.0	5	2.5	25	0.1	10	–	–	–	–	1.9	25	0.9	20	3.3	30	13.6	65	1.6	10	1.0	10	1.8	40	4.8	30	1.7	20	0.0	–	–	–	2.0	17	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4.0	10	–	–	3.5	10	–	–	–	–	0.4	1	spike-fescue
L	MUMO	Muhlenbergia montana	–	–	0.3	10	0.1	5	–	–	–	–	–	–	–	–	–	–	0.6	10	14.5	45	–	–	–	–	–	–	–	–	0.1	5	1.0	5	–	–	1.0	5	mountain muhly
L	NAVI4	Nassella viridula	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	green needlegrass
L	SCSC	Schizachyrium scoparium	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	0	little bluestem

M	Code	Sample	123		124		106		106		108		109		110		111		112		113		125		125		126		129		130		131		132				
		Transect No.	1		1		1		2		1		1		1		1		1		1		1		2		1		1		1		1		1				
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		Avg	Avg	
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	–	–	0.0	–	1.3	15	0.1	5	–	–	–	–	–	–	2.7	20	0.8	40	–	–	–	–	–	–	1.0	5	–	–	0.3	5	littleseed ricegrass
L	POFE	Poa fendleriana	–	–	–	–	–	–	–	–	–	–	–	–	2.0	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	muttongrass
L	POPR	Poa pratensis	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	10.7	20	–	–	–	–	–	–	–	–	–	–	0.6	1	Kentucky bluegrass
L	PSSP6	Pseudoroegneria spicata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.0	5	11.1	50	–	–	–	–	–	–	0.8	15	–	–	–	–	–	–	0.8	4	bluebunch wheatgrass
		FORBS																																					
L	ACLA5	Achillea lanulosa	0.0	–	0.1	5	0.1	5	1.1	15	0.1	5	–	–	0.3	20	0.2	15	0.3	10	1.4	40	0.0	–	2.5	30	0.1	10	0.0	–	0.1	10	0.5	5	–	–	0.4	10	western yarrow
L	ALCE2	Allium cernuum	–	–	–	–	0.0	–	0.0	5	–	–	–	–	0.0	–	–	–	0.5	5	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	1	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.4	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	yellow stonecrop
L	ANHO	Antennaria howellii	–	–	–	–	–	–	–	–	–	–	–	–	7.2	35	–	–	–	–	–	–	–	–	–	–	–	–	7.8	30	–	–	–	–	–	–	0.9	4	Howell's pussytoes
L	ANMU	Anemone multifida	0.1	5	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.1	5	0.1	5	0.1	10	–	–	0.0	–	–	–	–	–	–	–	0.0	2	Hudsonian anemone
L	ANRO2	Antennaria rosea	–	–	0.0	5	–	–	0.1	5	0.1	5	–	–	0.0	–	–	–	0.1	5	2.1	10	1.1	15	2.0	20	–	–	0.0	–	–	–	0.0	–	–	–	0.3	4	rose pussytoes
L	ANSE4	Androsace septentrionalis	–	–	–	–	0.1	5	0.1	10	–	–	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	northern rock-jasmine
L	ARFR4	Artemisia frigida	–	–	–	–	0.0	–	1.7	25	–	–	0.0	–	–	–	–	–	0.0	–	1.0	10	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	0.2	2	fringed sagewort
L	ASTE5	Astragalus tenellus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	15	0.0	–	–	–	0.0	1	pulse milkvetch
L	ASTRA	Astragalus	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	milkvetch
L	BADI	Bahia dissecta	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	ragleaf bahia
L	BODR	Boechera drummondii	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	0.0	1	false-arabis
L	BOFE	Boechera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	false-arabis
L	CARO2	Campanula rotundifolia	–	–	–	–	0.4	20	0.8	20	–	–	0.1	5	0.1	5	0.0	–	–	–	–	–	–	–	0.1	10	–	–	–	–	–	–	–	–	–	–	0.1	4	common harebell
L	CHAL7	Chenopodium album	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	lambs-quarters goosefoot
L	CHDA2	Chamerion danielsii	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	fireweed
L	CHDO	Chaenactis douglasii	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	pincushion
L	COPA3	Collinsia parviflora	–	–	–	–	0.1	5	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	smallflower blue-eyed Mary
L	DRAR8	Drymocallis arguta	–	–	–	–	–	–	–	–	0.6	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	sticky cinquefoil
L	DRFI3	Drymocallis fissa	0.0	–	–	–	–	–	–	–	–	–	–	–	0.8	20	0.0	–	–	–	0.5	5	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.1	1	bigflower cinquefoil
L	ERCO4	Erigeron compositus	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	--	fernleaf fleabane
L	EREX4	Erigeron eximius	–	–	0.1	5	–	–	–	–	–	–	–	–	0.1	5	0.0	–	–	–	–	–	–	–	0.1	10	–	–	–	–	0.0	5	–	–	–	–	0.0	1	forest fleabane
L	ERIGE2	Erigeron	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	fleabane
L	ERPE3	Erigeron peregrinus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.0	10	–	–	–	–	–	–	–	–	–	–	0.1	1	peregrine fleabane
L	ERSU2	Erigeron subtrinervis	–	–	–	–	–	–	–	–	1.6	15	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	threenerve fleabane
L	FORB	forb unknown	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	0.0	0	unknown forb
L	FRVE	Fragaria vesca	–	–	–	–	–	–	–	–	2.3	35	–	–	–	–	–	–	–	–	–	–	–	–	1.0	10	–	–	–	–	–	–	–	–	–	–	0.2	3	European strawberry
L	FRVI	Fragaria virginiana	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Virginia strawberry
L	GADR3	Gastrolychnis drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	alpine campion
L	GASE6	Galium septentrionale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	1.0	10	–	–	–	–	–	–	–	–	–	–	0.1	1	northern bedstraw
L	GECA3	Geranium caespitosum	0.0	5	0.0	–	0.1	5	0.1	5	0.0	–	0.3	20	0.1	10	0.3	25	–	–	0.1	5	0.0	–	4.0	20	–	–	–	–	–	–	0.1	5	0.5	10	0.3	6	Fremont geranium
L	HEFU3	Heterotheca fulcrata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	0.0	0	golden aster
L	HEPA11	Heuchera parvifolia	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	littleleaf alumroot
L	HEVI4	Heterotheca villosa	–	–	–	–	1.3	20	–	–	–	–	0.0	–	0.0	–	0.1	5	–	–	2.5	15	–	–	–	–	–	–	0.0	–	1.1	20	0.0	–	0.0	–	0.3	4	hairy golden aster
L	IPAG	Ipomopsis aggregata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	trumpet gilia
L	LIBO3	Linnaea borealis	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	American twinflower
L	LIMU3	Lithospermum multiflorum	–	–	–	–	–	–	–	–	–	–	0.5	25	–	–	–	–	0.3	10	0.1	5	–	–	–	–	0.3	20	–	–	–	–	–	–	–	–	0.1	4	puccoon
L	LIPU	Liatris punctata	0.0	5	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	0	dotted gayfeather
L	MABI	Machaeranthera bigelovii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.7	15	–	–	–	–	0.0	1	spiny aster
L	MAST4	Maianthemum stellatum	–	–	–	–	–	–	0.0	–	4.3	55	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	3	star Solomon-plume
L	MEDI7	Melandrium dioicum	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	white campion
L	MOFI	Monarda fistulosa	–	–	–	–	–	–	–	–	1.9	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	2	horse mint
L	NOMO2	Noccaea montana	–	–	–	–	0.1	5	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	0.0	1	candytuft
L	OLPA	Oligosporus pacificus	–	–	0.0	–	0.5	5	1.7	20	–	–	0.1	5	–	–	0.3	25	0.3	10	0.6	10	–	–	–	–	–	–	0.0	5	0.5	25	0.5	5	0.1	5	0.3	7	sagewort wormwood
L	ORVI4	Oreocarya virgata	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	miners-candle
L	OXHI2	Oxybaphus hirsutus	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	hairy four-o'clock
L	OXLA3	Oxytropis lambertii	–	–	–	–	0.0	–	1.0	10	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	0.1	1	Lambert crazyweed
L	PEBA2	Penstemon barbatus	–	–	–	–	0.0	–	0.0	–	0.0	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	beardtongue
L	PEVI3	Penstemon virens	0.0	–	–	–	1.0	5	0.1	5	–	–	–	–	–	–	0.1	5	–	–	0.0	–	–	–	–	–	0.1	30	–	–	–	–	0.0	–	0.0	5	0.1	3	Front Range beardtongue
L	PHVI7	Physaria vitulifera	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	roundtip twinpod
L	PLMA2	Plantago major	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	common plantain
L	POEF	Potentilla effusa	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.4	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.0	10	–	–	0.0	–	–	–	–	–	0.1	1	horse cinquefoil
L	PSMO	Pseudocymopterus montanus	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	mountain parsely
L	RUHI2	Rudbeckia hirta	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	0.0	1	black-eyed Susan
L	SCBR3	Scutellaria brittonii	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Britton's scullcap
L	SENEC	Senecio	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	groundsel
L	SOSI3	Solidago simplex	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	1.5	30	–	–	–	–	–	–	0.0	–	–	–	0.1	2	Mt. Albert goldenrod
L	TAOF	Taraxacum officinale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.0	10	–	–	–	–	–	–	–	–	–	–	0.1	1	common dandelion
L	THFE	Thalictrum fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.5	20	–	–	–	–	–	–	–	–	–	–	0.0	1	Fendler meadow-rue
L	TROC	Tradescantia occidentalis	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	spiderwort
L	TRRE3	Trifolium repens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.0	10	–	–	–	–	–	–	–	–	–	–	0.1	1	white Dutch clover
L	UNAL	Unamia alba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	prairie aster
L	VETH	Verbascum thapsus	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	flannel mullein
L	VIOLA	Viola	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	violet

M	Code	Sample	123		124		106		106		108		109		110		111		112		113		125		125		126		129		130		131		132				
		Transect No.	1		1		1		2		1		1		1		1		1		1		1		2		1		1		1		1		1				
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		Avg	Avg	
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		GROUND COVER																																					
	.BARE	bare soil	0.1	5	0.3	10	0.3	10	0.4	15	0.0	–	0.3	10	0.3	20	0.0	5	0.0	–	1.3	40	2.0	5	0.3	10	1.6	40	0.6	10	2.9	55	0.7	15	2.4	35	0.8	17	bare soil
	.LITT	litter and duff	85.8	100	90.2	100	79.2	100	95.7	100	97.3	100	96.0	100	96.0	100	97.9	100	97.5	100	75.8	100	96.2	100	98.5	100	91.3	100	97.9	100	64.7	100	93.3	100	79.1	100	90.1	100	duff litter
	.FIGR	gravel fine	9.6	30	7.8	30	14.2	45	2.0	35	–	–	0.1	10	0.3	15	0.1	5	1.3	20	8.8	65	1.0	5	0.1	10	0.5	20	–	–	14.2	65	2.2	30	8.8	50	4.2	26	fine gravel
	.MEGR	gravel medium	0.3	15	0.1	10	3.6	45	0.3	25	–	–	0.3	10	0.2	15	–	–	0.1	10	9.3	60	–	–	0.1	10	–	–	–	–	16.1	65	2.9	25	8.4	50	2.5	20	medium gravel
	.COBB	cobble 10-25 cm	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	–	–	–	–	–	–	–	–	–	–	0.0	1	cobble
	.BAVE	live plant bases	3.6	70	0.7	45	2.1	70	1.4	70	2.4	100	2.4	65	2.5	100	1.4	85	1.0	60	3.7	100	0.8	70	1.1	90	5.9	100	1.3	80	1.7	85	0.5	55	0.1	25	1.9	75	live plant bases
	.MOSSON	moss on soil	4.5	35	1.3	35	0.5	5	4.5	40	3.3	35	–	–	6.3	20	1.0	5	0.6	10	9.1	75	1.5	25	4.3	50	–	–	–	–	–	–	0.3	10	1.6	10	2.3	21	on soil moss
	.LICHEN	lichen on soil	3.5	55	5.5	50	1.9	35	5.6	45	2.4	25	5.3	25	0.6	10	–	–	0.5	5	3.8	40	0.9	30	1.4	40	–	–	2.6	50	0.4	20	4.5	55	1.6	25	2.4	30	on soil lichen
	.DEERPE	droppings deer	0.4	15	–	–	0.1	5	0.5	20	0.6	10	–	–	1.1	15	0.8	15	0.4	15	0.8	35	1.5	5	0.3	30	0.3	10	–	–	–	–	0.3	10	0.1	5	0.4	11	deer droppings
	.ELKPEL	droppings elk	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	1.0	5	–	–	0.1	10	–	–	0.1	1	elk droppings
	.WOOD00	wood < ¼ in diam.	73.4	100	86.0	100	65.2	100	75.4	100	39.4	100	71.7	100	84.0	100	76.5	100	61.0	100	32.3	100	85.0	100	65.0	100	51.0	100	78.3	100	48.5	100	83.2	100	52.7	100	66.4	100	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	5.5	90	2.4	70	5.1	65	5.0	65	5.7	90	7.5	85	4.9	90	16.0	100	16.6	100	5.3	95	8.1	100	11.0	80	23.5	90	10.8	100	4.3	80	6.3	95	15.5	85	9.0	87	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	1.1	30	1.9	50	3.1	65	3.4	65	3.7	60	4.2	40	1.1	50	2.4	50	8.6	75	6.0	50	2.1	65	4.8	80	9.8	90	5.3	60	2.9	45	1.8	20	10.2	65	4.3	56	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	–	–	–	–	–	–	–	–	8.1	30	0.6	10	–	–	0.5	5	2.0	10	5.0	10	–	–	3.3	30	5.3	50	0.5	5	–	–	0.0	5	2.6	20	1.6	10	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	–	–	–	–	–	–	7.1	25	–	–	0.5	5	–	–	–	–	3.4	25	–	–	–	–	1.0	10	1.0	5	–	–	–	–	–	–	0.8	4	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	–	–	–	–	–	–	–	–	4.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	0	> 10 in diam. wood

	Sample	123	124	106	106	108	109	110	111	112	113	125	125	126	129	130	131	132
	Transect No.	1	1	1	2	1	1	1	1	1	1	1	2	1	1	1	1	1
	Reading No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Tree Cover, %	78.7	69.3	48.3	66.4	84.5	70.0	86.2	57.4	71.8	9.2	95.6	45.2	32.1	60.0	52.6	73.6	53.3
	Shrub Cover, %	17.5	4.3	0.0	0.9	44.0	17.6	49.8	10.9	5.2	10.5	0.3	21.8	0.3	0.7	5.4	0.4	2.1
	Graminoid Cover, %	4.8	11.0	16.3	9.5	55.0	8.4	11.4	26.5	11.3	49.4	19.3	39.1	16.2	24.9	27.0	9.5	0.5
	Forb Cover, %	0.4	0.4	4.3	7.0	11.2	1.2	9.0	1.1	1.4	10.2	1.4	17.5	1.5	8.3	2.8	1.1	0.7
	Total Live Cover, %	101.4	84.9	68.9	83.8	194.7	97.2	156.5	95.9	89.7	79.2	116.6	123.6	50.1	93.9	87.9	84.6	56.7
	No. Live Species	19	16	27	28	34	22	31	20	19	29	17	32	15	24	23	24	13
	Tree Basal Area, ft²/ac	149.6	220.3	128.2	128.2	92.1	61.5	159.0	128.0	115.3	6.5	135.2	182.2	190.1	68.8	96.7	113.3	101.4

Table B-5. Vegetation cover and frequency for the samples from group SJG – Saloon Gulch, Jenny Creek, and Gunbarrel, Second Reading (After Fire), N = 9.
Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	106		106		108		109		110		111		112		129		130				
		Transect No.	1		2		1		1		1		1		1		1		1				
		Reading No.	2		2		2		2		2		2		2		2		2				
		Area†	SG		SG		SG		SG		SG		SG		SG		SG		SG				
		Date	09/17		09/17		09/05		09/17		09/16		09/16		09/05		09/06		09/06				
		Year	2002		2002		2002		2002		2002		2002		2002		2002		2002				
		Treatment Code*	F11		F11		F31		F21		F31		F31		F11		F31		F31				
		Elevation, ft	6360		6360		7490		6520		7190		7360		7480		7300		7308				
		Aspect, °M	101		101		056		079		017		081		051		022		075				
		Slope, %	9.0		9.0		8.0		9.0		21.0		13.0		17.0		25.0		24.0		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																					
L	JUSC2	Juniperus scopulorum	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	53.0	100	63.9	100	–	–	65.3	100	–	–	–	–	8.3	50	–	–	–	–	21.2	39	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	ponderosa pine - Seedling
D	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	0.0	–	0.0	–	29.1	100	22.1	60	0.2	20	5.7	20	ponderosa pine - Dead
C	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	ponderosa pine - live canopy < 8'
D	PIPU	Picea pungens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	blue spruce - Dead
L	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	0.1	10	–	–	–	–	21.6	45	–	–	–	–	2.4	6	Douglas-fir
E	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Douglas-fir - Seedling
D	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	0.0	–	0.0	–	15.1	55	0.0	–	0.2	25	1.7	9	Douglas-fir - Dead
C	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Douglas-fir - live canopy < 8'
		SHRUBS																					
L	ACGL	Acer glabrum	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Rocky Mountain maple
D	ACGL	Acer glabrum	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Rocky Mountain maple - Dead
L	ARUV	Arctostaphylos uva-ursi	–	–	–	–	–	–	–	–	0.1	10	–	–	–	–	–	–	0.2	15	0.0	3	kinnikinnick
L	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	0.0	–	0.0	--	true mountain-mahogany
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	pincushion cactus
L	HODI	Holodiscus discolor	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	ocean-spray
L	JAAM	Jamesia americana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	waxflower
L	JUCO6	Juniperus communis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	common juniper
L	OPPO	Opuntia polyacantha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	plains prickly-pear
L	PAVI11	Padus virginiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	common chokecherry
L	PHMO4	Physocarpus monogynus	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	mountain ninebark
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	skunkbrush
L	RICE	Ribes cereum	0.0	–	0.0	–	–	–	0.0	–	0.0	–	–	–	0.0	5	–	–	–	–	0.0	1	wax currant
D	RICE	Ribes cereum	–	–	0.4	–	–	–	14.3	–	–	–	–	–	–	–	–	–	–	–	1.6	--	wax currant - Dead
L	RIIN2	Ribes inerme	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	whitestem currant
D	RIIN2	Ribes inerme	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	whitestem currant - Dead
L	RILE	Ribes leptanthum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	trumpet gooseberry
L	ROWO	Rosa woodsii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Woods rose
L	RUDE	Rubus deliciosus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	delicious raspberry
L	RUID	Rubus idaeus	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	American red raspberry
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	--	common snowberry
L	SYRO	Symphoricarpos rotundifolius	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	mountain snowberry
L	YUGL	Yucca glauca	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	0.0	--	small soapweed
		GRAMINOIDS																					
L	ACNE9	Achnatherum nelsonii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Nelson's needlegrass
L	AGGI2	Agrostis gigantea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	redtop
L	BOCU	Bouteloua curtipendula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	side-oats grama
L	BRIN7	Bromopsis inermis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	smooth brome
L	BRJA	Bromus japonicus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Japanese brome
L	BRPO5	Bromopsis porteri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	nodding brome
L	CAMI7	Carex microptera	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	smallwing sedge
L	CARO5	Carex rossii	0.0	5	1.3	25	0.5	5	2.3	30	–	–	0.1	5	0.0	–	–	–	–	–	0.5	8	Ross sedge
L	CASI12	Carex siccata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	silvertop sedge
L	CAXE	Carex xerantica	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	dryland sedge
L	CHGR15	Chondrosum gracile	2.5	10	1.0	5	–	–	–	–	–	–	–	–	0.0	–	–	–	0.7	20	0.5	4	blue grama
L	CRBR12	Critesion brachyantherum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	little barley
L	DASP2	Danthonia spicata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	poverty oatgrass
L	ELEL5	Elymus elymoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	bottlebrush squirreltail
L	ELGL	Elymus glaucus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	blue wildrye
L	ELRE3	Elytrigia repens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	creeping quackgrass
L	KOMA	Koeleria macrantha	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	0.1	1	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	spike-fescue
L	MUMO	Muhlenbergia montana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	1	mountain muhly
L	NAVI4	Nassella viridula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	green needlegrass

M	Code	Sample	106		106		108		109		110		111		112		129		130				
		Transect No.	1		2		1		1		1		1		1		1		1				
		Reading No.	2		2		2		2		2		2		2		2		2		Avg	Avg	
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	littleseed ricegrass
L	POFE	Poa fendleriana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	muttongrass
L	POPR	Poa pratensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Kentucky bluegrass
L	PSSP6	Pseudoroegneria spicata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	bluebunch wheatgrass
L	SCSC	Schizachyrium scoparium	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	little bluestem
		FORBS																					
L	ACLA5	Achillea lanulosa	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	western yarrow
L	ALCE2	Allium cernuum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	yellow stonecrop
L	ANHO	Antennaria howellii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Howell's pussytoes
L	ANMU	Anemone multifida	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Hudsonian anemone
L	ANRO2	Antennaria rosea	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	rose pussytoes
L	ANSE4	Androsace septentrionalis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	northern rock-jasmine
L	ARFR4	Artemisia frigida	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	fringed sagewort
L	ASTE5	Astragalus tenellus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	pulse milkvetch
L	ASTRA	Astragalus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	milkvetch
L	BADI	Bahia dissecta	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	ragleaf bahia
L	BODR	Boechera drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	false-arabis
L	BOFE	Boechera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	false-arabis
L	CARO2	Campanula rotundifolia	0.0	–	0.3	10	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	1	common harebell
L	CHAL7	Chenopodium album	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	lambs-quarters goosefoot
L	CHDA2	Chamerion danielsii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	fireweed
L	CHDO	Chaenactis douglasii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	pincushion
L	COPA3	Collinsia parviflora	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	smallflower blue-eyed Mary
L	DRAR8	Drymocallis arguta	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	sticky cinquefoil
L	DRFI3	Drymocallis fissa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	bigflower cinquefoil
L	ERCO4	Erigeron compositus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	fernleaf fleabane
L	EREX4	Erigeron eximius	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	forest fleabane
L	ERIGE2	Erigeron	0.0	–	0.1	5	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	0.0	1	fleabane
L	ERPE3	Erigeron peregrinus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	peregrine fleabane
L	ERSU2	Erigeron subtrinervis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	threenerve fleabane
L	FORB	forb unknown	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	unknown forb
L	FRVE	Fragaria vesca	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	European strawberry
L	FRVI	Fragaria virginiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Virginia strawberry
L	GADR3	Gastrolychnis drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	alpine campion
L	GASE6	Galium septentrionale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	northern bedstraw
L	GECA3	Geranium caespitosum	0.0	–	–	–	0.0	–	0.2	20	0.0	5	0.0	5	0.1	5	0.0	–	0.0	5	0.0	4	Fremont geranium
L	HEFU3	Heterotheca fulcrata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	golden aster
L	HEPA11	Heuchera parvifolia	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	littleleaf alumroot
L	HEVI4	Heterotheca villosa	0.0	–	0.0	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	0.0	–	0.0	--	hairy golden aster
L	IPAG	Ipomopsis aggregata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	trumpet gilia
L	LIBO3	Linnaea borealis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	American twinflower
L	LIMU3	Lithospermum multiflorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	puccoon
L	LIPU	Liatris punctata	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	0.0	1	dotted gayfeather
L	MABI	Machaeranthera bigelovii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	spiny aster
L	MAST4	Maianthemum stellatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	star Solomon-plume
L	MEDI7	Melandrium dioicum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	white campion
L	MOFI	Monarda fistulosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	horse mint
L	NOMO2	Noccaea montana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	candytuft
L	OLPA	Oligosporus pacificus	0.0	–	0.0	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	0.0	5	0.0	1	sagewort wormwood
L	ORVI4	Oreocarya virgata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	--	miners-candle
L	OXHI2	Oxybaphus hirsutus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	hairy four-o'clock
L	OXLA3	Oxytropis lambertii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Lambert crazyweed
L	PEBA2	Penstemon barbatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	beardtongue
L	PEVI3	Penstemon virens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Front Range beardtongue
L	PHVI7	Physaria vitulifera	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	roundtip twinpod
L	PLMA2	Plantago major	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	common plantain
L	POEF	Potentilla effusa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	horse cinquefoil
L	PSMO	Pseudocymopterus montanus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	mountain parsely
L	RUHI2	Rudbeckia hirta	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	black-eyed Susan
L	SCBR3	Scutellaria brittonii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Britton's scullcap
L	SENEC	Senecio	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	groundsel
L	SOSI3	Solidago simplex	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Mt. Albert goldenrod
L	TAOF	Taraxacum officinale	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	common dandelion
L	THFE	Thalictrum fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	Fendler meadow-rue
L	TROC	Tradescantia occidentalis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	spiderwort
L	TRRE3	Trifolium repens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	white Dutch clover
L	UNAL	Unamia alba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	prairie aster
L	VETH	Verbascum thapsus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	flannel mullein
L	VIOLA	Viola	–	–	0.1	5	–	–	0.3	15	–	–	–	–	–	–	–	–	–	–	0.0	2	violet

M	Code	Sample	106		106		108		109		110		111		112		129		130				
		Transect No.	1		2		1		1		1		1		1		1		1				
		Reading No.	2		2		2		2		2		2		2		2		2		Avg	Avg	
	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		GROUND COVER																					
	.BARE	bare soil	49.5	100	44.4	90	60.3	100	29.9	65	48.1	100	57.9	100	40.4	100	53.3	100	46.5	100	47.8	95	bare soil
	.LITT	litter and duff	16.5	95	24.2	95	12.9	100	62.2	100	21.7	95	6.8	95	22.7	100	14.0	100	5.6	100	20.7	98	duff litter
	.FIGR	gravel fine	24.4	100	28.1	100	23.4	90	5.4	45	29.0	100	32.6	100	31.9	100	29.4	100	42.5	100	27.4	93	fine gravel
	.MEGR	gravel medium	9.4	90	3.0	70	3.4	45	0.6	20	1.2	50	2.7	65	4.9	95	3.4	85	5.1	95	3.7	68	medium gravel
	.COBB	cobble 10-25 cm	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	0.1	1	cobble
	.BAVE	live plant bases	0.2	20	0.2	30	0.0	10	1.4	45	0.0	5	0.0	10	0.0	10	0.0	–	0.3	50	0.3	20	live plant bases
	.MOSSON	moss on soil	–	–	2.0	5	–	–	1.6	10	–	–	–	–	–	–	–	–	–	–	0.4	2	on soil moss
	.LICHEN	lichen on soil	–	–	–	–	–	–	0.6	10	–	–	–	–	–	–	–	–	–	–	0.1	1	on soil lichen
	.DEERPE	droppings deer	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	deer droppings
	.ELKPEL	droppings elk	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	elk droppings
	.WOOD00	wood < ¼ in diam.	6.3	90	8.1	75	0.1	5	43.0	100	1.3	50	0.9	35	11.1	100	0.2	15	0.8	60	8.0	59	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	1.0	30	2.2	50	–	–	2.8	75	–	–	1.1	35	0.3	15	0.7	40	0.1	10	0.9	28	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	0.7	15	1.8	25	–	–	1.5	10	–	–	–	–	–	–	–	–	–	–	0.4	6	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	3.5	5	–	–	–	–	–	–	–	–	–	–	0.6	10	–	–	0.5	2	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	> 10 in diam. wood

	Sample	106	106	108	109	110	111	112	129	130
	Transect No.	1	2	1	1	1	1	1	1	1
	Reading No.	2	2	2	2	2	2	2	2	2
	Tree Cover, %	53.0	63.9	0.0	65.4	0.0	0.0	29.9	0.0	0.0
	Shrub Cover, %	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
	Graminoid Cover, %	2.5	2.3	0.5	2.8	0.0	0.1	0.0	0.0	0.8
	Forb Cover, %	0.0	0.5	0.0	0.5	0.0	0.1	0.1	0.0	0.1
	Total Live Cover, %	55.5	66.7	0.5	69.0	0.1	0.3	30.0	0.0	1.0
	No. Live Species	10	11	8	14	4	5	11	3	9
	Tree Basal Area, ft²/ac	101.9		0.0	60.0	0.0	0.0	35.0	0.0	0.0

Table B-6. Vegetation cover and frequency for the samples from group TRUM – Trumbull, First Reading (Before Treatment), Part 1 (17 samples in this table, total 42 samples). Averages across all 42 samples shown in Part 3 (Table B-8). Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	101		101		102		103		103		104		105		107		127		127		127		127		128		128		128		128		133		
		Transect No.	1		2		1		1		2		1		1		1		1		2		3		4		1		2		3		4		1		
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		
		Area†	TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		
		Date	06/29		06/29		06/30		07/10		07/10		07/12		07/13		07/14		09/13		09/13		09/13		09/13		09/14		09/21		09/21		09/25		09/25		
		Year	2000		2000		2000		2000		2000		2000		2000		2000		2001		2001		2001		2001		2001		2001		2001		2001		2001		
		Treatment Code*	O		O		O		O		O		O		O		O		O		O		O		O		O		O		O		O		O		
		Elevation, ft	6650		6650		6560		6800		6800		6740		6790		6920		6620		6701		6712		6797		6603		6657		6710		6641		6670		
		Aspect, °M	279		279		260		249		249		006		313		259		268		253		267		251		257		158		160		174		173		
		Slope, %	11.0		11.0		12.0		19.0		19.0		9.0		24.0		12.0		12.0		17.0		28.0		34.0		17.0		18.0		26.0		47.0		38.0		
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																																			
L	JUSC2	Juniperus scopulorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	49.6	100	57.0	100	68.5	100	53.1	100	24.3	70	70.5	100	60.5	100	71.0	100	53.0	100	34.6	80	46.1	100	54.9	100	52.0	100	39.4	95	26.1	80	31.6	85	41.7	90	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	1.3	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	ponderosa pine - Seedling
C	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ponderosa pine - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	0.0	–	0.0	–	–	–	–	–	–	–	–	–	22.4	85	5.8	30	–	–	0.1	5	5.5	15	5.3	25	–	–	–	–	–	–	–	–	–	–	Douglas-fir
C	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Douglas-fir - dead canopy < 8'
		SHRUBS																																			
L	ACGL	Acer glabrum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain maple
L	ARUV	Arctostaphylos uva-ursi	0.0	–	3.0	10	0.0	–	–	–	0.0	–	–	–	3.0	30	0.0	–	–	–	10.6	15	13.1	45	6.0	15	0.0	–	–	–	–	–	3.4	5	–	–	kinnikinnick
L	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	6.6	20	15.8	40	0.0	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	true mountain-mahogany
D	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	0.0	20	0.0	40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	true mountain-mahogany - Dead
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	pincushion cactus
L	HODI	Holodiscus discolor	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ocean-spray
L	JUCO6	Juniperus communis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common juniper
L	LEPU	Leptodactylon pungens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	granite gilia
L	OPPO	Opuntia polyacantha	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	plains prickly-pear
L	PAMY	Paxistima myrsinites	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain-lover
L	PAVI11	Padus virginiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common chokecherry
L	PESI	Pediocactus simpsonii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Simpson hedgehog cactus
L	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.3	5	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain ninebark
D	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain ninebark - Dead
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	skunkbrush
L	RICE	Ribes cereum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	wax currant
L	RIIN2	Ribes inerme	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	0.0	–	0.0	–	whitestem currant
L	ROWO	Rosa woodsii	–	–	–	–	–	–	–	–	–	–	0.4	5	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	Woods rose
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common snowberry
L	YUGL	Yucca glauca	–	–	–	–	–	–	3.6	10	9.5	20	0.0	–	–	–	–	–	0.5	5	0.0	–	0.2	–	0.6	–	2.8	10	1.0	15	1.8	10	2.5	10	0.4	–	small soapweed
		GRAMINOIDS																																			
L	ACHY	Achnatherum hymenoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Indian ricegrass
L	ACNE9	Achnatherum nelsonii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	0.1	5	0.0	–	Nelson's needlegrass
L	AGCR	Agropyron cristatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	crested wheatgrass
L	ANTE6	Anisantha tectorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	cheatgrass
L	BOCU	Bouteloua curtipendula	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	2.6	10	0.0	–	3.5	5	0.0	–	9.6	25	side-oats grama
L	CARO5	Carex rossii	2.8	25	8.8	60	12.4	75	1.8	25	0.0	–	1.6	15	0.9	20	4.3	60	12.3	50	1.6	10	0.8	15	2.3	25	8.6	35	1.6	20	–	–	1.5	5	13.8	40	Ross sedge
L	CASI12	Carex siccata	–	–	–	–	–	–	–	–	–	–	0.8	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	silvertop sedge
L	CHGR15	Chondrosum gracile	2.5	15	1.8	25	0.5	5	0.6	10	1.3	15	–	–	–	–	1.4	25	3.1	20	1.0	15	0.0	–	0.1	5	5.9	35	0.5	5	0.0	–	–	–	3.5	25	blue grama
L	ELCA4	Elymus canadensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Canada wildrye
L	ELEL5	Elymus elymoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.8	25	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bottlebrush squirreltail
L	ELTR7	Elymus trachycaulus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	slender wheatgrass
L	HECO26	Hesperostipa comata	0.7	15	–	–	1.0	10	11.9	45	7.0	25	3.5	15	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	needle-and-thread
L	KOMA	Koeleria macrantha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	1.0	5	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spike-fescue
L	MUFI	Muhlenbergia filiculmis	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	slimstem muhly
L	MUMO	Muhlenbergia montana	0.0	–	0.8	15	0.6	10	6.3	35	7.6	35	0.5	5	0.0	–	–	–	0.0	–	0.0	–	–	–	–	–	4.5	25	0.3	10	0.0	5	–	–	0.5	5	mountain muhly
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	0.0	5	2.1	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	littleseed ricegrass
L	POFE	Poa fendleriana	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	muttongrass
L	PSSP6	Pseudoroegneria spicata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bluebunch wheatgrass
L	SCSC	Schizachyrium scoparium	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	0.1	5	1.0	25	4.0	10	0.1	10	2.1	15	1.7	15	little bluestem
L	VUOC	Vulpia octoflora	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	six-weeks fescue
		FORBS																																			
L	ACAL10	Acrolasia albicaulis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	whitestem blazing-star
L	ACLA5	Achillea lanulosa	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	0.5	5	–	–	–	–	0.0	5	0.0	–	–	–	–	–	–	–	0.0	5	western yarrow
L	ALAC4	Allium acuminatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	tapertip onion
L	ALAN3	Aletes anisatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain Indian parsely
L	ALCE2	Allium cernuum	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	0.0	–	–	–	–	–	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	yellow stonecrop

		Sample	101		101		102		103		103		104		105		107		127		127		127		127		128		128		128		128		133		
		Transect No.	1		2		1		1		2		1		1		1		1		2		3		4		1		2		3		4		1		
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	ANMU	Anemone multifida	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	Hudsonian anemone
L	ANRO2	Antennaria rosea	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	rose pussytoes
L	ANSE4	Androsace septentrionalis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.1	10	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	northern rock-jasmine
L	APAN2	Apocynum androsaemifolium	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spreading dogbane
L	APCA	Apocynum cannabinum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Indian hemp
L	ARFR4	Artemisia frigida	0.3	10	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	0.0	5	2.0	5	0.0	5	0.0	–	0.0	–	–	–	–	–	–	–	–	–	fringed sagewort
L	ASMI10	Astragalus missouriensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	0.0	–	–	–	–	–	Missouri milkvetch
L	ASMI9	Astragalus miser	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	weedy milkvetch
L	ASTE5	Astragalus tenellus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	pulse milkvetch
L	ASTRA	Astragalus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	milkvetch
L	BODR	Boechera drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	false-arabis
L	BOFE	Boechera fendleri	–	–	0.1	5	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	false-arabis
L	CARO2	Campanula rotundifolia	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common harebell
L	CEFO2	Cerastium fontanum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mouse-ear
L	CHAL7	Chenopodium album	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	lambs-quarters goosefoot
L	CHDA2	Chamerion danielsii	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	fireweed
L	CHDO	Chaenactis douglasii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	0.0	5	–	–	–	–	–	–	–	–	0.6	10	–	–	pincushion
L	CICA11	Cirsium canescens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	prairie thistle
L	DAPU5	Dalea purpurea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	violet prairie-clover
L	DRFI3	Drymocallis fissa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	1.0	15	–	–	–	–	–	–	–	–	–	–	–	–	bigflower cinquefoil
L	ERCO4	Erigeron compositus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	fernleaf fleabane
L	ERDI4	Erigeron divergens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spreading fleabane
L	ERIGE2	Erigeron	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	fleabane
L	ERSU2	Erigeron subtrinervis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	–	–	–	–	threenerve fleabane
L	ERVE2	Erigeron vetensis	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	early bluetop fleabane
L	FORB	forb unknown	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	unknown forb
L	GADR3	Gastrolychnis drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	alpine campion
L	GECA3	Geranium caespitosum	0.3	15	0.1	5	0.0	–	0.5	10	–	–	0.0	–	0.0	5	3.5	50	0.1	10	0.0	5	–	–	–	–	0.1	5	0.0	–	–	–	–	–	0.1	15	Fremont geranium
L	GIPI	Gilia pinnatifida	–	–	0.1	5	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	–	0.0	–	sticky gilia
L	HEVI4	Heterotheca villosa	1.0	10	0.1	10	–	–	0.0	–	–	–	0.0	–	–	–	0.0	–	0.0	–	0.5	5	0.0	–	0.1	5	0.0	–	0.0	5	0.0	–	0.0	–	0.0	–	hairy golden aster
L	IPAG	Ipomopsis aggregata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	–	0.0	5	0.0	–	–	–	–	–	–	–	–	–	–	–	trumpet gilia
L	LASE	Lactuca serriola	–	–	–	–	–	–	0.1	5	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	prickly lettuce
L	LIIN2	Lithospermum incisum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	puccoon
L	LIMU3	Lithospermum multiflorum	0.1	10	0.1	5	–	–	–	–	0.0	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	puccoon
L	LIPU	Liatris punctata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	–	0.1	5	0.0	5	0.0	–	0.0	–	–	–	–	–	–	–	dotted gayfeather
L	LYJU	Lygodesmia juncea	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	rush skeleton-plant
L	MABI	Machaeranthera bigelovii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	spiny aster
L	MELA3	Mertensia lanceolata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	lanceleaf bluebells
L	MENTH	Mentha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mint
L	NOMO2	Noccaea montana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	candytuft
L	NURU	Nuttallia rusbyi	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	creamy blazing star
L	OLDR	Oligosporus dracunculus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.5	10	–	–	wild tarragon
L	OLPA	Oligosporus pacificus	0.6	10	0.3	10	0.0	–	0.1	5	–	–	–	–	–	–	1.1	10	0.2	15	–	–	0.0	–	0.0	–	0.1	5	0.0	–	–	–	0.0	–	0.5	5	sagewort wormwood
L	ORVI4	Oreocarya virgata	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	0.1	5	–	–	miners-candle
L	OXLA3	Oxytropis lambertii	0.0	–	0.0	–	–	–	0.6	10	0.0	–	0.1	5	–	–	–	–	–	–	0.1	5	–	–	–	–	0.0	–	0.0	–	–	–	0.0	–	–	–	Lambert crazyweed
L	PACKE	Packera	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	groundsel
L	PAFE4	Packera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Fendler groundsel
L	PAJA	Paronychia jamesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	5	–	–	0.1	5	–	–	–	–	0.1	10	0.0	–	–	–	James nailwort
L	PANE7	Packera neomexicana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	0.1	5	–	–	–	–	New Mexico groundsel
L	PEBA2	Penstemon barbatus	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	beardtongue
L	PEVI3	Penstemon virens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	–	–	Front Range beardtongue
L	PHHE2	Phacelia heterophylla	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	scorpion weed
L	PHVI7	Physaria vitulifera	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	0.1	10	0.0	5	–	–	–	–	0.1	10	0.8	25	0.3	15	–	–	roundtip twinpod
L	POEF	Potentilla effusa	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	horse cinquefoil
L	PSJA2	Pseudostellaria jamesiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	tuber starwort
L	PTAL3	Pterogonum alatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	0.1	5	–	–	–	–	–	–	–	–	winged buckwheat
L	SENEC	Senecio	–	–	–	–	–	–	–	–	0.1	5	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	groundsel
L	SESP3	Senecio spartioides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	broom groundsel
L	SOLID	Solidago	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	goldenrod
L	SOSI3	Solidago simplex	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Mt. Albert goldenrod
L	TAOF	Taraxacum officinale	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common dandelion
L	TIES	Tithymalus esula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	leafy spurge
L	TOEX2	Townsendia exscapa	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Easter-daisy
L	TOVE2	Toxicoscordion venenosum	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	meadow death camas
L	TUGL	Turritis glabra	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	tower mustard
L	UNAL	Unamia alba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	prairie aster
L	VETH	Verbascum thapsus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	–	0.0	–	flannel mullein
L	VINU2	Viola nuttallii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Nuttall violet
L	VIOLA	Viola	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	violet

M	Code	Sample	101		101		102		103		103		104		105		107		127		127		127		127		128		128		128		128		133		
		Transect No.	1		2		1		1		2		1		1		1		1		2		3		4		1		2		3		4		1		
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		GROUND COVER																																			
	.BARE	bare soil	0.1	15	1.2	50	0.0	–	1.8	45	3.6	75	1.1	15	0.3	15	0.8	15	0.9	25	7.5	80	2.3	55	1.1	45	6.4	60	8.8	65	18.7	90	25.1	85	2.5	55	bare soil
	.LITT	litter and duff	94.4	100	88.7	100	96.1	100	92.7	100	61.8	100	96.5	100	90.8	100	92.3	100	80.5	100	40.3	100	66.0	100	78.0	100	61.8	100	46.4	100	32.4	100	22.0	100	59.9	100	duff litter
	.FIGR	gravel fine	3.9	25	5.7	55	–	–	2.3	40	15.4	80	0.8	15	5.1	15	2.4	25	17.6	55	39.4	80	17.2	75	6.5	60	15.4	75	25.1	70	27.1	90	32.2	95	16.3	65	fine gravel
	.MEGR	gravel medium	0.3	20	1.0	50	–	–	0.3	20	12.9	75	–	–	2.0	15	4.3	25	0.1	10	12.0	70	11.3	70	13.3	60	14.0	75	19.0	65	20.6	90	18.4	85	7.1	60	medium gravel
	.COGR	gravel coarse	–	–	–	–	–	–	–	–	1.7	40	–	–	0.1	5	–	–	0.0	5	–	–	0.5	10	0.0	5	0.3	20	0.2	15	0.2	15	0.8	25	1.6	35	coarse gravel
	.COBB	cobble 10-25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	0.0	5	0.5	5	5.8	35	cobble
	.STON	stone > 25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.7	15	stone
	.BOUL	boulder > 60 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	4.1	5	boulder
	.BEDR	bedrock exposed	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	exposed bedrock
	.BAVE	live plant bases	1.0	50	3.3	75	3.6	70	2.5	55	4.5	55	0.9	20	1.5	50	0.7	60	1.4	75	0.8	50	1.1	60	1.3	45	2.1	80	0.8	45	1.0	60	1.0	45	–	–	live plant bases
	.MOSSON	moss on soil	3.1	25	4.5	60	0.5	20	2.1	35	2.5	30	0.3	10	2.9	35	7.6	30	0.1	5	0.1	5	–	–	1.0	5	0.5	5	–	–	0.1	5	–	–	0.6	10	on soil moss
	.LICHEN	lichen on soil	1.5	25	6.3	75	1.1	15	0.9	30	1.7	25	0.1	5	1.9	45	9.3	35	2.7	50	1.8	35	0.1	5	5.5	45	1.3	25	1.0	5	0.1	10	–	–	2.9	35	on soil lichen
	.ALGAE	algae on soil	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	algae on soil
	.DEERPE	droppings deer	–	–	–	–	–	–	0.4	20	0.1	5	–	–	–	–	–	–	0.2	20	0.2	25	–	–	0.7	20	0.1	10	–	–	–	–	–	–	–	–	deer droppings
	.ELKPEL	droppings elk	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	elk droppings
	.BEAR	droppings bear	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bear droppings
	.WOOD00	wood < ¼ in diam.	84.8	100	78.8	100	92.7	100	77.4	100	44.7	95	83.9	100	73.5	100	78.2	100	71.3	100	32.8	100	55.0	100	64.2	100	53.9	95	40.6	90	24.7	75	12.7	65	46.6	100	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	5.3	95	4.5	80	3.5	95	4.2	35	5.3	65	7.2	80	7.4	90	5.2	80	5.6	85	2.5	60	7.5	90	5.2	90	6.1	80	6.7	60	3.9	50	5.5	45	5.7	60	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	2.0	60	2.1	60	4.9	50	–	–	1.8	30	4.2	50	2.3	35	0.1	10	1.4	35	0.6	15	0.9	25	0.8	40	0.1	15	1.5	10	3.5	25	0.6	10	1.1	20	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	1.1	10	0.1	10	0.6	10	–	–	–	–	–	–	2.6	20	–	–	–	–	–	–	0.0	5	0.5	5	–	–	–	–	0.1	5	1.0	5	–	–	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	2.5	10	–	–	–	–	–	–	0.5	5	3.0	10	–	–	–	–	1.0	5	–	–	–	–	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	> 10 in diam. wood

	Sample	101	101	102	103	103	104	105	107	127	127	127	127	128	128	128	128	133
	Transect No.	1	2	1	1	2	1	1	1	1	2	3	4	1	2	3	4	1
	Reading No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Tree Cover, %	49.6	57.0	68.5	54.4	24.3	70.5	82.9	76.8	53.1	34.7	51.6	60.2	52.0	39.4	26.1	31.6	41.7
	Shrub Cover, %	0.0	3.0	0.0	10.2	25.3	0.4	3.0	0.0	0.5	10.9	13.3	6.6	2.8	1.0	1.8	5.9	0.4
	Graminoid Cover, %	5.9	11.3	14.5	20.6	18.1	6.9	1.0	6.6	15.4	3.1	0.8	2.5	22.8	6.3	3.7	3.8	30.0
	Forb Cover, %	2.3	1.0	0.0	1.5	0.1	0.3	0.0	6.2	1.6	3.0	1.3	0.5	1.1	0.3	1.5	1.6	0.6
	Total Live Cover, %	57.9	72.3	83.0	86.8	67.7	78.0	86.9	89.5	70.6	51.8	66.9	69.9	78.7	46.9	33.0	42.8	72.7
	No. Live Species	17	17	11	21	17	18	9	21	20	24	19	19	25	19	19	19	16
	Tree Basal Area, ft²/ac	73.7	75.9	133.8	64.2	64.4	189.3	95.4	208.6									

Table B-7. Vegetation cover and frequency for the samples from group TRUM – Trumbull, First Reading (Before Treatment), Part 2 (17 samples in this table, total 42 samples). Averages across all 42 samples shown in Part 3 (Table B-8). Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	133		133		133		137		137		137		138		143		144		145		146		205		205		205		205		206		206		
		Transect No.	2		3		4		1		2		4		1		1		1		1		1		1		2		3		4		1		2		
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		
		Area†	TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		
		Date	09/25		09/26		09/26		10/02		10/03		07/22		10/03		07/31		08/01		08/01		08/02		07/24		07/24		07/24		07/24		07/23		07/23		
		Year	2001		2001		2001		2001		2001		2002		2001		2002		2002		2002		2002		2002		2002		2002		2002		2002		2002		
		Treatment Code*	O		O		O		O		O		O		O		O		O		O		O		O		O		O		O		O		O		
		Elevation, ft	6697		6715		6748		6680		6857		6952		6742		6760		6520		6530		6800		6740		6469		6499		6722		6592		6398		
		Aspect, °M	236		265		231		240		326		277		264		298		289		281		295		313		313		308				245		252		
		Slope, %	20.0		18.0		19.0		31.0		28.0		32.0		12.0		15.0		11.0		18.0		9.0		18.0		15.0		15.0				42.0		31.0		
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																																			
L	JUSC2	Juniperus scopulorum	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	42.8	100	51.0	100	44.7	95	50.7	95	61.0	95	59.0	100	80.2	100	76.8	100	85.0	100	78.7	100	77.9	100	60.5	100	40.9	95	39.5	85	31.5	100	34.6	95	27.7	90	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ponderosa pine - Seedling
C	PIPO	Pinus ponderosa	–	–	8.7	–	11.2	–	8.2	–	4.9	–	–	–	6.8	–	14.5	–	11.7	–	15.1	–	11.1	–	13.1	–	6.9	–	10.3	–	8.2	–	9.5	–	7.3	–	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	–	–	4.5	–	4.9	–	2.5	–	2.6	–	–	–	3.8	–	5.9	–	–	–	8.7	–	9.9	–	7.3	–	1.3	–	1.7	–	4.3	–	6.5	–	2.5	–	ponderosa pine - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	1.8	15	–	–	–	–	8.3	40	–	–	–	–	0.0	–	5.6	20	16.0	55	17.5	45	20.1	60	7.2	20	0.0	5	Douglas-fir
C	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	0.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10.4	–	2.4	–	5.6	–	4.7	–	–	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.0	–	3.4	–	1.3	–	4.6	–	4.0	–	–	–	Douglas-fir - dead canopy < 8'
		SHRUBS																																			
L	ACGL	Acer glabrum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain maple
L	ARUV	Arctostaphylos uva-ursi	0.3	5	–	–	5.9	15	15.9	45	15.5	40	5.6	20	–	–	7.1	10	0.0	–	0.0	–	11.9	40	9.7	20	11.0	35	29.7	55	14.9	30	11.5	20	11.6	25	kinnikinnick
L	CEMO2	Cercocarpus montanus	–	–	–	–	0.0	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	true mountain-mahogany
D	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	true mountain-mahogany - Dead
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	pincushion cactus
L	HODI	Holodiscus discolor	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ocean-spray
L	JUCO6	Juniperus communis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	common juniper
L	LEPU	Leptodactylon pungens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	granite gilia
L	OPPO	Opuntia polyacantha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	plains prickly-pear
L	PAMY	Paxistima myrsinites	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain-lover
L	PAVI11	Padus virginiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	common chokecherry
L	PESI	Pediocactus simpsonii	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Simpson hedgehog cactus
L	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	3.0	5	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain ninebark
D	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain ninebark - Dead
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	skunkbrush
L	RICE	Ribes cereum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	wax currant
L	RIIN2	Ribes inerme	0.2	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	whitestem currant
L	ROWO	Rosa woodsii	–	–	–	–	–	–	–	–	–	–	–	–	1.8	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Woods rose
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common snowberry
L	YUGL	Yucca glauca	0.0	–	1.1	–	0.3	–	0.3	–	0.5	5	0.0	–	–	–	–	–	–	–	–	–	–	–	0.2	–	–	–	0.8	15	0.9	10	0.0	–	1.2	–	small soapweed
		GRAMINOIDS																																			
L	ACHY	Achnatherum hymenoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Indian ricegrass
L	ACNE9	Achnatherum nelsonii	–	–	–	–	–	–	2.0	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Nelson's needlegrass
L	AGCR	Agropyron cristatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	crested wheatgrass
L	ANTE6	Anisantha tectorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	cheatgrass
L	BOCU	Bouteloua curtipendula	1.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	1.1	15	0.5	5	0.5	5	side-oats grama
L	CARO5	Carex rossii	2.3	20	15.1	35	4.5	40	10.3	45	3.8	25	2.8	30	7.2	45	2.1	15	10.5	60	3.9	35	5.2	50	1.5	20	7.9	45	4.9	50	3.8	35	0.1	10	0.9	20	Ross sedge
L	CASI12	Carex siccata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	silvertop sedge
L	CHGR15	Chondrosum gracile	1.8	25	4.8	30	6.0	40	0.1	5	0.0	5	–	–	–	–	–	–	0.0	–	1.1	10	–	–	0.1	5	0.1	5	0.3	10	0.1	5	3.0	20	0.5	10	blue grama
L	ELCA4	Elymus canadensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Canada wildrye
L	ELEL5	Elymus elymoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bottlebrush squirreltail
L	ELTR7	Elymus trachycaulus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	slender wheatgrass
L	HECO26	Hesperostipa comata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	needle-and-thread
L	KOMA	Koeleria macrantha	–	–	–	–	–	–	–	–	0.0	–	1.0	10	–	–	–	–	0.0	–	–	–	0.0	–	0.0	5	0.5	10	1.9	30	0.6	10	–	–	–	–	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	–	–	–	–	3.6	25	–	–	–	–	–	–	–	–	–	–	–	–	0.8	15	0.1	5	–	–	–	–	0.1	5	spike-fescue
L	MUFI	Muhlenbergia filiculmis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	slimstem muhly
L	MUMO	Muhlenbergia montana	4.6	20	3.4	25	0.5	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain muhly
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	1.0	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	littleseed ricegrass
L	POFE	Poa fendleriana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	muttongrass
L	PSSP6	Pseudoroegneria spicata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bluebunch wheatgrass
L	SCSC	Schizachyrium scoparium	0.1	5	0.1	5	0.5	5	0.0	–	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.1	5	–	–	–	–	–	–	0.1	5	1.7	15	little bluestem
L	VUOC	Vulpia octoflora	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	six-weeks fescue
		FORBS																																			
L	ACAL10	Acrolasia albicaulis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	whitestem blazing-star
L	ACLA5	Achillea lanulosa	0.0	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	–	–	–	–	–	–	0.0	–	western yarrow
L	ALAC4	Allium acuminatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	tapertip onion
L	ALAN3	Aletes anisatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain Indian parsely
L	ALCE2	Allium cernuum	–	–	0.1	5	–	–	0.1	10	–	–	0.1	5	–	–	0.0	–	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	0.0	–	–	–	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	yellow stonecrop

M	Code	Sample	133		133		133		137		137		137		138		143		144		145		146		205		205		205		205		206		206		
		Transect No.	2		3		4		1		2		4		1		1		1		1		1		1		2		3		4		1		2		
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	ANMU	Anemone multifida	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	0.0	–	–	–	Hudsonian anemone
L	ANRO2	Antennaria rosea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	rose pussytoes
L	ANSE4	Androsace septentrionalis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	northern rock-jasmine
L	APAN2	Apocynum androsaemifolium	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spreading dogbane
L	APCA	Apocynum cannabinum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Indian hemp
L	ARFR4	Artemisia frigida	0.1	5	0.0	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	–	–	fringed sagewort
L	ASMI10	Astragalus missouriensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Missouri milkvetch
L	ASMI9	Astragalus miser	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	weedy milkvetch
L	ASTE5	Astragalus tenellus	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	pulse milkvetch
L	ASTRA	Astragalus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	milkvetch
L	BODR	Boechera drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	false-arabis
L	BOFE	Boechera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	false-arabis
L	CARO2	Campanula rotundifolia	0.0	–	–	–	0.0	–	–	–	0.5	5	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	0.0	5	–	–	common harebell
L	CEFO2	Cerastium fontanum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mouse-ear
L	CHAL7	Chenopodium album	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	lambs-quarters goosefoot
L	CHDA2	Chamerion danielsii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	fireweed
L	CHDO	Chaenactis douglasii	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	5	pincushion
L	CICA11	Cirsium canescens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	prairie thistle
L	DAPU5	Dalea purpurea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	violet prairie-clover
L	DRFI3	Drymocallis fissa	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	bigflower cinquefoil
L	ERCO4	Erigeron compositus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	fernleaf fleabane
L	ERDI4	Erigeron divergens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spreading fleabane
L	ERIGE2	Erigeron	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	fleabane
L	ERSU2	Erigeron subtrinervis	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	threenerve fleabane
L	ERVE2	Erigeron vetensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	early bluetop fleabane
L	FORB	forb unknown	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	unknown forb
L	GADR3	Gastrolychnis drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	alpine campion
L	GECA3	Geranium caespitosum	–	–	–	–	0.0	–	0.1	5	0.0	–	0.0	–	1.0	15	0.0	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	0.0	5	–	–	Fremont geranium
L	GIPI	Gilia pinnatifida	–	–	0.0	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	sticky gilia
L	HEVI4	Heterotheca villosa	0.1	10	0.3	15	2.1	30	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	hairy golden aster
L	IPAG	Ipomopsis aggregata	0.0	–	–	–	0.1	5	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	–	–	–	–	–	–	–	–	trumpet gilia
L	LASE	Lactuca serriola	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	prickly lettuce
L	LIIN2	Lithospermum incisum	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	puccoon
L	LIMU3	Lithospermum multiflorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	puccoon
L	LIPU	Liatris punctata	0.1	5	0.8	15	0.1	5	0.5	5	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	0.0	–	–	–	dotted gayfeather
L	LYJU	Lygodesmia juncea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	rush skeleton-plant
L	MABI	Machaeranthera bigelovii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spiny aster
L	MELA3	Mertensia lanceolata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	lanceleaf bluebells
L	MENTH	Mentha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mint
L	NOMO2	Noccaea montana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	candytuft
L	NURU	Nuttallia rusbyi	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	creamy blazing star
L	OLDR	Oligosporus dracunculus	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	wild tarragon
L	OLPA	Oligosporus pacificus	0.1	5	0.0	–	–	–	0.0	–	–	–	–	–	1.0	5	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	sagewort wormwood
L	ORVI4	Oreocarya virgata	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	miners-candle
L	OXLA3	Oxytropis lambertii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Lambert crazyweed
L	PACKE	Packera	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	groundsel
L	PAFE4	Packera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Fendler groundsel
L	PAJA	Paronychia jamesii	0.0	–	0.0	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	James nailwort
L	PANE7	Packera neomexicana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	New Mexico groundsel
L	PEBA2	Penstemon barbatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	beardtongue
L	PEVI3	Penstemon virens	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Front Range beardtongue
L	PHHE2	Phacelia heterophylla	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	scorpion weed
L	PHVI7	Physaria vitulifera	0.0	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	0.0	–	0.1	15	roundtip twinpod
L	POEF	Potentilla effusa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	horse cinquefoil
L	PSJA2	Pseudostellaria jamesiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	tuber starwort
L	PTAL3	Pterogonum alatum	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	winged buckwheat
L	SENEC	Senecio	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	groundsel
L	SESP3	Senecio spartioides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	broom groundsel
L	SOLID	Solidago	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	goldenrod
L	SOSI3	Solidago simplex	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Mt. Albert goldenrod
L	TAOF	Taraxacum officinale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common dandelion
L	TIES	Tithymalus esula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	leafy spurge
L	TOEX2	Townsendia exscapa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Easter-daisy
L	TOVE2	Toxicoscordion venenosum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	meadow death camas
L	TUGL	Turritis glabra	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	tower mustard
L	UNAL	Unamia alba	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	prairie aster
L	VETH	Verbascum thapsus	–	–	0.0	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	flannel mullein
L	VINU2	Viola nuttallii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Nuttall violet
L	VIOLA	Viola	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	violet

M	Code	Sample	133		133		133		137		137		137		138		143		144		145		146		205		205		205		205		206		206		
		Transect No.	2		3		4		1		2		4		1		1		1		1		1		1		2		3		4		1		2		
		Reading No.	1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		GROUND COVER																																			
	.BARE	bare soil	3.3	75	7.7	70	14.6	70	4.1	50	1.6	35	1.5	35	0.1	5	0.1	10	0.0	–	1.0	30	1.6	10	1.1	35	3.7	50	9.8	55	5.9	50	6.1	65	9.5	85	bare soil
	.LITT	litter and duff	65.4	100	57.7	100	63.6	100	74.1	100	90.5	100	85.8	100	96.8	100	97.9	100	99.0	100	90.4	100	93.2	100	86.3	100	82.2	100	72.1	100	67.8	100	57.0	100	49.5	100	duff litter
	.FIGR	gravel fine	23.8	90	24.0	75	16.7	80	9.7	45	4.0	40	7.4	40	0.3	10	0.6	10	–	–	7.1	40	2.5	10	9.7	35	12.2	50	13.1	55	19.7	55	20.9	65	27.4	85	fine gravel
	.MEGR	gravel medium	6.6	80	8.9	55	2.5	45	10.6	45	2.6	25	2.2	45	0.5	10	0.2	10	–	–	1.1	20	0.1	5	0.7	30	0.5	25	1.5	35	2.9	45	14.4	60	11.8	85	medium gravel
	.COGR	gravel coarse	–	–	0.2	10	0.1	10	0.0	5	0.0	5	0.2	20	–	–	–	–	–	–	–	–	0.1	5	0.6	10	–	–	–	–	0.1	5	0.3	15	–	–	coarse gravel
	.COBB	cobble 10-25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	1.0	5	–	–	–	–	cobble
	.STON	stone > 25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	stone
	.BOUL	boulder > 60 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	boulder
	.BEDR	bedrock exposed	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	exposed bedrock
	.BAVE	live plant bases	0.9	65	1.6	75	2.5	80	1.5	60	1.2	55	2.9	65	2.3	60	1.3	25	1.0	45	0.5	50	2.2	60	1.7	65	1.5	65	3.5	85	2.6	65	1.3	45	1.8	70	live plant bases
	.MOSSON	moss on soil	7.4	40	1.6	15	0.5	5	0.3	10	1.3	20	0.5	5	–	–	–	–	–	–	–	–	3.3	25	–	–	4.8	30	1.6	15	0.6	10	0.7	15	1.0	5	on soil moss
	.LICHEN	lichen on soil	7.4	40	7.6	45	1.4	30	5.4	40	4.4	40	3.5	50	–	–	0.1	5	–	–	0.8	15	2.3	25	0.4	20	2.0	20	1.1	15	0.3	15	2.4	35	3.3	40	on soil lichen
	.ALGAE	algae on soil	–	–	–	–	–	–	–	–	–	–	–	–	1.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	algae on soil
	.DEERPE	droppings deer	0.5	10	0.2	15	0.1	10	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.3	10	–	–	0.6	10	–	–	–	–	deer droppings
	.ELKPEL	droppings elk	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	elk droppings
	.BEAR	droppings bear	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bear droppings
	.WOOD00	wood < ¼ in diam.	44.5	100	35.2	100	47.0	85	61.8	90	74.4	100	79.7	100	88.2	100	88.0	100	91.5	100	83.9	100	82.7	100	77.4	100	65.2	100	53.5	95	52.8	95	47.4	95	33.6	90	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	6.2	80	11.5	75	5.8	70	4.2	55	8.0	95	3.9	95	6.9	100	5.8	90	4.2	100	2.6	90	6.3	80	2.9	75	5.5	85	2.8	70	6.8	80	5.1	75	5.8	60	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	0.9	35	0.8	20	3.1	30	1.5	35	2.8	45	0.1	10	1.5	20	3.0	50	4.3	45	1.3	20	4.8	65	1.1	15	1.0	10	1.0	10	2.8	30	1.0	5	1.6	20	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	0.3	10	–	–	0.1	5	–	–	3.6	10	–	–	–	–	–	–	–	–	–	–	1.4	25	0.1	5	–	–	1.0	5	1.0	5	–	–	–	–	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	–	–	–	–	–	–	1.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	> 10 in diam. wood

	Sample	133	133	133	137	137	137	138	143	144	145	146	205	205	205	205	206	206
	Transect No.	2	3	4	1	2	4	1	1	1	1	1	1	2	3	4	1	2
	Reading No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Tree Cover, %	42.8	51.0	44.7	50.7	62.7	59.0	80.2	85.0	85.0	78.7	77.9	66.1	56.9	56.9	51.6	41.8	27.7
	Shrub Cover, %	0.5	1.1	6.2	16.2	16.0	8.6	1.8	7.1	0.0	0.0	11.9	9.7	11.0	30.5	15.8	11.5	12.8
	Graminoid Cover, %	9.8	23.4	11.6	12.4	3.8	7.4	7.2	2.6	10.5	6.0	5.2	1.8	9.3	7.2	5.6	3.8	3.7
	Forb Cover, %	0.4	1.3	2.5	0.9	0.7	0.1	2.5	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.0	0.5	0.1
	Total Live Cover, %	53.5	76.8	65.0	80.2	83.2	75.2	91.7	94.7	95.5	84.7	95.0	78.1	77.3	94.7	73.0	57.5	44.3
	No. Live Species	22	16	21	18	17	12	10	7	9	7	8	12	9	10	8	20	14
	Tree Basal Area, ft²/ac							236.1	165.6	162.1	118.6	147.2						

Table B-8. Vegetation cover and frequency for the samples from group TRUM – Trumbull, First Reading (Before Treatment), Part 3 (8 samples in this table, total 42 samples). Averages across all 42 samples shown on this Table. Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	206		206		121		136		142		142		142		142				
		Transect No.	3		4		1		1		1		2		3		4				
		Reading No.	1		1		1		1		1		1		1		1				
		Area†	TR		TR		TRW		TRW		TRW		TRW		TRW		TRW				
		Date	07/23		07/23		10/17		09/28		10/11		10/11		10/11		10/11				
		Year	2002		2002		2000		2001		2001		2001		2001		2001				
		Treatment Code*	O		O		O		O		O		O		O		O				
		Elevation, ft	6629		6441		6540		6610		6576		6615		6681		6743				
		Aspect, °M	249		006		031		048		053		030		036		347				
		Slope, %	21.0		32.0		19.0		25.0		24.0		25.0		42.0		25.0		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																			
L	JUSC2	Juniperus scopulorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	28.1	75	41.3	100	48.4	100	54.9	95	35.1	100	54.1	100	45.3	100	36.4	83	50.5	95	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	ponderosa pine - Seedling
C	PIPO	Pinus ponderosa	2.5	–	2.8	–	–	–	–	–	8.1	–	5.1	–	11.4	–	8.1	–	4.4	–	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	2.5	–	2.8	–	–	–	3.1	–	0.8	–	2.7	–	4.5	–	9.1	–	2.2	–	ponderosa pine - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	26.8	80	40.6	73	19.9	75	7.3	85	18.4	60	21.5	85	35.0	90	34.1	83	7.6	25	Douglas-fir
C	PSME	Pseudotsuga menziesii	20.3	–	11.9	–	–	–	0.5	–	5.1	–	8.3	–	17.3	–	6.6	–	2.2	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	8.9	–	11.1	–	–	–	–	–	2.5	–	4.4	–	3.8	–	5.4	–	1.2	–	Douglas-fir - dead canopy < 8'
		SHRUBS																			
L	ACGL	Acer glabrum	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Rocky Mountain maple
L	ARUV	Arctostaphylos uva-ursi	26.7	35	4.3	7	–	–	–	–	0.0	–	0.0	–	0.0	–	0.0	–	5.3	12	kinnikinnick
L	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	1	true mountain-mahogany
D	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	true mountain-mahogany - Dead
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	pincushion cactus
L	HODI	Holodiscus discolor	0.0	–	1.1	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	ocean-spray
L	JUCO6	Juniperus communis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	common juniper
L	LEPU	Leptodactylon pungens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	granite gilia
L	OPPO	Opuntia polyacantha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	plains prickly-pear
L	PAMY	Paxistima myrsinites	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	mountain-lover
L	PAVI11	Padus virginiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	common chokecherry
L	PESI	Pediocactus simpsonii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Simpson hedgehog cactus
L	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	0	mountain ninebark
D	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	mountain ninebark - Dead
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	skunkbrush
L	RICE	Ribes cereum	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	wax currant
L	RIIN2	Ribes inerme	–	–	–	–	–	–	0.0	–	–	–	0.0	–	1.6	5	0.6	–	0.1	0	whitestem currant
L	ROWO	Rosa woodsii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	Woods rose
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	common snowberry
L	YUGL	Yucca glauca	0.0	–	–	–	0.2	10	0.0	–	3.4	10	0.4	–	0.7	–	0.0	–	0.8	3	small soapweed
		GRAMINOIDS																			
L	ACHY	Achnatherum hymenoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Indian ricegrass
L	ACNE9	Achnatherum nelsonii	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	0.1	0	Nelson's needlegrass
L	AGCR	Agropyron cristatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	crested wheatgrass
L	ANTE6	Anisantha tectorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	cheatgrass
L	BOCU	Bouteloua curtipendula	–	–	–	–	2.5	10	0.0	–	0.0	–	–	–	–	–	–	–	0.5	2	side-oats grama
L	CARO5	Carex rossii	2.9	30	0.7	7	9.0	60	6.9	50	7.8	40	16.4	50	8.1	40	4.2	33	5.2	33	Ross sedge
L	CASI12	Carex siccata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	silvertop sedge
L	CHGR15	Chondrosum gracile	0.0	–	–	–	0.7	15	0.4	15	6.6	35	1.1	10	0.5	5	3.9	11	1.3	11	blue grama
L	ELCA4	Elymus canadensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Canada wildrye
L	ELEL5	Elymus elymoides	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	0.0	1	bottlebrush squirreltail
L	ELTR7	Elymus trachycaulus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	slender wheatgrass
L	HECO26	Hesperostipa comata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.6	3	needle-and-thread
L	KOMA	Koeleria macrantha	0.3	10	0.3	13	0.1	10	–	–	1.0	10	0.1	5	0.5	5	2.2	11	0.2	3	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	spike-fescue
L	MUFI	Muhlenbergia filiculmis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	slimstem muhly
L	MUMO	Muhlenbergia montana	–	–	–	–	0.0	–	0.1	5	3.0	15	–	–	0.0	–	1.1	6	0.8	5	mountain muhly
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	littleseed ricegrass
L	POFE	Poa fendleriana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	muttongrass
L	PSSP6	Pseudoroegneria spicata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	bluebunch wheatgrass
L	SCSC	Schizachyrium scoparium	0.1	5	–	–	0.1	5	–	–	0.0	–	0.1	5	0.3	10	–	–	0.3	3	little bluestem
L	VUOC	Vulpia octoflora	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	six-weeks fescue
		FORBS																			
L	ACAL10	Acrolasia albicaulis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	whitestem blazing-star
L	ACLA5	Achillea lanulosa	–	–	–	–	0.0	5	0.0	–	0.1	5	0.5	5	–	–	0.0	–	0.0	1	western yarrow
L	ALAC4	Allium acuminatum	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	tapertip onion
L	ALAN3	Aletes anisatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Rocky Mountain Indian parsely
L	ALCE2	Allium cernuum	–	–	–	–	–	–	–	–	0.0	–	0.0	5	–	–	0.0	–	0.0	1	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	yellow stonecrop

		Sample	206		206		121		136		142		142		142		142				
		Transect No.	3		4		1		1		1		2		3		4				
		Reading No.	1		1		1		1		1		1		1		1		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	ANMU	Anemone multifida	–	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	0.0	0	Hudsonian anemone
L	ANRO2	Antennaria rosea	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	0.0	0	rose pussytoes
L	ANSE4	Androsace septentrionalis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	northern rock-jasmine
L	APAN2	Apocynum androsaemifolium	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	spreading dogbane
L	APCA	Apocynum cannabinum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Indian hemp
L	ARFR4	Artemisia frigida	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	fringed sagewort
L	ASMI10	Astragalus missouriensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Missouri milkvetch
L	ASMI9	Astragalus miser	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	weedy milkvetch
L	ASTE5	Astragalus tenellus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	pulse milkvetch
L	ASTRA	Astragalus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	milkvetch
L	BODR	Boechera drummondii	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	false-arabis
L	BOFE	Boechera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	false-arabis
L	CARO2	Campanula rotundifolia	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	0.0	0	common harebell
L	CEFO2	Cerastium fontanum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	mouse-ear
L	CHAL7	Chenopodium album	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	0	lambs-quarters goosefoot
L	CHDA2	Chamerion danielsii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	fireweed
L	CHDO	Chaenactis douglasii	–	–	–	–	0.0	5	–	–	–	–	0.0	–	–	–	–	–	0.0	1	pincushion
L	CICA11	Cirsium canescens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	prairie thistle
L	DAPU5	Dalea purpurea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	violet prairie-clover
L	DRFI3	Drymocallis fissa	0.1	5	0.2	7	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	bigflower cinquefoil
L	ERCO4	Erigeron compositus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	fernleaf fleabane
L	ERDI4	Erigeron divergens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	spreading fleabane
L	ERIGE2	Erigeron	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	fleabane
L	ERSU2	Erigeron subtrinervis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	threenerve fleabane
L	ERVE2	Erigeron vetensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	early bluetop fleabane
L	FORB	forb unknown	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	unknown forb
L	GADR3	Gastrolychnis drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	alpine campion
L	GECA3	Geranium caespitosum	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	3	Fremont geranium
L	GIPI	Gilia pinnatifida	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	0.0	0	sticky gilia
L	HEVI4	Heterotheca villosa	–	–	–	–	0.1	5	0.0	–	3.0	25	0.0	–	0.0	–	0.0	–	0.2	3	hairy golden aster
L	IPAG	Ipomopsis aggregata	0.1	5	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	0.0	1	trumpet gilia
L	LASE	Lactuca serriola	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	prickly lettuce
L	LIIN2	Lithospermum incisum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	puccoon
L	LIMU3	Lithospermum multiflorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	puccoon
L	LIPU	Liatris punctata	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	0.0	6	0.0	1	dotted gayfeather
L	LYJU	Lygodesmia juncea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	rush skeleton-plant
L	MABI	Machaeranthera bigelovii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	spiny aster
L	MELA3	Mertensia lanceolata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	lanceleaf bluebells
L	MENTH	Mentha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	mint
L	NOMO2	Noccaea montana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	candytuft
L	NURU	Nuttallia rusbyi	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	creamy blazing star
L	OLDR	Oligosporus dracunculus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	wild tarragon
L	OLPA	Oligosporus pacificus	–	–	–	–	–	–	0.3	10	0.1	5	0.5	5	–	–	–	–	0.1	2	sagewort wormwood
L	ORVI4	Oreocarya virgata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	miners-candle
L	OXLA3	Oxytropis lambertii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Lambert crazyweed
L	PACKE	Packera	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	groundsel
L	PAFE4	Packera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Fendler groundsel
L	PAJA	Paronychia jamesii	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	0.0	1	James nailwort
L	PANE7	Packera neomexicana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	0	New Mexico groundsel
L	PEBA2	Penstemon barbatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	beardtongue
L	PEVI3	Penstemon virens	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	0.0	0	Front Range beardtongue
L	PHHE2	Phacelia heterophylla	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	scorpion weed
L	PHVI7	Physaria vitulifera	–	–	–	–	–	–	0.0	5	0.1	5	–	–	–	–	–	–	0.0	3	roundtip twinpod
L	POEF	Potentilla effusa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	horse cinquefoil
L	PSJA2	Pseudostellaria jamesiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	tuber starwort
L	PTAL3	Pterogonum alatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	winged buckwheat
L	SENEC	Senecio	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	groundsel
L	SESP3	Senecio spartioides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	broom groundsel
L	SOLID	Solidago	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	goldenrod
L	SOSI3	Solidago simplex	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Mt. Albert goldenrod
L	TAOF	Taraxacum officinale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	common dandelion
L	TIES	Tithymalus esula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	leafy spurge
L	TOEX2	Townsendia exscapa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Easter-daisy
L	TOVE2	Toxicoscordion venenosum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	meadow death camas
L	TUGL	Turritis glabra	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	tower mustard
L	UNAL	Unamia alba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	prairie aster
L	VETH	Verbascum thapsus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	flannel mullein
L	VINU2	Viola nuttallii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Nuttall violet
L	VIOLA	Viola	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	violet

M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		Sample	206		206		121		136		142		142		142		142				
		Transect No.	3		4		1		1		1		2		3		4				
		Reading No.	1		1		1		1		1		1		1		1		Avg	Avg	
		GROUND COVER																			
	.BARE	bare soil	1.9	25	0.5	20	0.7	30	6.4	70	9.6	75	5.0	55	8.1	60	4.0	61	4.5	46	bare soil
	.LITT	litter and duff	87.0	100	93.5	100	82.7	100	61.5	100	54.3	100	76.5	100	58.3	100	83.3	100	74.4	100	duff litter
	.FIGR	gravel fine	5.7	25	3.2	40	11.4	55	21.9	75	19.6	80	9.5	55	16.9	70	6.7	67	12.5	52	fine gravel
	.MEGR	gravel medium	1.3	20	1.1	33	2.3	45	9.7	70	15.0	80	8.1	50	12.6	65	4.9	56	6.2	44	medium gravel
	.COGR	gravel coarse	0.8	15	1.3	7	0.1	5	0.1	10	0.1	5	0.1	5	1.7	45	0.1	6	0.3	9	coarse gravel
	.COBB	cobble 10-25 cm	0.1	5	–	–	–	–	–	–	–	–	–	–	1.1	10	–	–	0.2	2	cobble
	.STON	stone > 25 cm	1.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	0	stone
	.BOUL	boulder > 60 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	0	boulder
	.BEDR	bedrock exposed	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	exposed bedrock
	.BAVE	live plant bases	1.7	75	0.4	33	1.3	65	0.4	40	1.3	75	0.7	50	1.4	45	1.1	50	1.6	56	live plant bases
	.MOSSON	moss on soil	4.0	15	8.7	20	1.3	25	0.3	10	2.3	25	0.8	15	1.1	15	1.1	6	1.6	14	on soil moss
	.LICHEN	lichen on soil	2.3	40	1.7	27	3.4	40	3.0	60	8.9	50	3.3	45	2.6	40	6.8	39	2.7	30	on soil lichen
	.ALGAE	algae on soil	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	algae on soil
	.DEERPE	droppings deer	–	–	–	–	0.6	25	0.3	10	–	–	0.1	5	–	–	–	–	0.1	5	deer droppings
	.ELKPEL	droppings elk	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	elk droppings
	.BEAR	droppings bear	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	bear droppings
	.WOOD00	wood < ¼ in diam.	67.1	100	78.0	100	60.0	100	52.2	100	37.7	100	64.9	95	39.0	90	67.9	100	61.7	97	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	3.1	75	4.2	53	6.8	95	5.4	85	4.9	40	5.9	80	7.3	95	5.9	94	5.4	77	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	0.7	15	0.7	7	3.4	40	1.0	10	1.1	10	2.3	25	1.4	25	1.7	33	1.7	27	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	1.0	5	1.3	7	0.1	5	–	–	1.0	5	–	–	1.0	5	3.3	11	0.5	4	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	2.5	5	–	–	0.2	1	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	> 10 in diam. wood

Sample	206	206	121	136	142	142	142	142
Transect No.	3	4	1	1	1	2	3	4
Reading No.	1	1	1	1	1	1	1	1
Tree Cover, %	54.9	81.8	68.2	62.2	53.5	75.6	80.3	70.5
Shrub Cover, %	26.7	5.3	0.2	0.0	3.4	0.4	2.3	0.6
Graminoid Cover, %	3.3	1.0	12.4	7.5	18.4	17.8	9.4	11.4
Forb Cover, %	0.4	0.2	0.2	0.4	3.7	1.1	0.0	0.0
Total Live Cover, %	85.3	88.3	81.0	70.1	79.0	94.9	92.0	82.5
No. Live Species	15	9	12	16	21	17	13	14
Tree Basal Area, ft²/ac			179.9	78.8				

Table B-9. Vegetation cover and frequency for the samples from group TRUM – Trumbull, Later Reading (After Thinning), Part 1 (17 samples in this table, total 28 samples). Averages across all 28 samples shown in Part 2 (Table B-10). Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	101		101		102		103		103		107		127		127		127		127		128		133		133		133		133		137		137		
		Transect No.	1		2		1		1		2		1		1		2		3		4		1		1		2		3		4		1		2		
		Reading No.	2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		
		Area†	TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		
		Date	07/22		07/22		06/19		10/10		10/10		10/09		07/07		07/08		07/08		07/08		07/23		07/24		07/24		07/24		07/24		10/11		10/11		
		Year	2003		2003		2003		2002		2002		2002		2003		2003		2003		2003		2003		2003		2003		2003		2003		2002		2002		
		Treatment Code*	T11		T11		T01		T01		T01		T01		T01		T01		T01		T01		T01		T02		T02		T02		T02		T01		T01		
		Elevation, ft	6650		6650		6560		6800		6800		6920		6620		6701		6712		6797		6603		6670		6697		6715		6748		6680		6857		
		Aspect, °M	279		279		260		249		249		259		268		253		267		251		257		173		236		265		231		240		326		
		Slope, %	11.0		11.0		12.0		19.0		19.0		12.0		12.0		17.0		28.0		34.0		17.0		38.0		20.0		18.0		19.0		31.0		28.0		
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																																			
L	JUSC2	Juniperus scopulorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	61.8	100	34.0	75	50.0	100	17.3	75	26.9	65	48.2	95	38.3	95	22.0	75	15.5	60	25.5	65	37.5	95	26.6	75	23.6	75	21.6	85	18.1	80	30.1	90	41.5	80	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ponderosa pine - Seedling
C	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	2.5	–	1.7	–	4.9	–	8.4	–	8.0	–	–	–	–	–	4.3	–	5.7	–	–	–	–	–	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	27.2	–	3.7	–	–	–	7.6	–	–	–	–	–	–	–	10.3	–	–	–	–	–	–	–	ponderosa pine - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	0.0	–	0.0	–	–	–	–	–	–	–	0.2	15	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.3	10	Douglas-fir
C	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Douglas-fir - dead canopy < 8'
		SHRUBS																																			
L	ACGL	Acer glabrum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain maple
L	ARUV	Arctostaphylos uva-ursi	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	19.2	10	26.4	30	12.3	15	–	–	–	–	0.0	–	–	–	2.4	5	9.0	25	6.6	20	kinnikinnick
L	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	4.6	10	6.3	25	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	true mountain-mahogany
D	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	6.2	–	26.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	true mountain-mahogany - Dead
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	pincushion cactus
L	HODI	Holodiscus discolor	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ocean-spray
L	JUCO6	Juniperus communis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common juniper
L	LEPU	Leptodactylon pungens	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	granite gilia
L	OPPO	Opuntia polyacantha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	plains prickly-pear
L	PAMY	Paxistima myrsinites	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain-lover
L	PAVI11	Padus virginiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common chokecherry
L	PESI	Pediocactus simpsonii	–	–	–	–	0.0	5	–	–	–	–	–	–	0.0	–	–	–	–	–	0.1	5	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	Simpson hedgehog cactus
L	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain ninebark
D	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mountain ninebark - Dead
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	skunkbrush
L	RICE	Ribes cereum	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	wax currant
L	RIIN2	Ribes inerme	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	whitestem currant
L	ROWO	Rosa woodsii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Woods rose
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common snowberry
L	YUGL	Yucca glauca	–	–	–	–	–	–	1.3	–	11.1	25	–	–	1.8	5	1.5	5	0.0	–	0.9	–	10.0	5	2.7	–	–	–	5.3	5	0.0	–	–	–	0.0	–	small soapweed
		GRAMINOIDS																																			
L	ACHY	Achnatherum hymenoides	–	–	–	–	0.6	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Indian ricegrass
L	ACNE9	Achnatherum nelsonii	–	–	–	–	–	–	–	–	2.3	25	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	1.3	15	0.0	–	Nelson's needlegrass
L	AGCR	Agropyron cristatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	crested wheatgrass
L	ANTE6	Anisantha tectorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	cheatgrass
L	BOCU	Bouteloua curtipendula	0.1	5	0.5	5	–	–	–	–	1.0	10	–	–	–	–	–	–	–	–	–	–	2.1	10	7.5	20	1.0	5	–	–	0.0	–	0.5	5	0.0	–	side-oats grama
L	CARO5	Carex rossii	14.2	40	9.5	55	15.9	75	0.6	10	0.0	–	1.1	20	15.3	50	2.5	15	0.3	15	4.8	35	3.8	40	8.4	45	1.0	5	6.0	15	0.7	15	2.1	40	0.5	5	Ross sedge
L	CASI12	Carex siccata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	silvertop sedge
L	CHGR15	Chondrosum gracile	1.5	5	0.5	5	0.5	5	10.5	30	3.4	40	1.0	10	0.0	–	0.8	20	0.1	5	–	–	3.0	20	6.5	30	3.6	20	2.0	25	3.9	35	0.0	–	0.0	–	blue grama
L	ELCA4	Elymus canadensis	0.5	5	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Canada wildrye
L	ELEL5	Elymus elymoides	–	–	1.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	–	–	–	–	–	–	bottlebrush squirreltail
L	ELTR7	Elymus trachycaulus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	slender wheatgrass
L	HECO26	Hesperostipa comata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	needle-and-thread
L	KOMA	Koeleria macrantha	1.0	10	1.0	10	0.3	15	–	–	2.0	15	–	–	0.5	10	0.0	–	0.0	–	0.0	–	0.0	–	0.0	–	–	–	–	–	–	–	1.0	5	–	–	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	1.0	10	1.0	5	0.8	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spike-fescue
L	MUFI	Muhlenbergia filiculmis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	slimstem muhly
L	MUMO	Muhlenbergia montana	–	–	–	–	–	–	5.5	25	1.0	5	–	–	0.8	15	0.0	–	–	–	–	–	5.0	10	1.6	20	1.1	10	0.9	20	0.1	5	–	–	–	–	mountain muhly
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	littleseed ricegrass
L	POFE	Poa fendleriana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	muttongrass
L	PSSP6	Pseudoroegneria spicata	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	–	0.1	5	–	–	–	–	bluebunch wheatgrass
L	SCSC	Schizachyrium scoparium	–	–	–	–	–	–	–	–	–	–	1.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	little bluestem
L	VUOC	Vulpia octoflora	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	six-weeks fescue
		FORBS																																			
L	ACAL10	Acrolasia albicaulis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	whitestem blazing-star
L	ACLA5	Achillea lanulosa	1.6	10	0.0	–	0.0	–	–	–	–	–	–	–	0.5	5	0.1	5	–	–	0.5	5	0.5	5	0.0	–	0.0	–	–	–	–	–	–	–	–	–	western yarrow
L	ALAC4	Allium acuminatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	tapertip onion
L	ALAN3	Aletes anisatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Rocky Mountain Indian parsely
L	ALCE2	Allium cernuum	0.0	5	0.0	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	yellow stonecrop

M	Code	Sample	101		101		102		103		103		107		127		127		127		127		128		133		133		133		133		137		137		
		Transect No.	1		2		1		1		2		1		1		2		3		4		1		1		2		3		4		1		2		
		Reading No.	2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	ANMU	Anemone multifida	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Hudsonian anemone
L	ANRO2	Antennaria rosea	0.0	–	0.0	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	0.1	5	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	rose pussytoes
L	ANSE4	Androsace septentrionalis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	northern rock-jasmine
L	APAN2	Apocynum androsaemifolium	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spreading dogbane
L	APCA	Apocynum cannabinum	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Indian hemp
L	ARFR4	Artemisia frigida	–	–	–	–	0.0	–	0.0	–	–	–	–	–	0.1	10	1.0	5	0.1	5	–	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	–	–	fringed sagewort
L	ASMI10	Astragalus missouriensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Missouri milkvetch
L	ASMI9	Astragalus miser	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	weedy milkvetch
L	ASTE5	Astragalus tenellus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	pulse milkvetch
L	ASTRA	Astragalus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	milkvetch
L	BODR	Boechera drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	false-arabis
L	BOFE	Boechera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	false-arabis
L	CARO2	Campanula rotundifolia	0.1	5	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.1	5	–	–	0.0	–	0.0	–	1.0	5	–	–	0.0	–	–	–	–	–	common harebell
L	CEFO2	Cerastium fontanum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mouse-ear
L	CHAL7	Chenopodium album	0.3	30	0.6	10	0.7	15	–	–	–	–	–	–	0.3	25	0.0	5	3.5	10	0.0	5	1.6	30	0.3	10	0.1	5	0.7	15	0.8	15	–	–	–	–	lambs-quarters goosefoot
L	CHDA2	Chamerion danielsii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	fireweed
L	CHDO	Chaenactis douglasii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	pincushion
L	CICA11	Cirsium canescens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	prairie thistle
L	DAPU5	Dalea purpurea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.6	10	–	–	–	–	–	–	–	–	–	–	–	–	violet prairie-clover
L	DRFI3	Drymocallis fissa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bigflower cinquefoil
L	ERCO4	Erigeron compositus	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	fernleaf fleabane
L	ERDI4	Erigeron divergens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spreading fleabane
L	ERIGE2	Erigeron	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	fleabane
L	ERSU2	Erigeron subtrinervis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	threenerve fleabane
L	ERVE2	Erigeron vetensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	early bluetop fleabane
L	FORB	forb unknown	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	unknown forb
L	GADR3	Gastrolychnis drummondii	0.3	10	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	alpine campion
L	GECA3	Geranium caespitosum	0.3	15	0.0	–	0.0	–	0.0	–	–	–	0.0	–	0.5	10	0.3	10	0.0	–	–	–	0.0	–	0.1	5	–	–	0.0	–	–	–	0.1	5	–	–	Fremont geranium
L	GIPI	Gilia pinnatifida	0.0	–	–	–	0.0	5	–	–	–	–	–	–	0.3	15	0.1	5	0.1	5	0.1	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	sticky gilia
L	HEVI4	Heterotheca villosa	2.0	20	0.0	5	0.0	–	–	–	–	–	0.0	–	0.0	–	0.5	5	–	–	1.1	10	0.0	–	0.0	–	2.0	10	0.0	–	0.1	5	–	–	0.0	–	hairy golden aster
L	IPAG	Ipomopsis aggregata	0.0	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	trumpet gilia
L	LASE	Lactuca serriola	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	prickly lettuce
L	LIIN2	Lithospermum incisum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	puccoon
L	LIMU3	Lithospermum multiflorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	puccoon
L	LIPU	Liatris punctata	–	–	–	–	0.1	5	–	–	0.5	5	–	–	1.5	5	–	–	0.0	5	–	–	0.5	10	0.1	10	0.0	–	0.5	5	–	–	–	–	–	–	dotted gayfeather
L	LYJU	Lygodesmia juncea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	rush skeleton-plant
L	MABI	Machaeranthera bigelovii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	spiny aster
L	MELA3	Mertensia lanceolata	0.1	15	0.8	15	0.6	15	–	–	–	–	–	–	0.0	5	0.1	5	–	–	–	–	0.0	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	lanceleaf bluebells
L	MENTH	Mentha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	mint
L	NOMO2	Noccaea montana	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	candytuft
L	NURU	Nuttallia rusbyi	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	creamy blazing star
L	OLDR	Oligosporus dracunculus	0.0	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	5	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	wild tarragon
L	OLPA	Oligosporus pacificus	0.8	15	0.5	5	0.0	5	–	–	–	–	0.6	10	0.1	5	–	–	0.0	–	–	–	0.1	10	0.6	15	0.5	5	0.0	–	–	–	–	–	–	–	sagewort wormwood
L	ORVI4	Oreocarya virgata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	–	–	–	–	–	0.0	–	–	–	0.0	–	0.0	–	0.0	–	–	–	miners-candle
L	OXLA3	Oxytropis lambertii	0.0	–	0.0	–	–	–	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Lambert crazyweed
L	PACKE	Packera	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	groundsel
L	PAFE4	Packera fendleri	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Fendler groundsel
L	PAJA	Paronychia jamesii	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	5	–	–	–	–	–	–	James nailwort
L	PANE7	Packera neomexicana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	New Mexico groundsel
L	PEBA2	Penstemon barbatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	beardtongue
L	PEVI3	Penstemon virens	0.0	–	0.2	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Front Range beardtongue
L	PHHE2	Phacelia heterophylla	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	scorpion weed
L	PHVI7	Physaria vitulifera	–	–	–	–	–	–	0.1	5	–	–	–	–	–	–	0.3	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	roundtip twinpod
L	POEF	Potentilla effusa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	horse cinquefoil
L	PSJA2	Pseudostellaria jamesiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	tuber starwort
L	PTAL3	Pterogonum alatum	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	–	–	0.0	–	–	–	–	–	0.0	–	–	–	–	–	–	–	winged buckwheat
L	SENEC	Senecio	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	groundsel
L	SESP3	Senecio spartioides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	broom groundsel
L	SOLID	Solidago	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	goldenrod
L	SOSI3	Solidago simplex	0.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Mt. Albert goldenrod
L	TAOF	Taraxacum officinale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	common dandelion
L	TIES	Tithymalus esula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	leafy spurge
L	TOEX2	Townsendia exscapa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	Easter-daisy
L	TOVE2	Toxicoscordion venenosum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	meadow death camas
L	TUGL	Turritis glabra	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	tower mustard
L	UNAL	Unamia alba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	prairie aster
L	VETH	Verbascum thapsus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	flannel mullein
L	VINU2	Viola nuttallii	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Nuttall violet
L	VIOLA	Viola	0.0	5	0.1	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	15	0.1	10	0.0	5	–	–	0.0	5	–	–	–	–	violet

M	Code	Sample	101		101		102		103		103		107		127		127		127		127		128		133		133		133		133		137		137		
		Transect No.	1		2		1		1		2		1		1		2		3		4		1		1		2		3		4		1		2		
		Reading No.	2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		GROUND COVER																																			
	.BARE	bare soil	4.2	35	15.1	50	0.0	–	5.3	35	7.4	75	10.9	45	5.5	50	18.6	80	9.3	70	3.9	45	18.3	90	13.9	60	19.2	85	19.7	70	33.3	95	4.5	60	5.6	30	bare soil
	.LITT	litter and duff	91.4	100	79.8	100	98.9	100	91.6	100	67.9	100	88.0	100	78.7	100	47.5	100	69.7	100	85.7	100	47.7	100	53.5	100	39.4	100	48.1	100	38.0	100	75.9	100	82.0	100	duff litter
	.FIGR	gravel fine	2.6	40	6.5	50	–	–	2.2	20	17.9	65	0.6	10	10.5	50	22.1	85	14.8	70	7.8	50	22.4	95	13.8	60	28.1	95	27.4	70	21.8	95	13.9	55	10.0	30	fine gravel
	.MEGR	gravel medium	1.0	5	1.5	10	–	–	0.1	5	5.9	40	0.3	10	3.4	45	12.3	65	4.4	50	0.8	35	9.7	80	3.7	45	12.5	90	4.0	55	5.8	90	4.5	50	2.0	15	medium gravel
	.COGR	gravel coarse	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.1	5	0.2	10	2.7	30	0.5	5	0.1	5	0.2	10	0.5	5	–	–	coarse gravel
	.COBB	cobble 10-25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5.6	35	–	–	–	–	0.5	5	–	–	–	–	cobble
	.STON	stone > 25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	–	–	–	–	stone
	.BOUL	boulder > 60 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.5	10	–	–	–	–	–	–	–	–	–	–	boulder
	.BEDR	bedrock exposed	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.0	5	–	–	–	–	4.5	5	–	–	–	–	–	–	–	–	–	–	exposed bedrock
	.BAVE	live plant bases	0.9	70	0.3	65	0.9	80	0.8	35	0.9	70	0.2	45	1.9	60	0.6	45	0.8	50	1.7	60	1.7	65	0.7	65	0.4	50	0.6	50	0.4	25	0.8	70	0.3	25	live plant bases
	.MOSSON	moss on soil	6.0	20	0.2	15	0.6	10	0.8	15	0.5	5	0.5	5	1.0	25	0.0	5	–	–	1.0	5	1.5	10	0.7	20	6.7	30	2.6	15	0.5	5	2.6	20	0.1	5	on soil moss
	.LICHEN	lichen on soil	2.3	25	0.3	45	0.1	10	2.1	15	0.6	10	1.5	5	1.5	35	1.9	30	–	–	1.5	10	1.0	10	1.9	40	1.1	55	2.4	30	0.3	15	4.8	40	0.3	10	on soil lichen
	.ALGAE	algae on soil	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	algae on soil
	.DEERPE	droppings deer	0.5	5	0.0	5	0.5	5	0.1	5	–	–	–	–	0.1	10	–	–	–	–	–	–	0.1	10	0.1	5	–	–	–	–	0.1	5	–	–	–	–	deer droppings
	.ELKPEL	droppings elk	0.0	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	elk droppings
	.BEAR	droppings bear	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bear droppings
	.WOOD00	wood < ¼ in diam.	76.1	100	64.2	100	43.0	100	74.2	100	48.4	95	66.1	100	64.3	100	32.3	100	54.6	95	67.5	100	36.8	100	40.9	95	29.8	100	33.4	90	21.9	95	58.0	100	56.9	95	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	7.5	100	10.3	100	48.6	100	15.4	100	9.1	85	12.6	95	6.2	100	5.7	85	10.7	95	9.5	100	5.8	90	8.2	75	6.6	95	12.9	100	13.6	100	13.8	100	14.8	95	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	1.6	45	5.5	85	10.4	95	4.9	60	0.1	5	7.9	60	3.0	45	0.4	15	5.3	65	2.0	40	1.9	30	0.8	20	1.4	35	3.4	55	2.3	50	3.1	45	5.3	50	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	–	–	5.5	10	5.1	25	4.0	15	1.0	5	3.5	15	1.6	10	–	–	0.5	5	2.1	15	–	–	0.1	5	–	–	2.0	15	0.5	5	1.5	5	8.0	20	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	3.5	5	2.0	5	–	–	–	–	10.0	20	–	–	1.5	5	1.0	5	2.5	10	3.0	5	–	–	–	–	4.5	10	1.5	5	–	–	2.0	5	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	> 10 in diam. wood

	101	101	102	103	103	107	127	127	127	127	128	133	133	133	133	137	137
Transect No.	1	2	1	1	2	1	1	2	3	4	1	1	2	3	4	1	2
Reading No.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Tree Cover, %	61.8	34.0	50.0	17.3	26.9	48.3	38.3	22.0	15.5	25.5	37.5	26.6	23.6	21.6	18.1	30.1	41.8
Shrub Cover, %	0.0	0.0	0.0	5.8	17.4	0.0	1.8	21.2	26.4	13.4	10.0	2.7	0.0	5.3	2.4	9.0	6.6
Graminoid Cover, %	17.4	12.6	17.3	17.7	10.6	3.9	16.5	3.3	0.4	4.8	13.9	24.6	6.9	8.9	4.8	4.9	0.5
Forb Cover, %	5.6	2.2	1.5	0.1	0.5	0.7	3.6	2.7	4.4	1.9	3.6	1.1	3.7	1.2	0.9	0.1	0.1
Total Live Cover, %	84.8	48.8	68.8	40.9	55.4	52.9	60.1	49.3	46.7	45.6	65.0	55.0	34.2	37.0	26.2	44.1	49.0
No. Live Species	29	27	17	11	11	15	22	26	18	15	24	25	23	19	16	9	11
Tree Basal Area, ft²/ac	68.8		72.1	65.6		177.1											

Table B-10. Vegetation cover and frequency for the samples from group TRUM – Trumbull, Later Reading (After Thinning), Part 2 (11 samples in this table, total 28 samples). Averages across all 28 samples shown on this Table. Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	137		137		138		143		144		145		146		205		205		205		205				
		Transect No.	3		4		1		1		1		1		1		1		2		3		4				
		Reading No.	2		3		2		2		2		2		2		2		2		2		2				
		Area†	TR		TR		TR		TR		TR		TR		TR		TR		TR		TR		TR				
		Date	10/11		07/22		10/10		07/07		10/09		07/09		07/21		07/09		07/10		07/21		07/21				
		Year	2002		2003		2002		2003		2002		2003		2003		2003		2003		2003		2003				
		Treatment Code*	T01		T02		T01		T02		T01		T02		T02		T02		T02		T02		T02				
		Elevation, ft	6721		6952		6742		6760		6520		6530		6800		6740		6469		6499		6722				
		Aspect, °M			277		264		298		289		281		295		313		313		308						
		Slope, %			32.0		12.0		15.0		11.0		18.0		9.0		18.0		15.0		15.0				Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES																									
L	JUSC2	Juniperus scopulorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	27.0	85	17.4	60	56.0	100	30.4	100	15.3	100	4.3	55	18.4	70	16.8	80	32.6	90	19.6	80	26.6	100	28.7	82	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	ponderosa pine - Seedling
C	PIPO	Pinus ponderosa	–	–	–	–	–	–	3.3	–	–	–	–	–	–	–	–	–	2.5	–	1.1	–	5.6	–	1.7	–	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5.2	80	–	–	–	–	–	–	1.9	3	ponderosa pine - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	0.0	–	–	–	–	–	3.0	20	–	–	0.0	–	–	–	0.0	–	1.1	10	0.8	15	6.6	30	0.4	4	Douglas-fir
C	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.7	–	0.3	–	9.3	–	0.4	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12.4	–	0.4	–	Douglas-fir - dead canopy < 8'
		SHRUBS																									
L	ACGL	Acer glabrum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Rocky Mountain maple
L	ARUV	Arctostaphylos uva-ursi	0.3	10	17.4	20	–	–	2.7	10	0.0	–	0.0	–	2.7	45	36.6	25	58.5	35	80.0	60	49.6	25	11.6	12	kinnikinnick
L	CEMO2	Cercocarpus montanus	–	–	3.2	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.5	1	true mountain-mahogany
D	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.2	–	true mountain-mahogany - Dead
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	pincushion cactus
L	HODI	Holodiscus discolor	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	ocean-spray
L	JUCO6	Juniperus communis	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	common juniper
L	LEPU	Leptodactylon pungens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	granite gilia
L	OPPO	Opuntia polyacantha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	plains prickly-pear
L	PAMY	Paxistima myrsinites	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	mountain-lover
L	PAVI11	Padus virginiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	common chokecherry
L	PESI	Pediocactus simpsonii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	0	Simpson hedgehog cactus
L	PHMO4	Physocarpus monogynus	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	mountain ninebark
D	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	mountain ninebark - Dead
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	skunkbrush
L	RICE	Ribes cereum	–	–	–	–	0.0	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	0.0	–	wax currant
L	RIIN2	Ribes inerme	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	whitestem currant
L	ROWO	Rosa woodsii	–	–	–	–	2.1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	0	Woods rose
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	common snowberry
L	YUGL	Yucca glauca	2.0	5	5.3	5	–	–	–	–	–	–	0.0	–	–	–	0.0	–	0.0	–	2.8	10	1.9	5	1.7	3	small soapweed
		GRAMINOIDS																									
L	ACHY	Achnatherum hymenoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Indian ricegrass
L	ACNE9	Achnatherum nelsonii	–	–	1.5	10	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.2	2	Nelson's needlegrass
L	AGCR	Agropyron cristatum	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	crested wheatgrass
L	ANTE6	Anisantha tectorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	cheatgrass
L	BOCU	Bouteloua curtipendula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	2	side-oats grama
L	CARO5	Carex rossii	0.0	5	4.0	35	1.5	15	3.9	35	1.0	30	8.6	40	6.3	35	6.7	50	21.5	50	7.8	50	9.6	35	5.6	31	Ross sedge
L	CASI12	Carex siccata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	silvertop sedge
L	CHGR15	Chondrosum gracile	0.0	–	–	–	0.0	–	–	–	0.0	–	0.0	–	–	–	1.0	10	0.5	5	0.5	5	–	–	1.4	10	blue grama
L	ELCA4	Elymus canadensis	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	–	0.0	0	Canada wildrye
L	ELEL5	Elymus elymoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	0	bottlebrush squirreltail
L	ELTR7	Elymus trachycaulus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	–	slender wheatgrass
L	HECO26	Hesperostipa comata	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	needle-and-thread
L	KOMA	Koeleria macrantha	–	–	0.0	–	–	–	0.0	–	–	–	2.0	10	0.0	–	0.3	10	1.1	15	0.1	10	1.0	5	0.4	4	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	spike-fescue
L	MUFI	Muhlenbergia filiculmis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	slimstem muhly
L	MUMO	Muhlenbergia montana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.6	4	mountain muhly
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	littleseed ricegrass
L	POFE	Poa fendleriana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	muttongrass
L	PSSP6	Pseudoroegneria spicata	–	–	5.5	15	–	–	–	–	–	–	–	–	0.1	5	–	–	0.3	10	1.5	35	4.1	15	0.4	3	bluebunch wheatgrass
L	SCSC	Schizachyrium scoparium	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	little bluestem
L	VUOC	Vulpia octoflora	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	six-weeks fescue
		FORBS																									
L	ACAL10	Acrolasia albicaulis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	whitestem blazing-star
L	ACLA5	Achillea lanulosa	–	–	–	–	–	–	0.0	–	–	–	0.0	5	0.0	–	0.0	–	0.0	–	0.0	–	0.0	–	0.1	1	western yarrow
L	ALAC4	Allium acuminatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	tapertip onion
L	ALAN3	Aletes anisatus	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	1.0	5	–	–	–	–	–	–	0.0	0	Rocky Mountain Indian parsely
L	ALCE2	Allium cernuum	–	–	0.1	5	–	–	–	–	–	–	0.0	–	–	–	0.5	10	0.6	10	0.0	5	0.0	–	0.1	1	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	5	0.0	–	0.0	–	0.0	5	0.0	–	0.0	0	yellow stonecrop

		Sample	137		137		138		143		144		145		146		205		205		205		205				
		Transect No.	3		4		1		1		1		1		1		1		2		3		4				
		Reading No.	2		3		2		2		2		2		2		2		2		2		2		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	ANMU	Anemone multifida	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.1	5	0.0	–	0.0	0	Hudsonian anemone
L	ANRO2	Antennaria rosea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.6	15	–	–	0.0	–	0.0	1	rose pussytoes
L	ANSE4	Androsace septentrionalis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	northern rock-jasmine
L	APAN2	Apocynum androsaemifolium	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	spreading dogbane
L	APCA	Apocynum cannabinum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Indian hemp
L	ARFR4	Artemisia frigida	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	1	fringed sagewort
L	ASMI10	Astragalus missouriensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Missouri milkvetch
L	ASMI9	Astragalus miser	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	weedy milkvetch
L	ASTE5	Astragalus tenellus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	pulse milkvetch
L	ASTRA	Astragalus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	milkvetch
L	BODR	Boechera drummondii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	false-arabis
L	BOFE	Boechera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	false-arabis
L	CARO2	Campanula rotundifolia	–	–	–	–	0.0	5	0.0	–	–	–	0.0	–	0.0	–	0.0	–	0.1	10	0.0	–	0.0	–	0.1	1	common harebell
L	CEFO2	Cerastium fontanum	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	mouse-ear
L	CHAL7	Chenopodium album	–	–	0.6	10	–	–	0.9	25	–	–	0.6	10	3.0	5	0.1	10	0.1	5	0.1	5	0.3	10	0.5	9	lambs-quarters goosefoot
L	CHDA2	Chamerion danielsii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	fireweed
L	CHDO	Chaenactis douglasii	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	pincushion
L	CICA11	Cirsium canescens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	prairie thistle
L	DAPU5	Dalea purpurea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	violet prairie-clover
L	DRFI3	Drymocallis fissa	–	–	0.0	–	–	–	–	–	–	–	0.0	–	–	–	0.0	5	–	–	0.5	5	–	–	0.0	1	bigflower cinquefoil
L	ERCO4	Erigeron compositus	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.1	10	–	–	0.1	5	0.0	1	fernleaf fleabane
L	ERDI4	Erigeron divergens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	spreading fleabane
L	ERIGE2	Erigeron	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	fleabane
L	ERSU2	Erigeron subtrinervis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	0.0	0	threenerve fleabane
L	ERVE2	Erigeron vetensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	early bluetop fleabane
L	FORB	forb unknown	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.1	10	0.0	0	unknown forb
L	GADR3	Gastrolychnis drummondii	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	alpine campion
L	GECA3	Geranium caespitosum	–	–	0.0	–	–	–	0.0	–	–	–	0.0	–	0.0	–	0.0	5	0.0	–	0.5	5	–	–	0.1	2	Fremont geranium
L	GIPI	Gilia pinnatifida	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	0.0	2	sticky gilia
L	HEVI4	Heterotheca villosa	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	5	–	–	0.2	2	hairy golden aster
L	IPAG	Ipomopsis aggregata	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	0	trumpet gilia
L	LASE	Lactuca serriola	–	–	–	–	–	–	0.0	–	–	–	0.0	5	–	–	0.0	–	–	–	0.0	–	–	–	0.0	0	prickly lettuce
L	LIIN2	Lithospermum incisum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	puccoon
L	LIMU3	Lithospermum multiflorum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	puccoon
L	LIPU	Liatris punctata	–	–	0.0	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	0.1	2	dotted gayfeather
L	LYJU	Lygodesmia juncea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	rush skeleton-plant
L	MABI	Machaeranthera bigelovii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	spiny aster
L	MELA3	Mertensia lanceolata	–	–	–	–	–	–	–	–	–	–	0.0	–	0.1	10	0.0	5	0.0	–	–	–	0.1	5	0.1	3	lanceleaf bluebells
L	MENTH	Mentha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	15	–	–	0.0	1	mint
L	NOMO2	Noccaea montana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	0.0	0	candytuft
L	NURU	Nuttallia rusbyi	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	creamy blazing star
L	OLDR	Oligosporus dracunculus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	wild tarragon
L	OLPA	Oligosporus pacificus	0.1	5	–	–	0.1	5	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	–	–	0.0	–	0.1	3	sagewort wormwood
L	ORVI4	Oreocarya virgata	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	5	–	–	–	–	–	–	0.0	0	miners-candle
L	OXLA3	Oxytropis lambertii	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Lambert crazyweed
L	PACKE	Packera	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	groundsel
L	PAFE4	Packera fendleri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Fendler groundsel
L	PAJA	Paronychia jamesii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	0.0	–	0.0	1	James nailwort
L	PANE7	Packera neomexicana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	New Mexico groundsel
L	PEBA2	Penstemon barbatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	beardtongue
L	PEVI3	Penstemon virens	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	0.0	–	0.0	1	Front Range beardtongue
L	PHHE2	Phacelia heterophylla	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	scorpion weed
L	PHVI7	Physaria vitulifera	0.0	5	–	–	–	–	–	–	–	–	0.0	–	–	–	0.1	5	0.0	–	–	–	–	–	0.0	1	roundtip twinpod
L	POEF	Potentilla effusa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	horse cinquefoil
L	PSJA2	Pseudostellaria jamesiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	tuber starwort
L	PTAL3	Pterogonum alatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	winged buckwheat
L	SENEC	Senecio	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	groundsel
L	SESP3	Senecio spartioides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	broom groundsel
L	SOLID	Solidago	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	goldenrod
L	SOSI3	Solidago simplex	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	0.1	5	0.5	5	0.0	–	0.0	1	Mt. Albert goldenrod
L	TAOF	Taraxacum officinale	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	common dandelion
L	TIES	Tithymalus esula	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	leafy spurge
L	TOEX2	Townsendia exscapa	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	–	–	–	–	–	–	–	0.0	–	Easter-daisy
L	TOVE2	Toxicoscordion venenosum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	meadow death camas
L	TUGL	Turritis glabra	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	5	0.0	0	tower mustard
L	UNAL	Unamia alba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	prairie aster
L	VETH	Verbascum thapsus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	flannel mullein
L	VINU2	Viola nuttallii	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	–	Nuttall violet
L	VIOLA	Viola	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	15	0.1	5	0.1	15	0.1	10	0.0	4	violet

M	Code	Sample	137		137		138		143		144		145		146		205		205		205		205				
		Transect No.	3		4		1		1		1		1		1		1		2		3		4				
		Reading No.	2		3		2		2		2		2		2		2		2		2		2		Avg	Avg	
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		GROUND COVER																									
	.BARE	bare soil	10.8	60	8.2	55	4.3	30	1.3	20	2.0	15	0.6	20	2.4	40	4.7	25	7.0	50	5.9	65	4.9	55	8.8	50	bare soil
	.LITT	litter and duff	66.8	100	77.9	100	94.3	100	96.3	100	97.5	100	97.7	100	95.4	100	86.7	100	83.6	100	80.0	100	81.5	100	76.5	100	duff litter
	.FIGR	gravel fine	16.8	60	9.6	60	0.2	10	1.3	25	0.4	15	0.2	15	1.4	20	3.8	45	5.7	45	10.0	65	9.7	60	10.0	49	fine gravel
	.MEGR	gravel medium	5.4	45	3.5	45	–	–	0.8	20	0.0	5	1.3	25	0.0	5	2.3	30	1.6	20	2.2	35	1.5	40	3.2	34	medium gravel
	.COGR	gravel coarse	0.5	5	0.3	10	–	–	–	–	–	–	–	–	–	–	0.7	15	1.0	5	–	–	0.3	15	0.3	4	coarse gravel
	.COBB	cobble 10-25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5	5	–	–	–	–	1.0	10	0.3	2	cobble
	.STON	stone > 25 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	stone
	.BOUL	boulder > 60 cm	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	0	boulder
	.BEDR	bedrock exposed	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	0	exposed bedrock
	.BAVE	live plant bases	0.2	25	0.6	50	1.3	25	0.4	30	0.1	20	0.3	60	0.8	60	1.3	65	1.1	75	1.9	90	1.1	95	0.8	54	live plant bases
	.MOSSON	moss on soil	–	–	1.0	10	–	–	–	–	0.1	5	–	–	1.1	15	0.3	15	1.5	10	2.5	15	2.7	30	1.2	11	on soil moss
	.LICHEN	lichen on soil	–	–	2.3	40	–	–	–	–	0.1	5	0.1	5	2.8	25	0.3	20	3.2	35	1.8	30	4.6	60	1.4	22	on soil lichen
	.ALGAE	algae on soil	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	algae on soil
	.DEERPE	droppings deer	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	15	0.0	5	0.1	10	0.0	5	0.1	3	deer droppings
	.ELKPEL	droppings elk	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	10	0.0	1	elk droppings
	.BEAR	droppings bear	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	bear droppings
	.WOOD00	wood < ¼ in diam.	41.0	100	62.3	100	81.0	100	74.5	100	77.8	100	96.3	100	74.2	100	80.9	100	79.4	100	60.8	100	70.8	100	59.5	99	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	15.0	95	11.3	100	16.3	100	29.5	100	23.6	100	9.5	100	20.6	100	9.7	100	6.5	85	8.3	95	8.8	100	13.2	96	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	4.4	50	0.8	40	3.8	50	5.1	85	8.3	85	8.6	80	6.7	80	6.3	45	3.5	50	2.4	35	3.0	40	4.0	51	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	1.5	5	6.0	20	5.4	35	7.0	35	13.4	60	7.5	30	3.6	30	1.5	10	0.5	5	1.5	10	0.6	10	3.0	14	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	4.0	10	–	–	1.5	5	4.5	15	1.5	5	0.5	5	7.5	20	–	–	–	–	3.0	10	0.5	5	1.9	5	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	1.5	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	0	> 10 in diam. wood

	137	137	138	143	144	145	146	205	205	205	205
Sample	137	137	138	143	144	145	146	205	205	205	205
Transect No.	3	4	1	1	1	1	1	1	2	3	4
Reading No.	2	3	2	2	2	2	2	2	2	2	2
Tree Cover, %	27.0	17.4	56.0	33.4	15.3	4.3	18.4	16.8	33.8	20.4	33.2
Shrub Cover, %	2.3	26.0	2.1	2.7	0.0	0.0	2.7	36.6	58.5	82.8	51.6
Graminoid Cover, %	0.0	11.0	1.5	3.9	1.0	10.6	6.4	7.9	23.4	10.0	14.8
Forb Cover, %	0.1	0.8	0.1	0.9	0.0	0.7	3.2	2.6	1.9	2.1	0.9
Total Live Cover, %	29.4	55.1	59.8	40.9	16.3	15.6	30.7	63.9	117.5	115.3	100.4
No. Live Species	10	17	8	14	6	27	16	30	22	24	26
Tree Basal Area, ft²/ac			189.2	50.7	68.4	29.2	64.4				

Table B-11. Vegetation cover and frequency for the samples from group TRUM – Trumbull, Later Reading (After Fire), N = 3. Abbreviations for Area and Treatment are shown with Table B-1.

		Sample	104		104		105				
		Transect No.	1		1		1				
		Reading No.	2		3		3				
		Area†	TR		TR		TR				
		Date	07/31		07/23		07/23				
		Year	2002		2003		2003				
		Treatment Code*	F31		F32		F32				
		Elevation, ft	6740		6740		6790				
		Aspect, °M	006		006		313				
		Slope, %	9.0		9.0		24.0		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		TREES									
L	JUSC2	Juniperus scopulorum	–	–	–	–	–	–	0.0	–	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	–	–	0.0	–	0.0	–	0.0	–	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	0.0	–	ponderosa pine - Seedling
C	PIPO	Pinus ponderosa	–	–	–	–	–	–	0.0	–	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	–	–	–	–	–	–	0.0	–	ponderosa pine - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	0.0	–	Douglas-fir
C	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	0.0	–	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	0.0	–	Douglas-fir - dead canopy < 8'
		SHRUBS									
L	ACGL	Acer glabrum	–	–	–	–	–	–	0.0	–	Rocky Mountain maple
L	ARUV	Arctostaphylos uva-ursi	–	–	0.0	–	0.5	–	0.2	–	kinnikinnick
L	CEMO2	Cercocarpus montanus	–	–	0.0	–	–	–	0.0	–	true mountain-mahogany
D	CEMO2	Cercocarpus montanus	–	–	–	–	–	–	0.0	–	true mountain-mahogany - Dead
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	–	–	0.0	–	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	0.0	–	pincushion cactus
L	HODI	Holodiscus discolor	–	–	–	–	–	–	0.0	–	ocean-spray
L	JUCO6	Juniperus communis	–	–	–	–	–	–	0.0	–	common juniper
L	LEPU	Leptodactylon pungens	–	–	–	–	–	–	0.0	–	granite gilia
L	OPPO	Opuntia polyacantha	–	–	–	–	–	–	0.0	–	plains prickly-pear
L	PAMY	Paxistima myrsinites	–	–	–	–	–	–	0.0	–	mountain-lover
L	PAVI11	Padus virginiana	–	–	–	–	–	–	0.0	–	common chokecherry
L	PESI	Pediocactus simpsonii	–	–	–	–	–	–	0.0	–	Simpson hedgehog cactus
L	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	0.0	–	mountain ninebark
D	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	0.0	–	mountain ninebark - Dead
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	0.0	–	skunkbrush
L	RICE	Ribes cereum	–	–	–	–	–	–	0.0	–	wax currant
L	RIIN2	Ribes inerme	–	–	–	–	–	–	0.0	–	whitestem currant
L	ROWO	Rosa woodsii	–	–	0.9	5	0.0	–	0.3	2	Woods rose
L	SYAL	Symphoricarpos albus	–	–	–	–	–	–	0.0	–	common snowberry
L	YUGL	Yucca glauca	0.0	–	0.0	–	–	–	0.0	–	small soapweed
		GRAMINOIDS									
L	ACHY	Achnatherum hymenoides	–	–	–	–	–	–	0.0	–	Indian ricegrass
L	ACNE9	Achnatherum nelsonii	–	–	0.0	–	–	–	0.0	–	Nelson's needlegrass
L	AGCR	Agropyron cristatum	–	–	–	–	–	–	0.0	–	crested wheatgrass
L	ANTE6	Anisantha tectorum	–	–	0.0	–	–	–	0.0	–	cheatgrass
L	BOCU	Bouteloua curtipendula	1.0	5	3.5	10	–	–	1.5	5	side-oats grama
L	CARO5	Carex rossii	–	–	0.5	5	0.0	5	0.2	3	Ross sedge
L	CASI12	Carex siccata	–	–	–	–	–	–	0.0	–	silvertop sedge
L	CHGR15	Chondrosum gracile	–	–	–	–	–	–	0.0	–	blue grama
L	ELCA4	Elymus canadensis	–	–	0.5	10	3.1	25	1.2	12	Canada wildrye
L	ELEL5	Elymus elymoides	–	–	0.0	5	–	–	0.0	2	bottlebrush squirreltail
L	ELTR7	Elymus trachycaulus	–	–	–	–	–	–	0.0	–	slender wheatgrass
L	HECO26	Hesperostipa comata	–	–	0.0	–	–	–	0.0	–	needle-and-thread
L	KOMA	Koeleria macrantha	–	–	–	–	–	–	0.0	–	prairie junegrass
L	LEKI2	Leucopoa kingii	–	–	–	–	–	–	0.0	–	spike-fescue
L	MUFI	Muhlenbergia filiculmis	–	–	–	–	–	–	0.0	–	slimstem muhly
L	MUMO	Muhlenbergia montana	–	–	–	–	–	–	0.0	–	mountain muhly
L	PIMI7	Piptatherum micranthum	–	–	–	–	–	–	0.0	–	littleseed ricegrass
L	POFE	Poa fendleriana	–	–	–	–	–	–	0.0	–	muttongrass
L	PSSP6	Pseudoroegneria spicata	–	–	–	–	–	–	0.0	–	bluebunch wheatgrass
L	SCSC	Schizachyrium scoparium	0.0	–	–	–	–	–	0.0	–	little bluestem
L	VUOC	Vulpia octoflora	–	–	–	–	–	–	0.0	–	six-weeks fescue
		FORBS									
L	ACAL10	Acrolasia albicaulis	–	–	–	–	–	–	0.0	–	whitestem blazing-star
L	ACLA5	Achillea lanulosa	–	–	0.0	–	–	–	0.0	–	western yarrow
L	ALAC4	Allium acuminatum	–	–	–	–	–	–	0.0	–	tapertip onion
L	ALAN3	Aletes anisatus	–	–	–	–	–	–	0.0	–	Rocky Mountain Indian parsely
L	ALCE2	Allium cernuum	–	–	–	–	–	–	0.0	–	nodding onion
L	AMLA6	Amerosedum lanceolatum	–	–	–	–	–	–	0.0	–	yellow stonecrop

		Sample	104		104		105				
		Transect No.	1		1		1				
		Reading No.	2		3		3		Avg	Avg	
M	Code	Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
L	ANMU	Anemone multifida	–	–	0.0	–	–	–	0.0	–	Hudsonian anemone
L	ANRO2	Antennaria rosea	–	–	–	–	–	–	0.0	–	rose pussytoes
L	ANSE4	Androsace septentrionalis	–	–	–	–	0.0	–	0.0	–	northern rock-jasmine
L	APAN2	Apocynum androsaemifolium	–	–	–	–	–	–	0.0	–	spreading dogbane
L	APCA	Apocynum cannabinum	–	–	–	–	–	–	0.0	–	Indian hemp
L	ARFR4	Artemisia frigida	–	–	–	–	–	–	0.0	–	fringed sagewort
L	ASMI10	Astragalus missouriensis	–	–	–	–	–	–	0.0	–	Missouri milkvetch
L	ASMI9	Astragalus miser	–	–	0.0	–	–	–	0.0	–	weedy milkvetch
L	ASTE5	Astragalus tenellus	–	–	0.0	–	–	–	0.0	–	pulse milkvetch
L	ASTRA	Astragalus	–	–	0.0	5	–	–	0.0	2	milkvetch
L	BODR	Boechera drummondii	–	–	–	–	–	–	0.0	–	false-arabis
L	BOFE	Boechera fendleri	–	–	–	–	–	–	0.0	–	false-arabis
L	CARO2	Campanula rotundifolia	–	–	–	–	0.0	–	0.0	–	common harebell
L	CEFO2	Cerastium fontanum	–	–	–	–	–	–	0.0	–	mouse-ear
L	CHAL7	Chenopodium album	–	–	0.0	–	0.0	–	0.0	–	lambs-quarters goosefoot
L	CHDA2	Chamerion danielsii	–	–	–	–	–	–	0.0	–	fireweed
L	CHDO	Chaenactis douglasii	–	–	–	–	–	–	0.0	–	pincushion
L	CICA11	Cirsium canescens	–	–	0.0	–	–	–	0.0	–	prairie thistle
L	DAPU5	Dalea purpurea	–	–	–	–	–	–	0.0	–	violet prairie-clover
L	DRFI3	Drymocallis fissa	–	–	–	–	–	–	0.0	–	bigflower cinquefoil
L	ERCO4	Erigeron compositus	–	–	0.0	5	–	–	0.0	2	fernleaf fleabane
L	ERDI4	Erigeron divergens	–	–	0.0	–	–	–	0.0	–	spreading fleabane
L	ERIGE2	Erigeron	–	–	–	–	–	–	0.0	–	fleabane
L	ERSU2	Erigeron subtrinervis	–	–	–	–	–	–	0.0	–	threenerve fleabane
L	ERVE2	Erigeron vetensis	–	–	–	–	–	–	0.0	–	early bluetop fleabane
L	FORB	forb unknown	–	–	–	–	–	–	0.0	–	unknown forb
L	GADR3	Gastrolychnis drummondii	–	–	–	–	–	–	0.0	–	alpine campion
L	GECA3	Geranium caespitosum	–	–	0.0	–	0.0	–	0.0	–	Fremont geranium
L	GIPI	Gilia pinnatifida	–	–	–	–	–	–	0.0	–	sticky gilia
L	HEVI4	Heterotheca villosa	–	–	0.1	5	–	–	0.0	2	hairy golden aster
L	IPAG	Ipomopsis aggregata	–	–	–	–	–	–	0.0	–	trumpet gilia
L	LASE	Lactuca serriola	–	–	–	–	0.0	–	0.0	–	prickly lettuce
L	LIIN2	Lithospermum incisum	–	–	0.0	–	–	–	0.0	–	puccoon
L	LIMU3	Lithospermum multiflorum	–	–	–	–	–	–	0.0	–	puccoon
L	LIPU	Liatris punctata	0.6	15	1.0	15	0.0	–	0.5	10	dotted gayfeather
L	LYJU	Lygodesmia juncea	–	–	–	–	–	–	0.0	–	rush skeleton-plant
L	MABI	Machaeranthera bigelovii	–	–	–	–	–	–	0.0	–	spiny aster
L	MELA3	Mertensia lanceolata	–	–	0.0	–	0.0	–	0.0	–	lanceleaf bluebells
L	MENTH	Mentha	–	–	–	–	–	–	0.0	–	mint
L	NOMO2	Noccaea montana	–	–	–	–	–	–	0.0	–	candytuft
L	NURU	Nuttallia rusbyi	–	–	–	–	0.0	–	0.0	–	creamy blazing star
L	OLDR	Oligosporus dracunculus	–	–	–	–	–	–	0.0	–	wild tarragon
L	OLPA	Oligosporus pacificus	–	–	–	–	0.0	–	0.0	–	sagewort wormwood
L	ORVI4	Oreocarya virgata	–	–	–	–	–	–	0.0	–	miners-candle
L	OXLA3	Oxytropis lambertii	–	–	–	–	–	–	0.0	–	Lambert crazyweed
L	PACKE	Packera	–	–	–	–	–	–	0.0	–	groundsel
L	PAFE4	Packera fendleri	–	–	–	–	–	–	0.0	–	Fendler groundsel
L	PAJA	Paronychia jamesii	–	–	–	–	–	–	0.0	–	James nailwort
L	PANE7	Packera neomexicana	–	–	–	–	–	–	0.0	–	New Mexico groundsel
L	PEBA2	Penstemon barbatus	–	–	–	–	–	–	0.0	–	beardtongue
L	PEVI3	Penstemon virens	–	–	–	–	–	–	0.0	–	Front Range beardtongue
L	PHHE2	Phacelia heterophylla	–	–	–	–	–	–	0.0	–	scorpion weed
L	PHVI7	Physaria vitulifera	–	–	–	–	–	–	0.0	–	roundtip twinpod
L	POEF	Potentilla effusa	–	–	0.0	–	–	–	0.0	–	Saskatchewan cinquefoil
L	POHI6	Potentilla hippiana	–	–	–	–	–	–	0.0	–	horse cinquefoil
L	PSJA2	Pseudostellaria jamesiana	–	–	–	–	–	–	0.0	–	tuber starwort
L	PTAL3	Pterogonum alatum	–	–	0.0	–	–	–	0.0	–	winged buckwheat
L	SENEC	Senecio	–	–	–	–	–	–	0.0	–	groundsel
L	SESP3	Senecio spartioides	–	–	–	–	–	–	0.0	–	broom groundsel
L	SOLID	Solidago	–	–	–	–	–	–	0.0	–	goldenrod
L	SOSI3	Solidago simplex	–	–	0.5	5	0.1	10	0.2	5	Mt. Albert goldenrod
L	TAOF	Taraxacum officinale	–	–	0.1	5	–	–	0.0	2	common dandelion
L	TIES	Tithymalus esula	–	–	0.0	–	–	–	0.0	–	leafy spurge
L	TOEX2	Townsendia exscapa	–	–	0.0	–	–	–	0.0	–	Easter-daisy
L	TOVE2	Toxicoscordion venenosum	–	–	–	–	–	–	0.0	–	meadow death camas
L	TUGL	Turritis glabra	–	–	–	–	–	–	0.0	–	tower mustard
L	UNAL	Unamia alba	–	–	–	–	–	–	0.0	–	prairie aster
L	VETH	Verbascum thapsus	–	–	–	–	–	–	0.0	–	flannel mullein
L	VINU2	Viola nuttallii	–	–	–	–	–	–	0.0	–	Nuttall violet
L	VIOLA	Viola	–	–	–	–	–	–	0.0	–	violet

M	Code	Sample	104		104		105				
		Transect No.	1		1		1				
		Reading No.	2		3		3		Avg	Avg	
		Species	Cvr	Fr	Cvr	Fr	Cvr	Fr	Cvr	Fr	Common Name
		GROUND COVER									
	.BARE	bare soil	60.2	95	51.7	90	31.9	85	47.9	90	bare soil
	.LITT	litter and duff	34.4	95	21.7	95	45.6	95	33.9	95	duff litter
	.FIGR	gravel fine	5.1	70	25.9	85	14.2	75	15.1	77	fine gravel
	.MEGR	gravel medium	0.2	15	0.4	55	8.1	45	2.9	38	medium gravel
	.COGR	gravel coarse	–	–	0.1	15	0.0	10	0.0	8	coarse gravel
	.COBB	cobble 10-25 cm	–	–	–	–	–	–	0.0	–	cobble
	.STON	stone > 25 cm	–	–	–	–	–	–	0.0	–	stone
	.BOUL	boulder > 60 cm	–	–	–	–	–	–	0.0	–	boulder
	.BEDR	bedrock exposed	–	–	–	–	–	–	0.0	–	exposed bedrock
	.BAVE	live plant bases	0.1	10	0.2	25	0.1	25	0.1	20	live plant bases
	.MOSSON	moss on soil	–	–	–	–	–	–	0.0	–	on soil moss
	.LICHEN	lichen on soil	–	–	–	–	–	–	0.0	–	on soil lichen
	.ALGAE	algae on soil	–	–	–	–	–	–	0.0	–	algae on soil
	.DEERPE	droppings deer	–	–	–	–	–	–	0.0	–	deer droppings
	.ELKPEL	droppings elk	–	–	–	–	–	–	0.0	–	elk droppings
	.BEAR	droppings bear	–	–	–	–	–	–	0.0	–	bear droppings
	.WOOD00	wood < ¼ in diam.	23.3	80	20.9	95	38.4	85	27.5	87	< 1/4 in diam. wood
	.WOOD01	wood 1/4-1 in diam.	0.8	40	0.9	40	0.4	25	0.7	35	1/4-1 in diam. wood
	.WOOD13	wood 1-3 in diam.	0.1	10	1.5	40	1.0	10	0.9	20	1-3 in diam. wood
	.WOOD37	wood 3-7 in diam.	1.0	5	1.0	5	2.0	5	1.3	5	3-7 in diam. wood
	.WOOD71	wood 7-10 in diam.	–	–	–	–	–	–	0.0	–	7-10 in diam. wood
	.WOOD10	wood > 10 in diam.	–	–	–	–	–	–	0.0	–	> 10 in diam. wood

Sample	104	104	105
Transect No.	1	1	1
Reading No.	2	3	3
Tree Cover, %	0.0	0.0	0.0
Shrub Cover, %	0.0	0.9	0.5
Graminoid Cover, %	1.0	4.5	3.2
Forb Cover, %	0.6	1.8	0.1
Total Live Cover, %	1.6	7.3	3.9
No. Live Species	4	32	15
Tree Basal Area, ft²/ac	0.0	0.0	0.0

Table B-12. Vegetation cover and frequency for all samples by area. Abbreviations for Areas are shown with Table B-1.

	Area Code		BEM		JG		NI		RR1		RR2		SC		SG		SG		TR		TR		TR		TRW				
	Sample Timing		Pre-Treat		Pre-Treat		Pre-Treat		After Thin		Pre-Treat		Pre-Treat		Pre-Treat		After Fire		Pre-Treat		After Thin		After Fire		Pre-Treat				
	Number of Samples		9		2		8		1		1		13		15		9		36		28		3		6		Avg	Avg	
	Species		Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Cvr	Fre	Common Name
	TREES																												
L	JUSC2	Juniperus scopulorum	–	–	0.0	–	–	–	–	–	–	–	2.1	7	0.0	1	0.0	–	0.0	–	–	–	–	–	–	–	0.2	1	Rocky Mountain juniper
L	PIPO	Pinus ponderosa	54.6	100	54.5	100	41.6	96	49.5	100	35.0	100	38.8	88	39.6	81	21.2	39	51.3	95	28.7	82	0.0	–	45.7	96	39.9	85	ponderosa pine
E	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	0.0	7	–	–	0.0	0	–	–	–	–	–	–	0.0	1	ponderosa pine - Seedling
D	PIPO	Pinus ponderosa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5.7	20	–	–	–	–	–	–	–	–	0.4	1	ponderosa pine - Dead
C	PIPO	Pinus ponderosa	0.7	–	–	–	1.0	–	–	–	–	–	2.5	–	1.4	–	–	–	4.2	–	1.7	–	–	–	5.4	–	2.3	--	ponderosa pine - live canopy < 8'
X	PIPO	Pinus ponderosa	7.6	–	–	–	0.1	–	–	–	–	–	2.1	–	–	–	–	–	2.0	–	1.9	3	–	–	3.4	–	1.8	1	ponderosa pine - dead canopy < 8'
D	PIPU	Picea pungens	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	blue spruce - Dead
L	POTR5	Populus tremuloides	1.8	8	–	–	0.9	4	–	–	0.0	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	1	quaking aspen
C	POTR5	Populus tremuloides	0.1	–	–	–	1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	--	quaking aspen - live canopy < 8'
X	POTR5	Populus tremuloides	1.1	–	–	–	0.1	–	–	–	1.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1	--	quaking aspen - dead canopy < 8'
L	PSME	Pseudotsuga menziesii	39.9	72	19.5	53	51.9	92	4.8	90	54.3	100	40.0	85	20.8	44	2.4	6	5.1	16	0.4	4	–	–	22.7	80	15.7	36	Douglas-fir
E	PSME	Pseudotsuga menziesii	–	–	–	–	–	–	–	–	–	–	0.1	8	1.5	8	–	–	–	–	–	–	–	–	–	–	0.2	2	Douglas-fir - Seedling
D	PSME	Pseudotsuga menziesii	–	–	0.6	8	–	–	–	–	–	–	–	–	5.2	14	1.7	9	–	–	–	–	–	–	–	–	0.7	2	Douglas-fir - Dead
C	PSME	Pseudotsuga menziesii	10.9	–	–	–	17.1	–	–	–	17.9	–	9.0	–	2.2	–	–	–	1.6	–	0.4	–	–	–	6.3	–	3.9	--	Douglas-fir - live canopy < 8'
X	PSME	Pseudotsuga menziesii	8.6	–	–	–	14.4	–	–	–	8.6	–	4.9	–	–	–	–	–	1.0	–	0.4	–	–	–	2.7	–	2.5	--	Douglas-fir - dead canopy < 8'
	SHRUBS																												
L	ACGL	Acer glabrum	–	–	–	–	–	–	–	–	–	–	–	–	0.8	1	0.0	–	0.0	–	–	–	–	–	–	–	0.1	0	Rocky Mountain maple
D	ACGL	Acer glabrum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	--	Rocky Mountain maple - Dead
L	AMAL2	Amelanchier alnifolia	0.0	1	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	Saskatoon serviceberry
L	ARUV	Arctostaphylos uva-ursi	6.4	24	7.6	33	7.9	29	21.0	60	0.2	–	8.5	27	4.4	10	0.0	3	6.1	14	11.6	12	0.2	–	0.0	–	6.7	15	kinnikinnick
D	ARUV	Arctostaphylos uva-ursi	6.5	–	–	–	10.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.1	--	kinnikinnick - Dead
L	CEFE	Ceanothus fendleri	0.0	–	–	–	0.1	1	–	–	–	–	0.0	1	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	buckbrush
L	CEMO2	Cercocarpus montanus	0.1	1	–	–	0.6	2	–	–	–	–	0.0	–	0.3	1	0.0	–	0.6	2	0.5	1	0.0	–	–	–	0.3	1	true mountain-mahogany
D	CEMO2	Cercocarpus montanus	–	–	–	–	0.5	–	–	–	–	–	–	–	–	–	–	–	0.0	2	1.2	–	–	–	–	–	0.3	0	true mountain-mahogany - Dead
L	CHNA2	Chrysothamnus nauseosus	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	rubber rabbitbrush
L	COVI9	Coryphantha vivipara	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	–	–	0.0	–	–	–	–	–	–	–	0.0	0	pincushion cactus
L	HODI	Holodiscus discolor	–	–	–	–	–	–	–	–	–	–	–	–	0.3	1	0.0	–	0.0	–	–	–	–	–	–	–	0.0	0	ocean-spray
L	JAAM	Jamesia americana	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	–	–	–	–	–	–	–	–	–	–	0.0	0	waxflower
L	JUCO6	Juniperus communis	3.4	4	–	–	11.2	18	14.4	30	0.0	–	5.9	10	0.8	2	–	–	0.0	–	0.0	–	–	–	–	–	1.7	3	common juniper
D	JUCO6	Juniperus communis	1.1	–	–	–	1.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	--	common juniper - Dead
L	LEPU	Leptodactylon pungens	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	granite gilia
L	MARE11	Mahonia repens	1.7	9	–	–	0.2	3	0.0	–	23.2	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.3	1	Oregon-grape
L	OPPO	Opuntia polyacantha	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	plains prickly-pear
L	PAMY	Paxistima myrsinites	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	0.0	--	mountain-lover
L	PAVI11	Padus virginiana	0.0	–	–	–	0.0	–	–	–	8.4	20	–	–	0.0	–	–	–	0.0	–	–	–	–	–	–	–	0.1	0	common chokecherry
L	PESI	Pediocactus simpsonii	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	0.0	0	–	–	–	–	0.0	0	Simpson hedgehog cactus
L	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	0.0	–	0.1	0	0.0	0	–	–	–	–	0.0	0	mountain ninebark
D	PHMO4	Physocarpus monogynus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	mountain ninebark - Dead
L	QUGA	Quercus gambelii	17.6	28	–	–	0.7	1	26.6	55	38.1	80	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.7	3	scrub oak
D	QUGA	Quercus gambelii	10.7	–	–	–	0.3	–	–	–	36.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.0	--	scrub oak - Dead
L	RHART	Rhus aromatica ssp. trilobata	–	–	–	–	–	–	–	–	–	–	–	–	0.2	1	–	–	0.0	–	0.0	–	–	–	–	–	0.0	0	skunkbrush
L	RICE	Ribes cereum	0.3	1	–	–	0.9	2	–	–	–	–	0.5	2	1.3	3	0.0	1	0.0	–	0.0	–	–	–	–	–	0.3	1	wax currant
D	RICE	Ribes cereum	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	1.6	–	–	–	–	–	–	–	–	–	0.1	0	wax currant - Dead
L	RIIN2	Ribes inerme	–	–	0.0	–	–	–	–	–	–	–	0.3	2	1.3	3	–	–	0.0	–	–	–	–	–	0.4	1	0.2	1	whitestem currant
D	RIIN2	Ribes inerme	–	–	–	–	–	–	–	–	–	–	–	–	0.0	2	–	–	–	–	–	–	–	–	–	–	0.0	0	whitestem currant - Dead
L	RILE	Ribes leptanthum	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	–	–	0.0	--	trumpet gooseberry
L	ROWO	Rosa woodsii	0.2	3	–	–	0.2	1	1.6	20	7.0	65	0.5	7	0.1	1	–	–	0.1	1	0.1	0	0.3	2	–	–	0.2	2	Woods rose
L	RUDE	Rubus deliciosus	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	–	–	–	–	–	–	–	–	–	–	0.0	0	delicious raspberry
L	RUID	Rubus idaeus	–	–	–	–	–	–	–	–	–	–	–	–	0.1	1	0.0	–	–	–	–	–	–	–	–	–	0.0	0	American red raspberry
L	SYAL	Symphoricarpos albus	0.5	3	–	–	0.0	–	0.0	–	5.6	20	2.1	13	1.0	4	0.0	–	0.0	–	–	–	–	–	–	–	0.4	2	common snowberry
D	SYAL	Symphoricarpos albus	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	--	common snowberry - Dead
L	SYRO	Symphoricarpos rotundifolius	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	–	–	–	–	0.0	--	mountain snowberry
L	YUGL	Yucca glauca	–	–	3.3	13	0.4	1	–	–	–	–	–	–	0.3	1	0.0	–	0.8	3	1.7	3	0.0	–	0.8	3	0.7	2	small soapweed
	GRAMINOIDS																												
L	ACHY	Achnatherum hymenoides	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	0	–	–	–	–	0.0	0	Indian ricegrass
L	ACNE9	Achnatherum nelsonii	0.5	4	–	–	0.3	2	1.0	10	6.5	10	0.8	5	0.5	5	–	–	0.1	1	0.2	2	0.0	–	0.0	–	0.3	2	Nelson's needlegrass
L	AGCR	Agropyron cristatum	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.0	–	–	–	–	–	0.0	--	crested wheatgrass
L	AGGI2	Agrostis gigantea	–	–	–	–	–	–	–	–	–	–	–	–	0.0	1	–	–	–	–	–	–	–	–	–	–	0.0	0	redtop

	Area Code	BEM	JG	NI	RR1	RR2	SC	SG	SG	TR	TR	TR	TRW		
	Sample Timing	Pre-Treat	Pre-Treat	Pre-Treat	After Thin	Pre-Treat	Pre-Treat	Pre-Treat	After Fire	Pre-Treat	After Thin	After Fire	Pre-Treat		
	Number of Samples	9	2	8	1	1	13	15	9	36	28	3	6	Avg Avg	
	Species	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Common Name
L ANOD	Anthoxanthum odoratum	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	0.0 --	sweetgrass
L ANTE6	Anisantha tectorum	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	0.0 --	cheatgrass
L BOCU	Bouteloua curtipendula	– –	– –	– –	– –	– –	– –	0.1 0	– –	0.5 2	0.5 2	1.5 5	0.4 2	0.3 1	side-oats grama
L BRCA10	Bromopsis canadensis	– –	– –	– –	– –	– –	0.4 2	– –	– –	– –	– –	– –	– –	0.0 0	fringed brome
L BRIN7	Bromopsis inermis	– –	– –	– –	– –	– –	0.4 3	0.3 2	– –	– –	– –	– –	– –	0.1 0	smooth brome
L BRJA	Bromus japonicus	– –	– –	– –	– –	– –	– –	0.3 2	– –	– –	– –	– –	– –	0.0 0	Japanese brome
L BRPO5	Bromopsis porteri	0.1 1	– –	3.1 8	0.0 –	14.6 45	0.0 1	0.1 1	– –	– –	– –	– –	– –	0.3 1	nodding brome
L CAMI7	Carex microptera	– –	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	0.0 0	smallwing sedge
L CAPEH	Carex pensylvanica ssp. heliophila	– –	– –	– –	– –	– –	9.5 33	– –	– –	– –	– –	– –	– –	0.9 3	sun sedge
L CARO5	Carex rossii	18.2 48	6.5 50	17.9 56	1.0 10	1.5 10	9.9 31	8.6 47	0.5 8	4.6 30	5.6 31	0.2 3	8.7 46	7.3 34	Ross sedge
L CASI12	Carex siccata	4.2 10	– –	0.4 1	39.8 85	15.0 35	4.9 19	3.8 14	– –	0.0 0	– –	– –	– –	1.7 5	silvertop sedge
L CAXE	Carex xerantica	– –	– –	– –	– –	– –	0.0 1	0.0 0	– –	– –	– –	– –	– –	0.0 0	dryland sedge
L CHGR15	Chondrosum gracile	0.0 –	0.9 15	– –	– –	– –	0.2 3	1.2 8	0.5 4	1.1 10	1.4 10	– –	2.2 15	0.9 7	blue grama
L CRBR12	Critesion brachyantherum	– –	– –	– –	– –	– –	– –	0.1 1	– –	– –	– –	– –	– –	0.0 0	little barley
L CRJU2	Critesion jubatum	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	0.0 --	foxtail barley
L DASP2	Danthonia spicata	– –	– –	– –	– –	– –	– –	0.4 2	– –	– –	– –	– –	– –	0.0 0	poverty oatgrass
L ELCA4	Elymus canadensis	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	1.2 12	– –	0.0 0	Canada wildrye
L ELEL5	Elymus elymoides	0.6 3	– –	0.2 3	0.0 –	– –	0.4 5	0.1 1	– –	0.0 1	0.1 0	0.0 2	0.0 1	0.1 1	bottlebrush squirreltail
L ELGL	Elymus glaucus	– –	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	0.0 0	blue wildrye
L ELRE3	Elytrigia repens	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	– –	– –	0.0 0	creeping quackgrass
L ELTR7	Elymus trachycaulus	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	0.0 --	slender wheatgrass
L HECO26	Hesperostipa comata	– –	– –	– –	– –	– –	0.8 1	– –	– –	0.7 3	0.0 0	0.0 –	– –	0.3 1	needle-and-thread
L KOMA	Koeleria macrantha	0.2 4	0.1 5	2.1 16	0.0 –	0.0 –	1.2 9	2.2 19	0.1 1	0.2 3	0.4 4	– –	0.7 7	0.7 6	prairie junegrass
L LEKI2	Leucopoa kingii	0.3 2	– –	0.9 3	– –	– –	0.3 1	0.5 1	– –	0.1 1	0.1 1	– –	– –	0.2 1	spike-fescue
L MUFI	Muhlenbergia filiculmis	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	0.0 0	slimstem muhly
L MUMO	Muhlenbergia montana	– –	0.1 5	0.1 1	– –	– –	1.5 8	1.1 5	0.0 1	0.8 6	0.6 4	– –	0.7 4	0.7 4	mountain muhly
L NAVI4	Nassella viridula	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	– –	– –	0.0 0	green needlegrass
L OREX	Oryzopsis exigua	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	– –	0.0 0	little ricegrass
L PIMI7	Piptatherum micranthum	– –	– –	– –	– –	– –	0.6 2	0.4 6	– –	0.1 1	– –	– –	– –	0.1 1	littleseed ricegrass
L POFE	Poa fendleriana	– –	– –	– –	– –	– –	– –	0.1 1	– –	0.0 –	– –	– –	– –	0.0 0	muttongrass
L PONEI2	Poa nemoralis ssp. interior	– –	– –	1.1 3	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.1 0	interior bluegrass
L POPR	Poa pratensis	0.1 1	– –	0.0 –	8.6 25	10.0 30	0.0 0	0.7 2	– –	– –	– –	– –	– –	0.2 1	Kentucky bluegrass
L PSSP6	Pseudoroegneria spicata	1.7 8	– –	0.5 3	– –	– –	– –	0.9 5	– –	– –	0.4 3	– –	– –	0.3 2	bluebunch wheatgrass
L SCSC	Schizachyrium scoparium	– –	0.3 3	– –	– –	– –	0.0 0	0.0 –	– –	0.3 3	0.0 0	0.0 –	0.1 3	0.1 1	little bluestem
L VUOC	Vulpia octoflora	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	0.0 --	six-weeks fescue
	FORBS														
L ACAL10	Acrolasia albicaulis	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	0.0 0	whitestem blazing-star
L ACDI2	Acrolasia dispersa	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	0.0 --	bushy blazing-star
L ACDI3	Acosta diffusa	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 --	tumble knapweed
L ACLA5	Achillea lanulosa	0.3 5	0.1 3	0.8 13	0.6 10	0.1 5	0.2 5	0.4 11	0.0 –	0.0 1	0.1 1	0.0 –	0.1 3	0.2 4	western yarrow
L AGAU2	Agoseris aurantiaca	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 --	false-dandelion
L ALAC4	Allium acuminatum	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	0.0 0	tapertip onion
L ALAN3	Aletes anisatus	– –	– –	– –	0.1 5	– –	– –	– –	– –	– –	0.0 0	– –	– –	0.0 0	Rocky Mountain Indian parsely
L ALCE2	Allium cernuum	0.1 2	– –	0.1 1	– –	– –	0.0 1	0.0 1	– –	0.0 1	0.1 1	– –	0.0 1	0.0 1	nodding onion
L AMLA6	Amerosedum lanceolatum	0.0 –	– –	0.0 1	– –	– –	– –	0.0 1	– –	0.0 0	0.0 0	– –	– –	0.0 0	yellow stonecrop
L ANHO	Antennaria howellii	– –	– –	0.1 1	– –	– –	– –	1.0 4	– –	– –	– –	– –	– –	0.1 1	Howell's pussytoes
L ANMU	Anemone multifida	0.0 2	0.1 5	0.3 4	– –	– –	0.1 4	0.0 1	– –	0.0 0	0.0 0	0.0 –	0.0 1	0.0 1	Hudsonian anemone
L ANPA	Anemone parviflora	– –	– –	0.0 2	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	arctic anemone
L ANRO2	Antennaria rosea	0.4 3	0.0 3	1.0 8	0.0 –	– –	1.0 15	0.4 4	0.0 1	0.0 0	0.0 1	– –	0.0 1	0.2 3	rose pussytoes
L ANSE4	Androsace septentrionalis	– –	– –	– –	– –	– –	– –	0.0 2	– –	0.0 0	0.0 –	0.0 –	– –	0.0 0	northern rock-jasmine
L APAN2	Apocynum androsaemifolium	0.0 –	– –	0.3 6	– –	– –	0.0 0	– –	– –	– –	0.0 –	– –	– –	0.0 0	spreading dogbane
L APCA	Apocynum cannabinum	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	0.0 --	Indian hemp
L AQCO	Aquilegia coerulea	– –	– –	0.0 2	– –	0.5 5	– –	– –	– –	– –	– –	– –	– –	0.0 0	Colorado columbine
L ARFR4	Artemisia frigida	– –	– –	– –	– –	– –	0.0 –	0.2 2	0.0 –	0.1 1	0.0 1	– –	– –	0.1 1	fringed sagewort
L ASAL7	Astragalus alpinus	0.1 2	– –	0.1 1	0.1 5	1.0 10	– –	– –	– –	– –	– –	– –	– –	0.0 0	alpine milkvetch
L ASFO	Aster foliaceus	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	– –	0.0 0	leafybract aster
L ASLA5	Aster laevis	0.6 7	– –	0.2 5	– –	0.1 5	– –	– –	– –	– –	– –	– –	– –	0.1 1	smooth aster
L ASMI10	Astragalus missouriensis	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	0.0 0	Missouri milkvetch
L ASMI9	Astragalus miser	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	0.0 –	– –	0.0 --	weedy milkvetch
L ASSP16	Aster spathulatus	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	– –	0.0 0	western aster
L ASTE5	Astragalus tenellus	– –	– –	– –	– –	– –	0.5 3	0.0 1	– –	0.0 –	– –	0.0 –	– –	0.1 0	pulse milkvetch
L ASTRA	Astragalus	– –	– –	– –	– –	– –	0.3 2	0.0 –	– –	– –	0.0 –	0.0 2	– –	0.0 0	milkvetch

	Area Code	BEM	JG	NI	RR1	RR2	SC	SG	SG	TR	TR	TR	TRW		
	Sample Timing	Pre-Treat	Pre-Treat	Pre-Treat	After Thin	Pre-Treat	Pre-Treat	Pre-Treat	After Fire	Pre-Treat	After Thin	After Fire	Pre-Treat		
	Number of Samples	9	2	8	1	1	13	15	9	36	28	3	6	Avg Avg	
	Species	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Common Name
L BODR	Boechera drummondii	– –	0.1 3	– –	– –	– –	– –	0.0 0	– –	– –	– –	– –	0.0 –	0.0 0	false-arabis
L BOFE	Boechera fendleri	0.0 –	– –	– –	– –	– –	– –	0.0 0	– –	0.0 0	0.0 –	– –	– –	0.0 0	false-arabis
L CANU4	Carduus nutans	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 --	musk thistle
L CARO2	Campanula rotundifolia	0.1 1	– –	0.3 5	0.0 –	– –	0.1 3	0.1 4	0.0 1	0.0 1	0.1 1	0.0 –	0.0 –	0.1 2	common harebell
L CEFO2	Cerastium fontanum	1.0 9	– –	0.4 6	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	0.1 1	mouse-ear
L CHAL7	Chenopodium album	0.0 –	– –	0.1 3	0.0 –	– –	0.0 –	0.0 –	– –	0.0 0	0.5 9	0.0 –	0.0 –	0.1 2	lambs-quarters goosefoot
L CHDA2	Chamerion danielsii	– –	– –	– –	– –	– –	– –	0.0 0	– –	0.0 0	– –	– –	– –	0.0 0	fireweed
L CHDO	Chaenactis douglasii	– –	– –	– –	– –	– –	– –	0.0 0	– –	0.0 1	0.0 –	– –	0.0 1	0.0 0	pincushion
L CICA11	Cirsium canescens	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	0.0 --	prairie thistle
L COLI2	Collomia linearis	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 --	slender-leaf collomia
L COPA3	Collinsia parviflora	– –	– –	0.1 3	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	0.0 0	smallflower blue-eyed Mary
L DAPU5	Dalea purpurea	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	0.0 0	violet prairie-clover
L DRAR8	Drymocallis arguta	– –	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	0.0 0	sticky cinquefoil
L DRFI2	Dryopteris filix-mas	– –	– –	0.1 3	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	shield fern
L DRFI3	Drymocallis fissa	0.1 3	0.0 –	0.4 4	0.5 5	– –	0.3 3	0.1 2	– –	0.0 1	0.0 1	– –	– –	0.1 1	bigflower cinquefoil
L ERCO4	Erigeron compositus	– –	0.0 –	– –	– –	– –	– –	0.0 –	– –	0.0 0	0.0 1	0.0 2	– –	0.0 0	fernleaf fleabane
L ERDI4	Erigeron divergens	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	0.0 --	spreading fleabane
L EREX4	Erigeron eximius	– –	0.1 3	0.1 1	– –	– –	0.0 –	0.0 1	– –	– –	– –	– –	– –	0.0 0	forest fleabane
L ERFL	Erigeron flagellaris	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	– –	– –	– –	0.0 0	trailing fleabane
L ERIGE2	Erigeron	– –	– –	– –	– –	– –	– –	– –	0.0 1	– –	0.0 0	– –	– –	0.0 0	fleabane
L ERME2	Erigeron melanocephalus	0.0 1	– –	0.0 1	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	blackhead fleabane
L ERPE3	Erigeron peregrinus	– –	– –	0.0 –	– –	1.0 5	0.1 3	0.1 1	– –	– –	– –	– –	– –	0.0 0	peregrine fleabane
L ERSU2	Erigeron subtrinervis	– –	– –	0.0 1	– –	– –	0.3 6	0.1 1	– –	0.0 0	0.0 0	– –	– –	0.0 1	threenerve fleabane
L ERVE2	Erigeron vetensis	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	0.0 --	early bluetop fleabane
L FACO	Fallopia convolvulus	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 --	hedge cornbind
L FORB	forb unknown	0.1 1	– –	– –	– –	– –	– –	0.0 0	– –	0.0 0	0.0 0	– –	– –	0.0 0	unknown forb
L FRVE	Fragaria vesca	– –	– –	0.0 –	– –	– –	0.1 1	0.2 3	– –	– –	– –	– –	– –	0.0 0	European strawberry
L FRVI	Fragaria virginiana	0.0 1	– –	0.1 3	– –	– –	0.0 1	0.0 0	– –	– –	– –	– –	– –	0.0 0	Virginia strawberry
L GADR3	Gastrolychnis drummondii	0.1 1	– –	0.1 1	– –	– –	– –	0.0 0	– –	– –	0.0 0	– –	– –	0.0 0	alpine campion
L GASE6	Galium septentrionale	– –	– –	– –	0.9 25	15.6 60	0.1 2	0.1 1	– –	– –	– –	– –	– –	0.1 1	northern bedstraw
L GATR3	Galium triflorum	0.0 1	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	fragrant bedstraw
L GECA3	Geranium caespitosum	0.1 2	0.0 3	0.0 3	2.1 15	– –	0.6 11	0.4 7	0.0 4	0.2 4	0.1 2	0.0 –	– –	0.2 4	Fremont geranium
L GIPI	Gilia pinnatifida	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	0.0 2	– –	0.0 –	0.0 0	sticky gilia
L GRSQ	Grindelia squarrosa	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 --	curly-cup gumweed
L HEFU3	Heterotheca fulcrata	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	– –	– –	0.0 0	golden aster
L HEPA11	Heuchera parvifolia	– –	– –	0.0 1	– –	– –	– –	0.0 0	– –	– –	– –	– –	– –	0.0 0	littleleaf alumroot
L HEVI4	Heterotheca villosa	0.0 –	– –	– –	– –	– –	0.0 2	0.3 4	0.0 –	0.1 3	0.2 2	0.0 2	0.5 5	0.1 2	hairy golden aster
L IPAG	Ipomopsis aggregata	– –	– –	– –	– –	– –	– –	0.0 –	– –	0.0 1	0.0 0	– –	0.0 1	0.0 0	trumpet gilia
L LASE	Lactuca serriola	0.0 –	– –	0.0 –	0.0 –	– –	– –	– –	– –	0.0 0	0.0 0	0.0 –	– –	0.0 0	prickly lettuce
L LIBO3	Linnaea borealis	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	0.0 --	American twinflower
L LIIN2	Lithospermum incisum	0.0 –	– –	0.0 1	– –	– –	0.0 0	– –	– –	0.0 0	– –	0.0 –	– –	0.0 0	puccoon
L LIMU3	Lithospermum multiflorum	– –	– –	– –	– –	– –	0.0 0	0.1 4	– –	0.0 1	– –	– –	– –	0.0 1	puccoon
L LIPO	Ligusticum porteri	– –	– –	– –	– –	33.6 85	– –	– –	– –	– –	– –	– –	– –	0.3 1	osha
L LIPU	Liatris punctata	– –	0.0 3	0.0 –	– –	– –	– –	0.0 –	0.0 1	0.1 1	0.1 2	0.5 10	0.0 2	0.1 1	dotted gayfeather
L LUAR3	Lupinus argenteus	0.0 –	– –	– –	0.0 –	0.0 –	– –	– –	– –	– –	– –	– –	– –	0.0 --	silvery lupine
L LYJU	Lygodesmia juncea	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	0.0 --	rush skeleton-plant
L MABI	Machaeranthera bigelovii	– –	– –	– –	– –	– –	– –	0.0 1	– –	0.0 –	– –	– –	– –	0.0 0	spiny aster
L MAST4	Maianthemum stellatum	0.0 1	– –	0.0 –	0.1 5	1.5 5	0.0 0	0.3 4	– –	– –	– –	– –	– –	0.0 1	star Solomon-plume
L MEAR4	Mentha arvensis	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	0.0 --	field mint
L MEDI7	Melandrium dioicum	– –	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	0.0 0	white campion
L MELA3	Mertensia lanceolata	0.0 1	– –	1.3 22	0.0 –	– –	– –	– –	– –	– –	0.1 3	0.0 –	– –	0.1 2	lanceleaf bluebells
L MENTH	Mentha	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 1	– –	– –	0.0 0	mint
L MOFI	Monarda fistulosa	– –	– –	– –	0.0 –	– –	– –	0.1 2	– –	– –	– –	– –	– –	0.0 0	horse mint
L NOMO2	Noccaea montana	– –	– –	– –	– –	– –	– –	0.0 1	– –	0.0 0	0.0 0	– –	– –	0.0 0	candytuft
L NURU	Nuttallia rusbyi	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	0.0 –	– –	0.0 0	creamy blazing star
L OLDR	Oligosporus dracunculus	0.0 –	– –	– –	– –	– –	– –	– –	– –	0.0 0	0.0 0	– –	– –	0.0 0	wild tarragon
L OLPA	Oligosporus pacificus	0.0 –	0.0 –	0.1 1	– –	– –	0.0 2	0.3 8	0.0 1	0.1 2	0.1 3	0.0 –	0.1 3	0.1 3	sagewort wormwood
L ORLI	Orogenia linearifolia	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	0.0 --	turkey-peas
L ORVI4	Oreocarya virgata	– –	0.0 –	– –	– –	– –	– –	0.0 –	0.0 –	0.0 0	0.0 0	– –	– –	0.0 0	miners-candle
L OXHI2	Oxybaphus hirsutus	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	– –	– –	0.0 0	hairy four-o'clock
L OXLA3	Oxytropis lambertii	– –	– –	– –	– –	– –	0.2 1	0.1 1	– –	0.0 1	0.0 0	– –	– –	0.0 0	Lambert crazyweed
L PACKE	Packera	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	0.0 --	groundsel

	Area Code	BEM	JG	NI	RR1	RR2	SC	SG	SG	TR	TR	TR	TRW		
	Sample Timing	Pre-Treat	Pre-Treat	Pre-Treat	After Thin	Pre-Treat	Pre-Treat	Pre-Treat	After Fire	Pre-Treat	After Thin	After Fire	Pre-Treat		
	Number of Samples	9	2	8	1	1	13	15	9	36	28	3	6	Avg Avg	
	Species	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Cvr Fre	Common Name
L PAFE4	Packera fendleri	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	0.0 --	Fendler groundsel
L PAJA	Paronychia jamesii	– –	– –	– –	– –	– –	– –	– –	– –	0.0 1	0.0 1	– –	0.0 1	0.0 0	James nailwort
L PANE7	Packera neomexicana	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	0.0 –	0.0 0	New Mexico groundsel
L PEBA2	Penstemon barbatus	– –	– –	– –	– –	– –	– –	0.0 –	– –	0.0 –	– –	– –	– –	0.0 --	beardtongue
L PESE11	Penstemon secundiflorus	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	0.0 --	Fendler penstemon
L PEVI3	Penstemon virens	0.3 2	0.0 –	0.0 –	– –	– –	0.1 3	0.1 3	– –	0.0 –	0.0 1	– –	0.0 1	0.0 1	Front Range beardtongue
L PHHE2	Phacelia heterophylla	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	0.0 --	scorpion weed
L PHVI7	Physaria vitulifera	– –	0.1 3	– –	– –	– –	– –	– –	– –	0.0 3	0.0 1	– –	0.0 2	0.0 1	roundtip twinpod
L PLMA2	Plantago major	– –	– –	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	0.0 0	common plantain
L POEF	Potentilla effusa	– –	– –	– –	– –	– –	0.0 1	0.0 1	– –	0.0 –	0.0 –	0.0 –	– –	0.0 0	Saskatchewan cinquefoil
L POHI6	Potentilla hippiana	– –	– –	– –	– –	– –	0.0 0	0.1 1	– –	0.0 –	0.0 –	– –	– –	0.0 0	horse cinquefoil
L PSJA2	Pseudostellaria jamesiana	– –	– –	– –	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	0.0 0	tuber starwort
L PSMO	Pseudocymopterus montanus	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	– –	– –	0.0 0	mountain parsely
L PTAL3	Pterogonum alatum	0.0 –	– –	– –	– –	– –	– –	– –	– –	0.0 0	0.0 –	0.0 –	– –	0.0 0	winged buckwheat
L PYPI2	Pyrola picta	0.0 1	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	white-veined wintergreen
L RUHI2	Rudbeckia hirta	– –	– –	– –	– –	– –	– –	0.0 1	– –	– –	– –	– –	– –	0.0 0	black-eyed Susan
L SCBR3	Scutellaria brittonii	– –	0.0 –	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 --	Britton's scullcap
L SENEC	Senecio	– –	– –	– –	– –	– –	– –	0.0 1	– –	0.0 0	0.0 0	– –	– –	0.0 0	groundsel
L SESP3	Senecio spartioides	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	0.0 --	broom groundsel
L SISC7	Silene scouleri	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	0.0 --	moss campion
L SOLID	Solidago	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	0.0 --	goldenrod
L SOMI2	Solidago missouriensis	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	0.0 --	Missouri goldenrod
L SOSI3	Solidago simplex	0.2 4	– –	0.9 10	0.0 –	– –	0.7 6	0.1 3	– –	0.0 0	0.0 1	0.2 5	– –	0.2 2	Mt. Albert goldenrod
L TAOF	Taraxacum officinale	– –	– –	– –	– –	– –	– –	0.1 1	0.0 –	0.0 –	– –	0.0 2	– –	0.0 0	common dandelion
L THDI4	Thermopsis divaricarpa	– –	– –	– –	0.0 –	2.5 10	– –	– –	– –	– –	– –	– –	– –	0.0 0	golden banner
L THFE	Thalictrum fendleri	– –	– –	– –	– –	0.5 5	– –	0.0 1	– –	– –	– –	– –	– –	0.0 0	Fendler meadow-rue
L TIES	Tithymalus esula	– –	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	– –	0.0 --	leafy spurge
L TOEX2	Townsendia exscapa	– –	– –	– –	– –	– –	– –	– –	– –	0.0 –	0.0 –	0.0 –	– –	0.0 --	Easter-daisy
L TOVE2	Toxicoscordion venenosum	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	0.0 0	meadow death camas
L TROC	Tradescantia occidentalis	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	0.0 --	spiderwort
L TRRE3	Trifolium repens	– –	– –	– –	– –	– –	– –	0.1 1	– –	– –	– –	– –	– –	0.0 0	white Dutch clover
L TUGL	Turritis glabra	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	0.0 0	tower mustard
L UNAL	Unamia alba	0.0 –	– –	– –	– –	– –	– –	0.0 –	– –	0.0 –	– –	– –	– –	0.0 --	prairie aster
L VETH	Verbascum thapsus	– –	– –	– –	0.0 –	– –	– –	0.0 0	– –	0.0 0	0.0 –	– –	– –	0.0 0	flannel mullein
L VIAS2	Virgulaster ascendens	– –	– –	– –	– –	– –	0.0 –	– –	– –	– –	– –	– –	– –	0.0 --	Chile aster
L VINU2	Viola nuttallii	– –	– –	0.0 1	– –	– –	– –	– –	– –	– –	0.0 –	– –	– –	0.0 0	Nuttall violet
L VIOLA	Viola	– –	– –	– –	0.0 –	– –	– –	– –	0.0 2	– –	0.0 4	– –	– –	0.0 1	violet
	GROUND COVER														
.BARE	bare soil	0.1 2	0.2 8	0.4 4	2.3 25	0.0 –	0.5 13	0.9 18	47.8 95	4.3 43	8.8 50	47.9 90	5.6 59	7.9 38	bare soil
.LITT	litter and duff	98.1 100	88.0 100	97.9 100	96.4 100	98.4 100	95.9 100	90.4 100	20.7 98	75.3 100	76.5 100	33.9 95	69.4 100	77.8 100	duff litter
.FIGR	gravel fine	0.0 1	8.7 30	0.0 3	– –	– –	0.9 13	3.6 25	27.4 93	12.2 49	10.0 49	15.1 77	14.3 67	9.0 40	fine gravel
.MEGR	gravel medium	0.0 1	0.2 13	0.1 3	– –	– –	0.4 8	2.7 21	3.7 68	5.7 41	3.2 34	2.9 38	8.8 61	3.4 31	medium gravel
.COGR	gravel coarse	0.0 1	– –	– –	– –	– –	– –	– –	– –	0.3 8	0.3 4	0.0 8	0.4 13	0.1 4	coarse gravel
.COBB	cobble 10-25 cm	– –	– –	– –	– –	– –	– –	0.0 1	0.1 1	0.2 2	0.3 2	– –	0.2 2	0.1 1	cobble
.STON	stone > 25 cm	– –	– –	– –	– –	– –	– –	– –	– –	0.1 1	0.0 0	– –	– –	0.0 0	stone
.BOUL	boulder > 60 cm	– –	– –	– –	– –	– –	– –	– –	– –	0.1 0	0.1 0	– –	– –	0.0 0	boulder
.BEDR	bedrock exposed	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.2 0	– –	– –	0.0 0	exposed bedrock
.BAVE	live plant bases	1.8 79	2.2 58	1.5 83	1.4 95	1.6 100	2.1 88	1.9 77	0.3 20	1.7 57	0.8 54	0.1 20	1.0 54	1.4 62	live plant bases
.MOSSON	moss on soil	0.5 8	2.9 35	3.1 18	– –	3.5 15	2.6 19	2.2 19	0.4 2	1.7 14	1.2 11	– –	1.1 16	1.6 13	on soil moss
.LICHEN	lichen on soil	0.9 17	4.5 53	1.2 26	0.1 5	0.0 5	2.1 27	2.1 27	0.1 1	2.3 27	1.4 22	– –	4.7 46	1.8 24	on soil lichen
.FUNGI	fungi on soil	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	– –	– –	– –	0.0 0	on soil fungi
.ALGAE	algae on soil	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	0.0 0	algae on soil
.DEERPE	droppings deer	0.1 3	0.2 8	0.1 3	– –	– –	0.2 7	0.5 12	0.0 1	0.1 5	0.1 3	– –	0.2 7	0.1 5	deer droppings
.ELKPEL	droppings elk	– –	– –	0.1 2	– –	– –	– –	0.1 1	– –	– –	0.0 1	– –	– –	0.0 0	elk droppings
.RABBIT	droppings rabbit	– –	– –	0.0 1	– –	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	rabbit droppings
.BEAR	droppings bear	– –	– –	– –	– –	– –	– –	– –	– –	0.0 0	– –	– –	– –	0.0 0	bear droppings
.WOOD00	wood < ¼ in diam.	94.8 100	79.7 100	90.1 100	81.4 100	71.7 100	56.3 92	64.6 100	8.0 59	63.0 96	59.5 99	27.5 87	53.6 98	61.1 95	< 1/4 in diam. wood
.WOOD01	wood 1/4-1 in diam.	7.7 90	3.9 80	11.2 96	14.8 95	12.7 90	20.1 91	9.7 88	0.9 28	5.3 76	13.2 96	0.7 35	6.0 82	9.2 82	1/4-1 in diam. wood
.WOOD13	wood 1-3 in diam.	2.4 29	1.5 40	2.1 34	4.3 55	7.8 60	3.4 39	4.6 59	0.4 6	1.7 27	4.0 51	0.9 20	1.8 24	2.7 37	1-3 in diam. wood
.WOOD37	wood 3-7 in diam.	0.6 6	– –	0.2 2	1.5 5	4.0 15	0.9 6	1.9 12	– –	0.4 4	3.0 14	1.3 5	0.9 4	1.2 7	3-7 in diam. wood
.WOOD71	wood 7-10 in diam.	0.2 1	– –	0.1 1	– –	– –	0.3 0	0.9 5	0.5 2	0.2 1	1.9 5	– –	0.4 1	0.7 2	7-10 in diam. wood
.WOOD10	wood > 10 in diam.	0.3 1	– –	– –	– –	– –	0.2 0	0.3 0	– –	0.0 0	0.1 0	– –	– –	0.1 0	> 10 in diam. wood

GENERAL FIELD FORM
(MAY 2004)

SITE ID: __ __ - __ __ - __ - __ __ __ __ | __ __ __ __ __ - __ __ __ __ - __ __ - __

AGCY	RGN	FOR	QUADRANGLE CODE	SEQ. NO.	YR	READ

LOCATION INFORMATION

AREA NAME:

LAST	FIRST	MI

---------- EXAMINER(S) ----------

PROJECT/PURPOSE | SAMPLE TYPE(S)

QUADRANGLE:

R ___ PF ___ DI ___ OWN ___ AF ___

LOC: _____ STAND: _____

START: __ __ | __ __ | __ __ __ __

END: __ __ | __ __ | __ __ __ __

QUAD __ __ __ __ - __ __ __ __ __ __

STATE, COUNTY __ __ – __ __ __

ELEVATION __ __ , __ __ __ FT

__ __ ¼ __ __ ¼
__ __ ¼ __ __ ¼
SECTION __ __

LATITUDE __ __ ° __ __ ' __ __ • __ __ "

LONGITUDE __ __ __ ° __ __ ' __ __ • __ __ "

UTM EAST __ __ __ __ __ __ __ __ • __ __
UTM NORTH __ __ __ __ __ __ __ __ • __ __
UTM ZONE __ __ __

ASPECT AZIMUTH __ __ __ ° __

SLOPE ANGLE __ __ __ • __ %

SLOPE POSITION __ __

TOWNSHIP __ __ __ __
RANGE __ __ __ __
MERIDIAN __ __

GPS ELEVATION:
GPS COMMENTS:
WATERSHED __ __ - __ __ - __ __ - __ __ - __ __ - __ __
SITE __ __ __ __

ALLOTMENT
PASTURE
KEY AREA
AREA

ACRES __ __ , __ __ __
EXAM LEVEL __ __ __ __
EXAM PURPOSE __ __
STRATUM __ __ __ __ __ __
STRUC __ __

REACH __ __ __ , __ __ __ , __ __ __ REACH LENGTH: UOM __ __ __

CAPABLE GROWING __ __ __ %

PRECISION PROTOCOL __ __ __ __ __ __

FUEL PHOTO REF: __ __ __

IS THERE A MAP OF THE SITE? YES__ NO__. WHERE IS THE MAP LOCATED?

SKETCH MAP OF SITE

IS POINT MONUMENTED? YES__ NO__. HOW, AND WITH WHAT?

NARRATIVE ROUTE TO SITE:

POINT	IS (DISTANCE)	AZIMUTH	FROM (LANDMARK, WITNESS TREE, ETC.)
	M	__ __ __ ° __	
	M	__ __ __ ° __	
	M	__ __ __ ° __	
	M	__ __ __ ° __	

SAMPLE DESIGN DATA (METADATA)

FIXED AREA PLOT		UOM			UOM
	RADIUS	__ __ __ | __ __ __	O R	LENGTH	__ __ __ | __ __ __
	AREA	__ __ __ | __ __ __		WIDTH	__ __ __ | __ __ __

TRANSECTS	BASELINE	UOM	TRANSECT	UOM	MICROPLOT	UOM
LENGTH	__ __ __ |	__ __ __	__ __ __ |	__ __ __	__ __ __ |	__ __ __
WIDTH					__ __ __ |	__ __ __
NUMBER OF …	__ __ __	TRANSECTS	__ __ __	MICROPLOTS		
AZIMUTH	__ __ __ ° __		1: __ __ __ ° __ 2: __ __ __ ° __ 3: __ __ __ ° __ 4: __ __ __ ° __			
FIRST LOCATION …			__ __ __ |	__ __ __	__ __ __ |	__ __ __
INTERVAL BETWEEN …			__ __ __ |	__ __ __	__ __ __ |	__ __ __
POINTS PER …			__ __ __		__ __ __	
ORIENTATION					__ __ __	

PHOTOGRAPHY

TYPE: AERIAL FLIGHT LINE: __ __ __ __ __ __ __ __ __ __ __ __

GROUND SET: ROLL NO.: __ __ __ __ __ __

SCALE 1: __ __ __ , __ __ __ DATE: __ __|__ __|__ __ __ __ AT __ __:__ __ EXPOSURE NO.: __ __ __ __ __

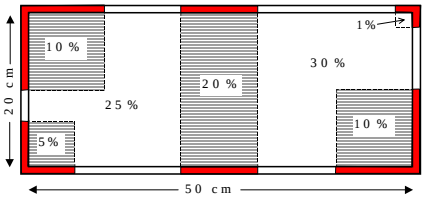
SITE INFORMATION

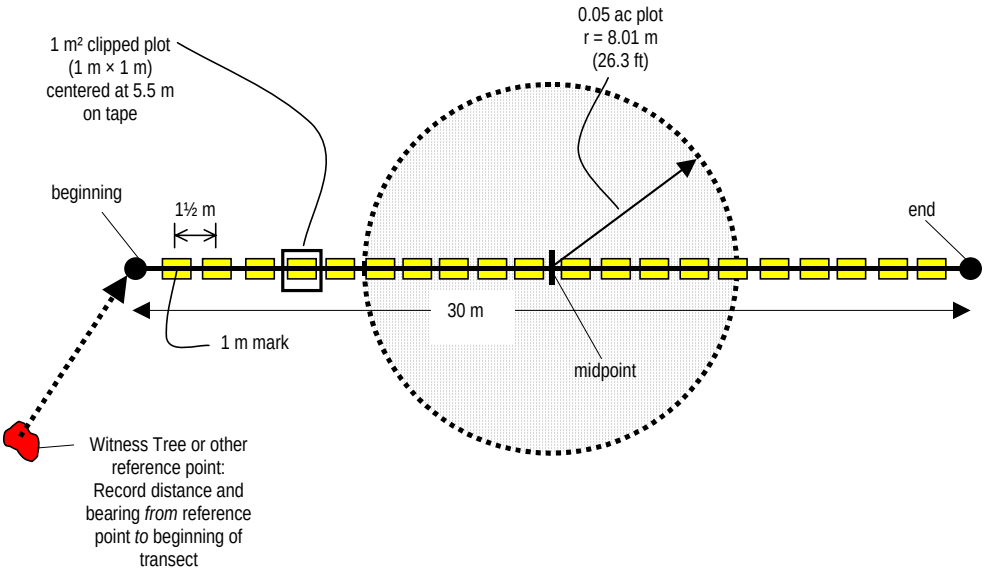
EXISTING VEGETATION	PLANT COMMUNITY __ __ __ __ DESCRIP: SERAL STAGE __ __ __ __ __ __ DESCRIP: SAF COVER TYPE: __ __ __ DESCRIP: SRM COVER TYPE: __ __ __ DESCRIP: DOMINANT SPECIES: RANGE SITE:
POTENTIAL VEGETATION	HABITAT TYPE/PLANT ASSOCIATION: HT/PA PHASE: PHASE NAME: CLIMAX CATEGORY:

SOIL INFORMATION

SOIL MAPPED	SURVEY: | MAP UNIT CODE: | MAP UNIT: FAMILY: ORD __ __ | GG __ __ | SG __ __ __ | FAMILY:		SERIES:
SOIL OBSERVED	CLIMATE ZONE:	MOISTURE REGIME:	TEMPERATURE REGIME:
	MEAN ANNUAL PRECIPITATION:		LANDFORM CODE:
	LANDFORM DESCRIPTION:	ECOLOGICAL UNIT TYPE (LTA, LT, LTP) __ __ __	
	EU NO.	EU NAME	
	OBSERVED SOIL TAXON:		

COMMENTS





COVER-FREQUENCY DATA TRANSECT NUMBER: __ OF __. LENGTH _____ ___. SITE ID: __ __-__ __-__ __-__ __ __ __|__ __ __ __ __-__ __ __ __-__ __-__

COVER CLASSES: X "10-CLASS" (BELOW) DATE: __ __ | __ __ | __ __ __ __ OBS: __ __ __ AGCY RGN FOR QUADRANGLE CODE SEQ. NO. YR READ

LINE	LF	ITEM	ACC	FREQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC
1																									
2																									
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40																									

LAYER	MIN	AVG	MAX

CODE	RANGE
T	0-1%
0	1-5%
1	5-15%
2	15-25%
3	25-35%
4	35-45%
5	45-55%
6	55-65%
7	65-75%
8	75-85%
9	85-95%
A	95-99%
X	99-100%

AL	ALGAE
BR	BRYOPHYTE
CL	CRUST.LICH.
FA	FERN ALLIES
FB	FORB
FE	FERN
FO	FOL.LICH.
FR	FRUT.LICH.
FU	FUNGUS
GR	GRAMINOID
LC	LICHEN
LI	LIANA
SH	SHRUB
SS	SUBSHRUB
ST	SUCCULENT
TR	TREE
VI	HERB. VINE

BARE	BARE SOIL
LITT	LITTER AND DUFF
FIGR	FINE GRAVEL 2 – 5 MM
MEGR	MEDIUM GRAVEL 5 – 20 MM
COGR	COARSE GRAVEL 20 – 75 MM
COBB	COBBLE 7.5 – 25 CM
STON	STONE 25 – 60 CM
BOUL	BOULDER > 60 CM
BEDR	BEDROCK
BAVE	LIVE BASAL VEGETATION
MOSSON	MOSS ON SOIL
LICHEN	LICHEN ON SOIL
WOOD00	DEAD ORG. < ¼"
WOOD01	DEAD ORG. ¼ – 1"
WOOD13	DEAD ORG. 1 – 3"
WOOD37	DEAD ORG. 3 – 7"
WOOD71	DEAD ORG. 7 – 10"
WOOD10	DEAD ORG. >10"
COWPIE	COWPIE
DEERPE	DEER PELLETS
ELKPEL	ELK PELLETS

SIDE 2 (BACK OF SHEET) TRANSECT NUMBER: __ OF __. LENGTH _____ ___. SITE ID: __ __-__ __-__ __-__ __ __ __|__ __ __ __ __-__ __ __ __-__ __-__

DATE: __ __ | __ __ | __ __ __ __ OBS: __ __ __ AGCY RGN FOR QUADRANGLE CODE SEQ. NO. YR READ

LINE	LF	ITEM	ACC	FREQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC
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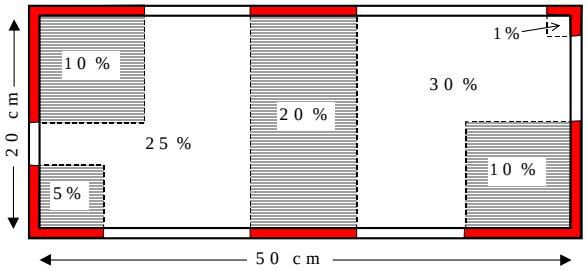
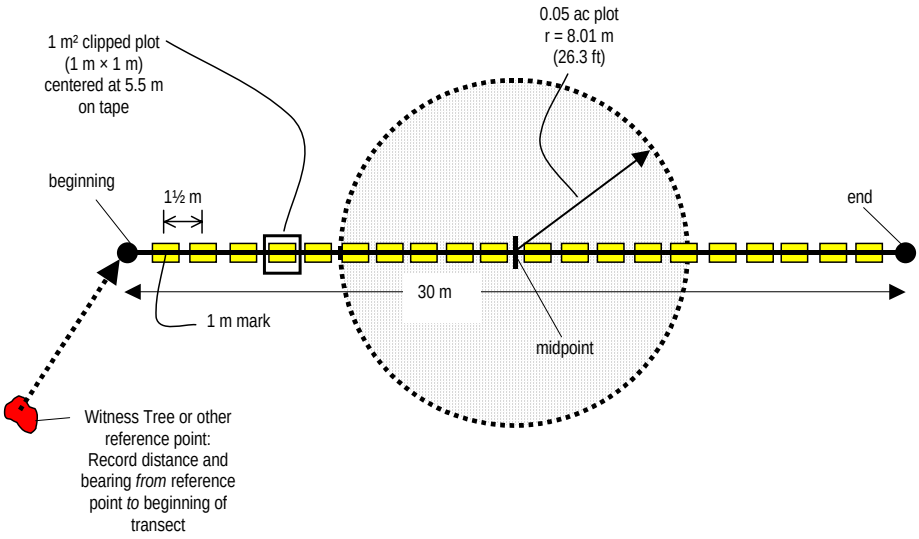
COMMENTS:





CODE	RANGE
T	0-1%
0	1-5%
1	5-15%
2	15-25%
3	25-35%
4	35-45%
5	45-55%
6	55-65%
7	65-75%
8	75-85%
9	85-95%
A	95-99%
X	99-100%

AL	ALGAE
BR	BRYOPHYTE
CL	CRUST.LICH.
FA	FERN ALLIES
FB	FORB
FE	FERN
FO	FOL.LICH.
FR	FRUT.LICH.
FU	FUNGUS
GR	GRAMINOID
LC	LICHEN
LI	LIANA
SH	SHRUB
SS	SUBSHRUB
ST	SUCCULENT
TR	TREE
VI	HERB. VINE

LINE-INTERCEPT TRANSECT NUMBER: __ OF __. LENGTH _______ ___. SITE ID: __ __-__ __-__ __-__ __ __ __|__ __ __ __ __-__ __ __ __-__ __-__

LENGTH UNITS: __ CM __ 0.1 FT DATE: __ __|__ __|__ __ __ __ OBS: __ __ __ AGCY | RGN | FOR | QUADRANGLE CODE | SEQ. NO. | YR | READ

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FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO

SIDE 2 (BACK OF SHEET) TRANSECT NUMBER: __ OF __. LENGTH ________. SITE ID: __ __-__ __-__ __-__ __ __ __|__ __ __ __ __-__ __ __ __-__ __-__

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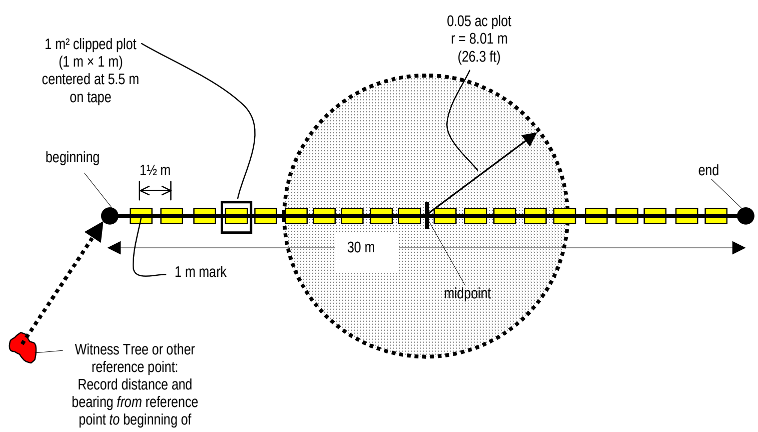

SHRUB NUMBERS DATE: __ __ | __ __ | __ __ __ __ SITE ID: __ __-__ __-__ __-__ __ __ __ | __ __ __ __ __-__ __ __ __-__ __-__

PLOT SHAPE: __ __ __ NO. PLOTS: __ __ PLOT SIZE: ____•____ ___ OBS: __ __ __ AGCY | RGN | FOR | QUADRANGLE CODE | SEQ. NO. | YR | READ

PLOT	GF	SPECIES	NSTEM CLASS	HT CLASS	BROWSE CLASS	PERCENT OF STEMS DEAD	COUNT	PLOT	GF	SPECIES	NSTEM CLASS	HT CLASS	BROWSE CLASS	PERCENT OF STEMS DEAD	COUNT
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GROWTH FORMS

LI	LIANA
SH	SHRUB
SS	SUBSHRUB
ST	SUCCULENT
TR	TREE

NSTEM CLASSES

CD	NO. STEMS
00	0-5
01	5-10
02	10-20
03	20-30
04	30-40
	…ETC.

HT CLASSES

CD	AVG STEM HT
00	0-½ DM
01	½-1 DM
02	1-2 DM
03	2-3 DM
04	3-4 DM
05	4-5 DM
	…
10	9-10 DM
11	1-2 M
12	2-3 M
	… ETC.

BROWSE CLASSES

CD	BROWSED
0_	NONE
1_	¼ CURRENT YR
2_	½ CURRENT YR
3_	¾ CURRENT YR
4_	ALL CURRENT YR
5_	1-2 × CURRENT YR
6_	> 2 × CURRENT YR

CD	AVAILABILITY
_0	RETREATED
_1	NONE
_2	¼ OF HEIGHT
_3	½ OF HEIGHT
_4	¾ OF HEIGHT
_5	ALL

SIDE 2 (BACK OF SHEET)

DATE: __ __ | __ __ | __ __ __ __

SITE ID: __ __-__ __-__ __-__ __ __ __ | __ __ __ __ __-__ __ __ __-__ __-__

OBS: __ __ __

AGCY | RGN | FOR | QUADRANGLE CODE | SEQ. NO. | YR | READ

PLOT	GF	SPECIES	NSTEM CLASS	HT CLASS	BROWSE CLASS	PERCENT OF STEMS DEAD	COUNT	PLOT	GF	SPECIES	NSTEM CLASS	HT CLASS	BROWSE CLASS	PERCENT OF STEMS DEAD	COUNT
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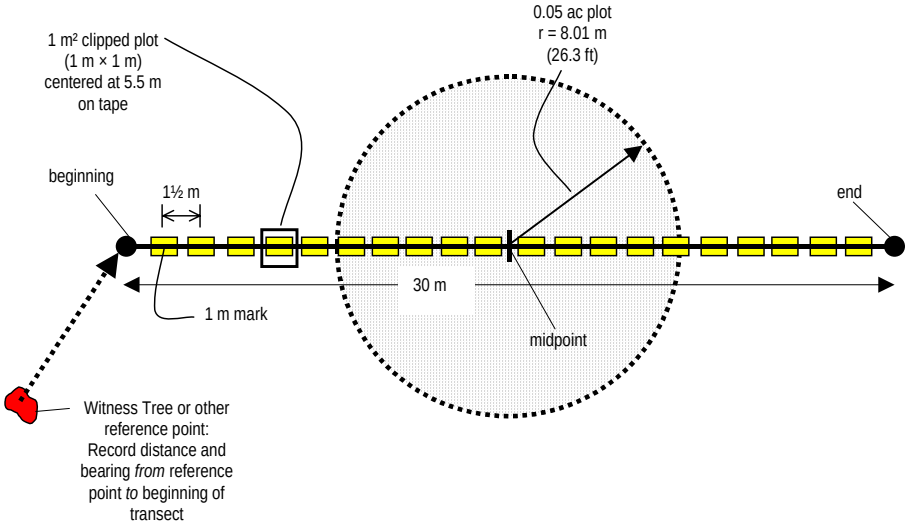

TREE DATA FORM | SIDE 1 | DATE: __ __ / __ __ / __ __ __ __ | SITE ID: __ __ - __ __ - __ __ - __ __ __ __ | __ __ __ __ - __ __ __ - __ __ - __ | SHEET ___ OF ___

NO. OF PLOTS: __ __ | SHAPE __ __ __ | SIZE __ __ __ • __ __ __ | OBS: __ __ __ | AGCY | RGN | FOR | QUADRANGLE CODE | SEQ. NO. | YR | READ | BRKPT DBH: _____ | LOCATION __ __ __ __ __ __ | STAND __ __ __ __

PLOT NO.	TAG NO.	STATUS	SITE/GST	SPECIES	COUNT	DRC NO. STEMS	DBH/DRC	HEIGHT	HEIGHT CROWN	RAD GROW 1	RAD GROW 2	AGE	CROWN RATIO	CROWN CLASS	CROWN WIDTH	WILDLIFE USE	LOG/SNAG DECAY	CONE SEROTINY	% NEEDLES ON TREE	% NEEDLES GREEN	DAMAGE CATEGORY	DAMAGE AGENT	DAMAGE PART	DAMAGE SEVERITY	DAMAGE CATEGORY	DAMAGE AGENT	DAMAGE PART	DAMAGE SEVERITY	COMMENT
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BACK OF FORM | SIDE 2 | DATE: __ __ / __ __ / __ __ __ __ | SITE ID: __ __ - __ __ - __ __ - __ __ __ __ | __ __ __ __ - __ __ __ - __ __ - __ | SHEET ___ OF ___

AGCY | RGN | FOR | QUADRANGLE CODE | SEQ. NO. | YR | READ

PLOT NO.	TAG NO.	STATUS	SITE/GST	SPECIES	COUNT	DRC NO. STEMS	DBH/DRC	HEIGHT	HEIGHT CROWN	RAD GROW 1	RAD GROW 2	AGE	CROWN RATIO	CROWN CLASS	CROWN WIDTH	WILDLIFE USE	LOG/SNAG DECAY	CONE SEROTINY	% NEEDLES ON TREE	% NEEDLES GREEN	DAMAGE CATEGORY	DAMAGE AGENT	DAMAGE PART	DAMAGE SEVERITY	DAMAGE CATEGORY	DAMAGE AGENT	DAMAGE PART	DAMAGE SEVERITY	COMMENT
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USDA FOREST SERVICE
PIKE NATIONAL FOREST
UPPER SOUTH PLATTE WATERSHED PROTECTION AND RESTORATION PROJECT

September, 2004