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A Visual Training Tool for the Photoload Sampling Technique

Violet J. Holley and Robert E. Keane

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Abstract

This visual training aid is designed to provide Photoload users a tool to increase the accuracy of fuel loading estimations when using the Photoload technique. *The Photoload Sampling Technique* (RMRS-GTR-190) provides fire managers a sampling method for obtaining consistent, accurate, inexpensive, and quick estimates of fuel loading. It is designed to require only one hour of training, but the accuracy of the estimates can be increased with additional training and visual calibration. This training tool is designed to help users estimate loadings of the six common surface fuel components used in the Photoload method (1 hr, 10 hr, 100 hr, and 1000 hr downed, dead woody fuels and live and dead shrubs and herbaceous fuels). Users estimate the loadings of the fuels in the photographs in this document using the Photoload sampling technique and then compare their estimates to the actual loadings that are given on the page following each photograph. Each photograph set contains a photograph of the fuelbed, a photograph of the stand, and a table of laboratory measured loadings. The photographed fuelbeds are in both natural and disturbed sites.

Keywords: fuel load loading, fuel sampling, fuelbeds, photographs, wildland fire

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A Visual Training Tool for the Photoload Sampling Technique

Violet J. Holley and Robert E. Keane

Introduction

Accurate fuel loading estimates are vital to fire managers for predicting fire behavior and effects from both prescribed fire and wildfire. Fuel loadings are critical inputs in a wide variety of fire simulation models such as the First Order Fire Effects Model (FOFEM) (Reinhardt and others 1997), CONSUME (Ottmar and others 1993), BehavePlus (Andrews and others 2005), and FARSITE (Finney 1995). However, estimating fuel loads is difficult and costly if complex sampling techniques, such as the commonly used planar intersect sampling (Brown 1974), are used across large areas to achieve high accuracies. What is needed is a quick, accurate, and consistent sampling procedure to estimate fuel loadings that achieves the same level of accuracy as more complex sampling approaches but is easier to teach, learn, and implement in the field.

A number of fuel sampling techniques that use fixed-area plots and planar intersect methods have been developed to gather high-quality, accurate fuel loading data. Most of these are complex and require extensive expertise, time, and funding to implement (Sikkink and Keane 2008). Also, few of these techniques can be used to estimate fuel loading for herbs and shrubs. Choosing the most appropriate method for each project involves compromises in accuracy, time, money, training, scale, and effectiveness. Sikkink and Keane (2008) found that, of the six sampling methods they studied, the planar intersect method (Brown 1974) was the most accurate at assessing the six fuel types: 1 hr, 10 hr, 100 hr, 1000 hr, dead and live shrubs, and dead and live herbaceous fuels. But this accuracy was only achieved if over 2500 m of sampling planes were used, taking a minimum of five minutes for each plane.

The Photoload technique was developed by Keane and Dickinson (2007a) as an alternative method for assessing fuel loadings of down, dead, woody fuels, shrubs, and herbs. It involves visually comparing fuel loading conditions in the field with a series of photographs taken in a controlled setting that represent a wide range of loadings. It is a quick, cost-effective, and easy method for estimating loading, and it also appears to offer the same level of accuracy as other intensive sampling techniques (Sikkink and Keane 2008). The Photoload technique was designed to require only one hour of training to begin estimating fuel loadings. This minimizes time, money, and training restrictions and provides the accuracy needed for estimating fuel loadings. However, the accuracy of Photoload fuel loading estimates can increase if more time is spent on training and calibrating the visual estimates (Sikkink and Keane 2008). Keane and Dickinson (2007a) found that additional training improved the accuracy of the Photoload estimates by more than 20 percent. It became clear to the authors that what managers would benefit from is a training tool that can be used to help teach the proper use of the Photoload technique and to calibrate the sampler's "eye" to make better fuel loading estimations. We developed this set of photographs with corresponding measured fuel loadings to accompany The Photoload Sampling Technique: Estimating Surface Fuel Loadings from Downward-Looking Photographs of Synthetic Fuelbeds (RMRS-GTR-190; Keane and Dickinson 2007b) in order to help people learn the Photoload technique and to aid in the calibration process. This training tool assumes the user has already read and understands the material in The Photoload Sampling Technique (RMRS-GTR-190).

How Were the Photoload Training Tool Photographs Developed?

In developing this training tool, we sampled forest and rangeland settings commonly encountered by forest managers when assessing fuels. Our chosen study sites encompass a wide range of fuel types and loadings. Sites are stratified by five dominant vegetation and condition categories: (1) forests, (2) shrublands, (3) grasslands, (4) disturbed activity areas, and (5) 1000 hr log plots. We sampled all of these fuelbed categories on the Lolo National Forest, MT; Bitterroot National Forest, MT; Lubrecht Experimental Forest, MT; Tenderfoot Experimental Forest, MT; Beaverhead-Deerlodge National Forest, MT; and BLM land in Iron County, UT, managed by the Cedar City field office. Table 1 reflects the sampling distribution of this study. The activity photograph sets were taken in areas of disturbance that was either caused by fire or stand management techniques, including standard thinning techniques and mastication.

The Photoload technique includes methods for measuring six fuel components, all of which were sampled to develop this training device:

- 1 hr: <1 cm (<0.25 inch) diameter
- 10 hr: 1 to <2.5 cm (0.25 to <1 inch) diameter
- 100 hr: 2.5 to <7 cm (1.0 to <3 inches) diameter
- 1000 hr: ≥7 cm (≥3 inches) diameter
- Live and dead shrub fuels
- Live and dead herbaceous fuels

At each fuelbed, we filled out a FIREMON plot description form (Appendix C) to aid in the vegetation and fuels description provided for each photograph (Lutes and others 2006). Then, in the fine fuelbed plots, we used an area defined by a 1-m^2 plot frame and took digital photographs of the fuelbed looking straight down (with the exception of one tall shrub fuelbed in the Forests series) and at eye-level to the north and east of the site. We then clipped and collected all of the fuels within the plot frame. We sorted the fuels into the above components, placed them in paper bags, and labeled the bags according to fuel type and plot number. Samples were taken to the laboratory where they were oven-dried and weighed to determine actual loadings (mass per unit area) for each fuel type, which are printed opposite each photograph.

Logs or 1000 hr fuels were measured differently than fine fuels. We measured the dimensions of all logs within a 100-m^2 plot (Figure 1). Within this plot, the small end diameter, large end diameter, and the length of each log were measured using a cloth tape. If part of the log fell out of the plot, we measured only the part that fell inside the plot boundaries. We took a photograph of each plot at a distance of 5 m from the plot base line and at a height of 1.5 m. Log loadings were calculated by multiplying log volume by wood density. The following equation was used to calculate log volume:

$$V = \frac{l}{3}\left[\left(a_s + a_l\right) + \sqrt{\left(a_s a_l\right)}\right]$$

where a_s and a_l are the areas of the small and large ends of the log ($a = \pi d_2/4$) and l is the length of the log (Keane and Dickinson 2007a). We assumed an average wood bulk density of 420 kg m^{-3} in our calculations (Fleischer and others 1984).

How Are the Fuelbed Photographs Organized and Categorized?

We sampled 112 fuelbeds across the five fuelbed categories to develop this training tool. It is organized according to five categories previously described. Within fuelbed category, photographs are randomly arranged such that patterns will not influence estimates.

Based on dominant fuel type within the 1-m^2 plot frame, fuelbeds are categorized (and subcategorized) as woody (1, 10, 100, and 1000 hr), shrub (low, medium, and tall), and herb (graminoid and forb). Each photograph set has a site description following the photographs to better familiarize the user with the stands he or she is evaluating. These descriptions utilize the Society of American Foresters (Eyre 1980) and the Society of Range Management (Shiflet 1994) site classification systems, and FIREMON (Lutes and others 2006) protocol for size classes. Tables 2 and 3 provide scientific names and common names of species used in the photograph descriptions, and Tables 4 and 5 contain the tree and shrub size classifications.

With this information and the photographs provided, the observer in training should be able to visualize the stand and relate it to stands they may encounter during field exercises.

How to Estimate Fuel Loadings in the Photographs Using the Photoload Methods

Many of the shrubland photographs were taken in sagebrush shrublands. Sagebrush was not included in the Photoload sampling technique development and is generally estimated using different techniques from those used for other shrub species. However, we included these photograph sets because we recognize that there are many active projects involving sagebrush species.

Some fuel components are obscured by other components in these photographs so user estimates may be lower due to the difficulty of capturing each fuel type in a single, one-dimensional photograph. We recommend using the stand description provided for each photograph to guide your estimation process. Each photograph was taken to emphasize the targeted fuel type. For example, if you are training to estimate woody fuels, try to concentrate on those fuel type photographs.

To begin estimating fuel loadings from the photographs, re-familiarize yourself with pp. 8 through 13 of *The Photoload Sampling Technique* (RMRS-GTR-190). These pages describe how to make a Photoload fuel load estimate.

Next, to assess fuel loadings, select a photograph from the appropriate series. This visual training tool is divided into five sections based on the fuelbed categories (forests, shrublands, grasslands, disturbed activity areas, and 1000 hr log plots). As previously described, each of these sections is categorized and subcategorized by the fuel type in the plot frame.

Examine the photographs, and make a note of the fuel composition. Note the proportion of herbs to shrubs and their physiological differences. You will need to know this when you are choosing a species in *The Photoload Sampling Technique* (RMRS-GTR-190). Notice what types of fine woody fuels you see. Mentally break these fuels into 1 hr, 10 hr, 100 hr, and 1000 hr classes.

The visual estimation of fine woody fuel loading may be difficult since you cannot physically measure the diameter of the fuels, but for length estimations, use the black bars on the 1-m^2 plot frame. The center of each bar marks 33.33 cm (13.12 inches). Now that you have mentally separated the fuels into the five fuel types, you can use *The Photoload Sampling Technique* (RMRS-GTR-190) to estimate loadings in the photographs. Write down your estimates, and compare them with the laboratory-confirmed loadings opposite each photograph. Continue this process through all the fuel types until you become proficient and comfortable with the technique and your loading estimates are consistent.

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Table 1. Number of fuelbeds sampled by location and fuel type.

Location	Fuel category				
	Forest	Shrubland	Grassland	Activity	Log
Beaverhead-Deerlodge National Forest, MT	2	0	8	0	0
Bitterroot National Forest, MT	4	0	0	0	0
Iron County, UT	3	1	0	3	0
Lolo National Forest, MT	12	0	5	17	17
Lubrecht Experimental Forest, MT	0	9	3	0	16
Tenderfoot Experimental Forest, MT	3	0	2	1	0

Table 2. Forb and graminoid species list.

Life form	Scientific name	Common name
Forb	*Arnica cordifolia*	heartleaf arnica
	Arnica latifolia	broadleaf arnica
	Apocynum androsaemifolium	spreading dogbane
	Asarum caudatum	wild ginger
	Balsamorhiza sagittata	arrowleaf balsamroot
	Clintonia uniflora	queen's cup
	Epilobium angustifolium	fireweed
	Fragaria virginiana	Virginia strawberry
	Lupinus argentinus	silvery lupine
	Penstemon spp.	penstemon
Graminoid	*Agropyron spicatum*	bluebunch wheatgrass
	Bromus tectorum	cheatgrass
	Calamagrostis rubescens	pinegrass
	Carex spp.	sedge
	Festuca idahoensis	Idaho fescue
	Festuca scabrella	rough fescue
	Festuca spp.	fescue

Table 3. Shrub and tree species list.

Life form	Scientific name	Common name
Shrub	*Amelanchier alnifolia*	Saskatoon serviceberry
	Arctostaphylos uva-ursi	kinnikinnick
	Artemisia tridentata	big sagebrush
	Berberis repens	Oregon grape
	Gutierrezia spp.	snakeweed
	Linnaea borealis	twinflower
	Physocarpus malvaceus	ninebark
	Spiraea betulifolia	white spirea
	Symphoricarpos albus	common snowberry
	Vaccinium caespitosum	dwarf bilberry
	Vaccinium globulare	blue huckleberry
	Vaccinium scoparium	grouse whortleberry
Tree	*Abies grandis*	grand fir
	Abies lasiocarpa	subalpine fir
	Juniperus osteosperma	Utah juniper
	Larix occidentalis	western larch
	Picea engelmannii	Engelmann spruce
	Pinus contorta	lodgepole pine
	Pinus edulis	two-needle pinyon
	Pinus ponderosa	ponderosa pine
	Pseudotsuga menziesii	Douglas-fir
	Thuja plicata	western red cedar

Table 4. FIREMON tree size classification.

Size class	Size class parameters
Seedling	<1.4 m (<4.5 ft) tall
Sapling	1.4 m (4.5 ft) tall and <13.0 cm (<5.0 inches) diameter
Pole	13.0 cm (5.0 inches) to <23.0 cm (<9.0 inches) diameter
Medium	23.0 cm (9.0 inches) to <53.0 cm (<21.0 inches) diameter
Large	53.0 cm (21.0 inches) to <83.0 cm (<33.0 inches) diameter
Very large	≥83.0 cm (>33.0 inches) diameter

Table 5. FIREMON shrub size classification.

Size class	Size class parameters
Low	<1.0 m (<3.0 ft) tall
Medium	1.0 m (3.0 ft) to <2.0 m (<6.5 ft) tall
Tall	≥2.0 m (>6.5 ft) tall

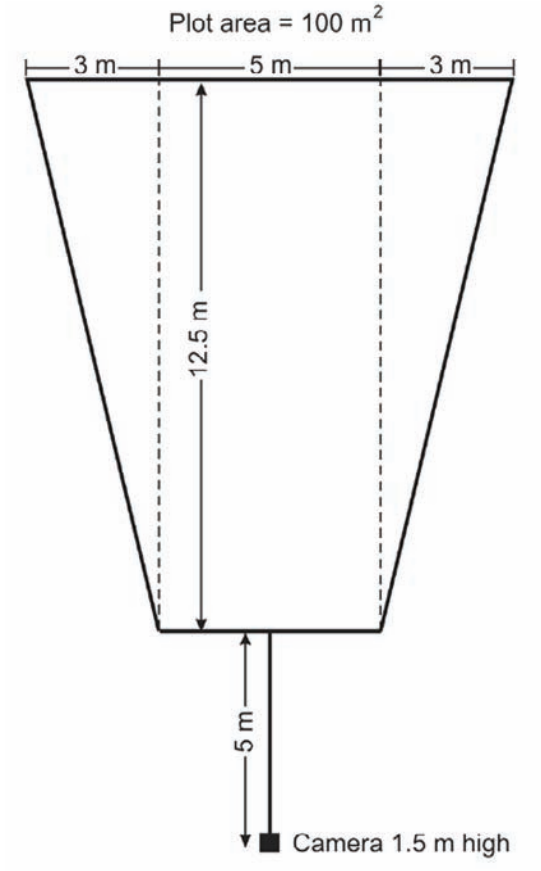
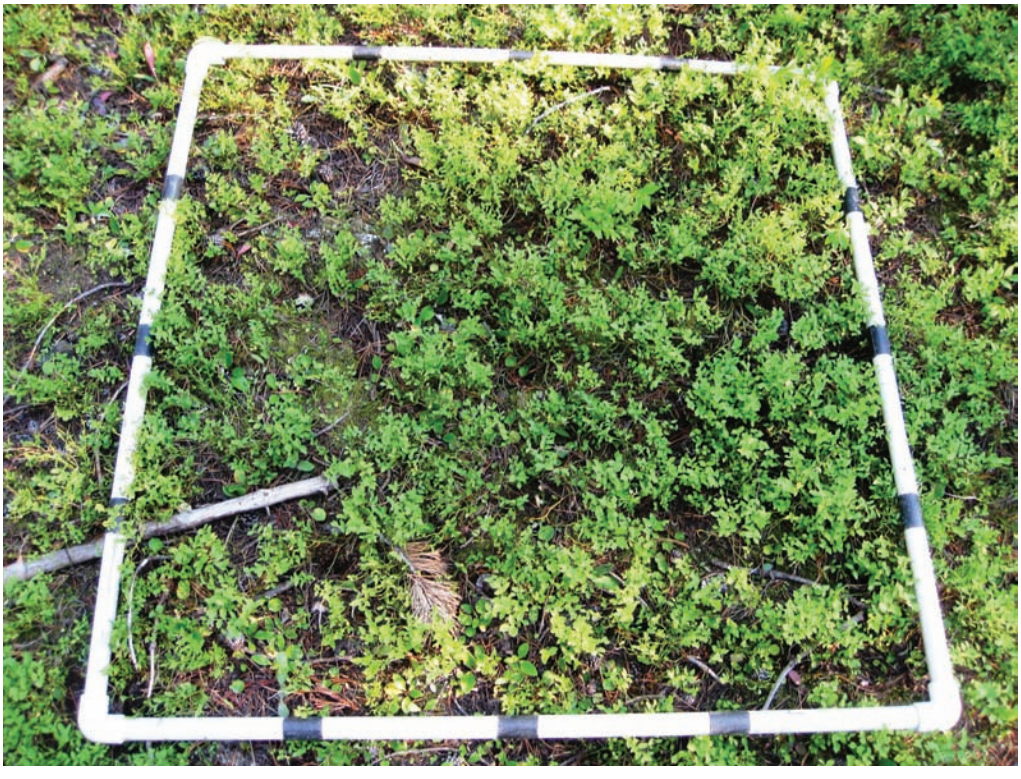


Figure 1. 1000-hr plot layout design (Keane and Dickinson 2007a).

Series 1—Forests

Stand type: SAF 218: lodgepole pine
Fuel type: shrub; low shrub



Stand type: SAF 218: lodgepole pine
Fuel type: shrub; low shrub

- Pole-sized lodgepole pine overstory
- Grouse whortleberry dominant undergrowth layer with scattered fine woody fuels
- Thin duff and litter layer <1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.13	0.03
10 hr	0.22	0.05
100 hr	0.00	0.00
shrub	0.79	0.18
herb	0.02	<0.01

Stand type: SAF 206: Engelmann spruce-subalpine fir
Fuel type: herb; forb

Stand type: SAF 206: Engelmann spruce-subalpine fir
Fuel type: herb; forb

- Engelmann spruce overstory ranging from seedling- to medium-sized
- Arnica and wild ginger dominant understory
- Ground cover moss and scattered fine woody fuels
- Duff and litter layer 2 to 6 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.11	0.03
10 hr	0.09	0.02
100 hr	0.00	0.00
shrub	0.12	0.03
herb	0.40	0.09

Stand type: SAF 218: lodgepole pine
Fuel type: herb; graminoid

Stand type: SAF 218: lodgepole pine
Fuel type: herb; graminoid

- Seedling- to medium-sized lodgepole pine and Douglas-fir overstory
- Sedge and strawberry dominant understory with moderate, scattered 1 and 10 hr fuels
- Duff and litter layer 1 to 3 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.19	0.04
10 hr	0.45	0.10
100 hr	0.00	0.00
shrub	0.12	0.03
herb	0.56	0.13

Stand type: SAF 218: lodgepole pine
Fuel type: shrub; low shrub

Stand type: SAF 218: lodgepole pine
Fuel type: shrub; low shrub

- Seedling- to medium-sized lodgepole pine overstory
- Huckleberry and sedge dominant undergrowth with heavy fine woody fuels (1 to 10 hr)
- Thin duff and litter layer <1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.54	0.12
10 hr	1.06	0.24
100 hr	0.00	0.00
shrub	0.10	0.02
herb	<0.01	<0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; medium shrub

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; medium shrub

- Douglas-fir and lodgepole pine overstory with trees ranging from seedling- to large-sized
- Tall and low shrub and herb understory
- Thick duff and litter layer 2 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.16	0.04
10 hr	0.06	0.01
100 hr	0.00	0.00
shrub	0.74	0.17
herb	0.30	0.07

Stand type: SAF 218: lodgepole pine
Fuel type: shrub; low shrub

Stand type: SAF 218: lodgepole pine
Fuel type: shrub; low shrub

- Medium-sized lodgepole pine overstory
- Low grouse whortleberry and pinegrass dominate understory with few fine woody fuels
- Duff and litter layer 1 to 2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	<0.01	<0.01
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	1.39	0.31
herb	0.24	0.05

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; graminoid

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; graminoid

- Medium- and pole-sized lodgepole pine and Douglas-fir
- Understory dominant growth of pinegrass
- Very few fine woody fuels
- Duff and litter layer 1 to 2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	<0.01	<0.01
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.15	0.03
herb	0.54	0.12

Stand type: SAF 206: Engelmann spruce-subalpine fir
Fuel type: woody; 1 hr

Stand type: SAF 206: Engelmann spruce-subalpine fir
Fuel type: woody; 1 hr

- Medium- and pole-sized Engelmann spruce and lodgepole pine
- Twinflower and arnica dominate understory along with 1 and 10 hr fine woody fuels
- Duff and litter layer 1 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.30	0.07
10 hr	0.60	0.14
100 hr	0.00	0.00
shrub	0.04	0.01
herb	0.02	<0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; graminoid and forb

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; graminoid and forb

- Medium- and pole-sized Douglas-fir and western larch
- Pinegrass dominant understory with 1 to 10 hr fine woody fuels
- Duff and litter layer 0.5 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.20	0.05
10 hr	0.46	0.10
100 hr	0.00	0.00
shrub	0.01	<0.01
herb	0.17	0.04

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1 hr and 10 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1 hr and 10 hr

- Medium- and pole-sized Douglas-fir
- Sedge dominant understory with 1, 10, and 100 hr fuels
- Thick duff and litter layer 1 to 5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.37	0.08
10 hr	0.31	0.07
100 hr	1.16	0.26
shrub	0.01	<0.01
herb	0.08	0.02

Stand type: SRM 412: juniper-pinyon woodland
Fuel type: woody; 100 hr

Stand type: SRM 412: juniper-pinyon woodland
Fuel type: woody; 100 hr

- Medium-sized juniper stand
- Sagebrush dominant understory with heavy 100 hr fuels
- Thin duff and litter layer 0 to 3 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.03	0.01
10 hr	0.77	0.17
100 hr	17.32	3.88
shrub	0.00	0.00
herb	0.01	<0.01

Stand type: SRM 412: juniper-pinyon woodland
Fuel type: shrub; low shrub

Stand type: SRM 412: juniper-pinyon woodland
Fuel type: shrub; low shrub

- Medium-sized juniper stand
- Low sagebrush shrubs dominate the understory with few fine woody fuels
- Duff and litter 0 to 0.3 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.01	<0.01
10 hr	0.02	<0.01
100 hr	0.00	0.00
shrub	0.46	0.10
herb	0.08	0.02

Stand type: SRM 412: juniper-pinyon woodland
Fuel type: woody; 10 hr

Stand type: SRM 412: juniper-pinyon woodland
Fuel type: woody; 10 hr

- Medium- and pole-sized juniper stand with few low sagebrush shrubs
- Mixed 1, 10, and 100 hr fuels
- Thick duff and litter layer 2 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.08	0.02
10 hr	0.30	0.07
100 hr	1.01	0.23
shrub	0.03	0.01
herb	<0.01	<0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; graminoid

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; graminoid

- Medium- and pole-sized Douglas-fir and ponderosa pine stand
- Understory primarily composed of medium and low snowberry
- Light 1 hr and 100 hr fuels and moderate 10 hr fuels
- Thick duff and litter layer 3 to 7 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.06	0.01
10 hr	1.14	0.26
100 hr	0.55	0.12
shrub	0.10	0.02
herb	0.59	0.13

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low and medium shrub

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low and medium shrub

- Medium-sized Douglas-fir dominant stand
- Understory mostly composed of dense medium and low snowberry with light 1 hr fuels, moderate 10 hr fuels, and no 100 hr fuels
- Duff and litter layer 5 to 10 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.27	0.06
10 hr	1.72	0.39
100 hr	0.00	0.00
shrub	4.67	1.05
herb	0.02	0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; tall shrub

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; tall shrub

- Medium-sized Douglas-fir dominant stand
- Understory dominated by medium and low snowberry with light cover of tall ninebark
- Moderate 100 hr and 10 hr fuels with light 1 hr fuels
- Thick duff and litter layer 7.5 to 13.3 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.34	0.08
10 hr	1.36	0.30
100 hr	2.67	0.60
shrub	5.04	1.13
herb	0.04	0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low shrub

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low shrub

- Douglas-fir dominated seedling- and sapling-sized stand
- Understory dominated by low snowberry and heavy 10 hr fuels
- Duff and litter layer 4 to 11 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.05	0.01
10 hr	5.66	1.27
100 hr	0.00	0.00
shrub	0.43	0.10
herb	0.43	0.10

Stand type: SAF 213: grand fir
Fuel type: woody; 1 and 10 hr

Stand type: SAF 213: grand fir
Fuel type: woody; 1 and 10 hr

- Medium-sized western red cedar dominated stand
- Heavy fine woody fuel understory with few herbs and shrubs
- Duff and litter layer 2 to 3.5 cm, primarily composed of litter

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.66	0.15
10 hr	0.66	0.15
100 hr	0.00	0.00
shrub	0.08	0.02
herb	0.01	<0.01

Stand type: SAF 213: grand fir
Fuel type: woody; 1 hr

Stand type: SAF 213: grand fir
Fuel type: woody; 1 hr

- Medium-sized western red cedar dominated stand
- Fine woody fuel and litter dominate the understory with few herbs and shrubs
- Duff and litter layer 2 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.20	0.05
10 hr	0.12	0.03
100 hr	0.00	0.00
shrub	0.03	0.01
herb	<0.01	<0.01

Stand type: SAF 213: grand fir
Fuel type: woody; 1 hr

Stand type: SAF 213: grand fir
Fuel type: woody; 1 hr

- Mixed medium-, pole-, and sapling-sized western red cedar stand
- Fine woody fuel and litter dominated understory with few low herbs and shrubs
- Duff and litter layer 2 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.48	0.11
10 hr	0.82	0.18
100 hr	0.00	0.00
shrub	0.47	0.11
herb	0.01	<0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; forb

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; forb

- Stand of primarily medium-sized Douglas-fir
- Understory dominated by broadleaf arnica and tall and low Saskatoon serviceberry
- Moderate loading of 1, 10, and 100 hr fuels
- Duff and litter layer 3 to 4.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.38	0.08
10 hr	0.35	0.08
100 hr	0.70	0.16
shrub	0.06	0.01
herb	0.23	0.05

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; forb

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; forb

- Medium- and pole-sized Douglas-fir stand
- Tall Saskatoon serviceberry and low forbs dominate the understory
- No fine woody fuels
- Duff and litter layer 1.5 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.27	0.06
herb	1.02	0.23

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1 hr

- Medium- and pole-sized Douglas-fir dominated stand
- Heavy fine woody fuel understory with rough fescue
- Duff and litter layer 4 to 8.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	1.18	0.27
10 hr	0.51	0.11
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.05	0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; forb

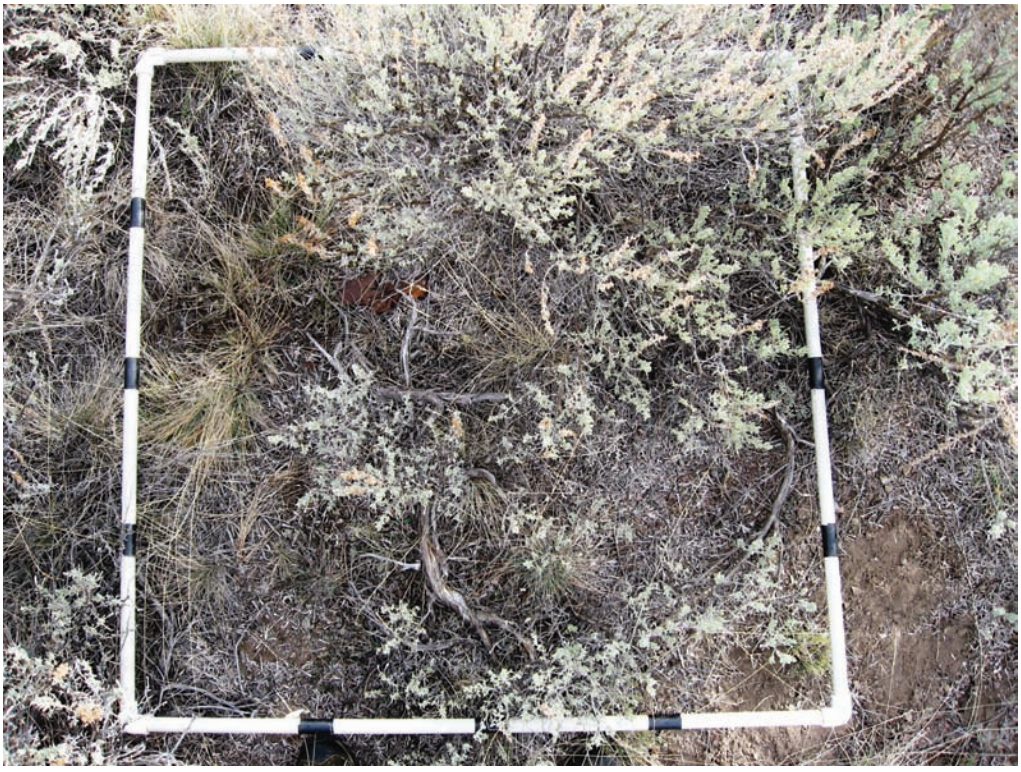
Stand type: SAF 210: interior Douglas-fir
Fuel type: herb; forb

- Medium- and pole-sized Douglas-fir dominated stand with few large trees
- Understory dominated by mixed low graminoids and forbs
- Moderate fine woody fuelbed with no 100 hr fuels
- Duff and litter layer 3 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.09	0.02
10 hr	0.13	0.03
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.16	0.04

Series 2—Shrublands

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub



Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

- Sagebrush and fescue dominated understory with few fine woody fuels
- Thin duff and litter layer 0.2 to 1.3 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.02	<0.01
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	4.36	0.98
herb	0.13	0.03

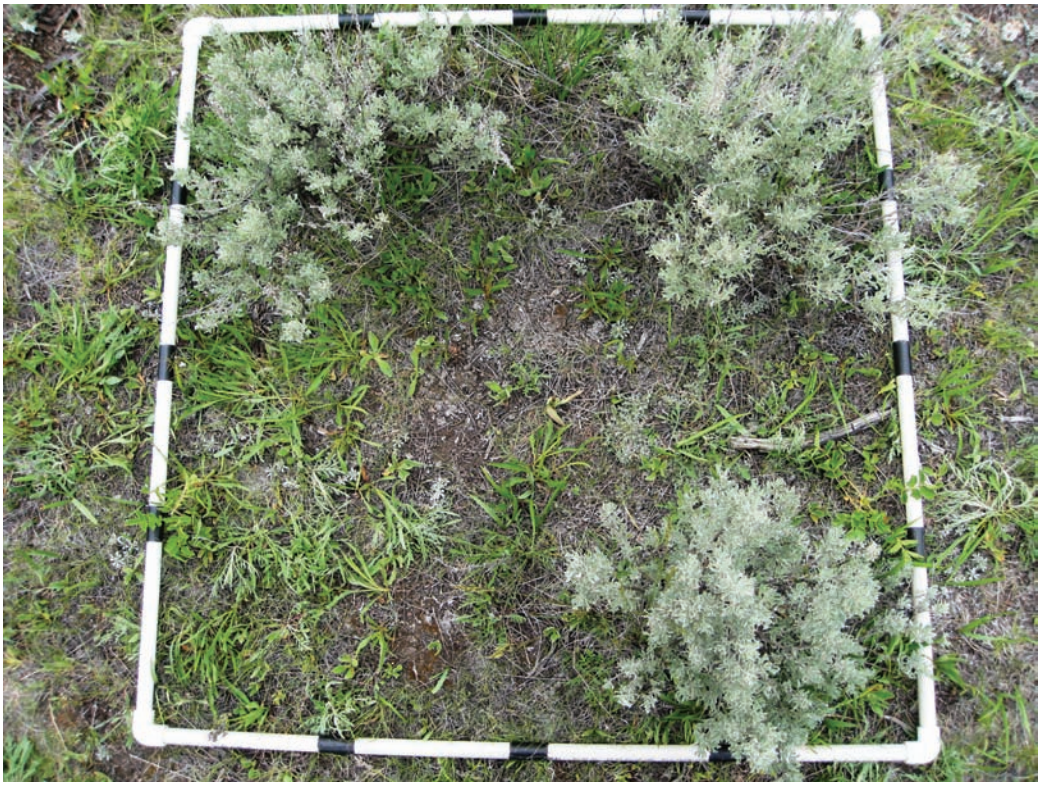
Stand type: SRM 403: Wyoming big sagebrush
Fuel type: shrub; low shrub

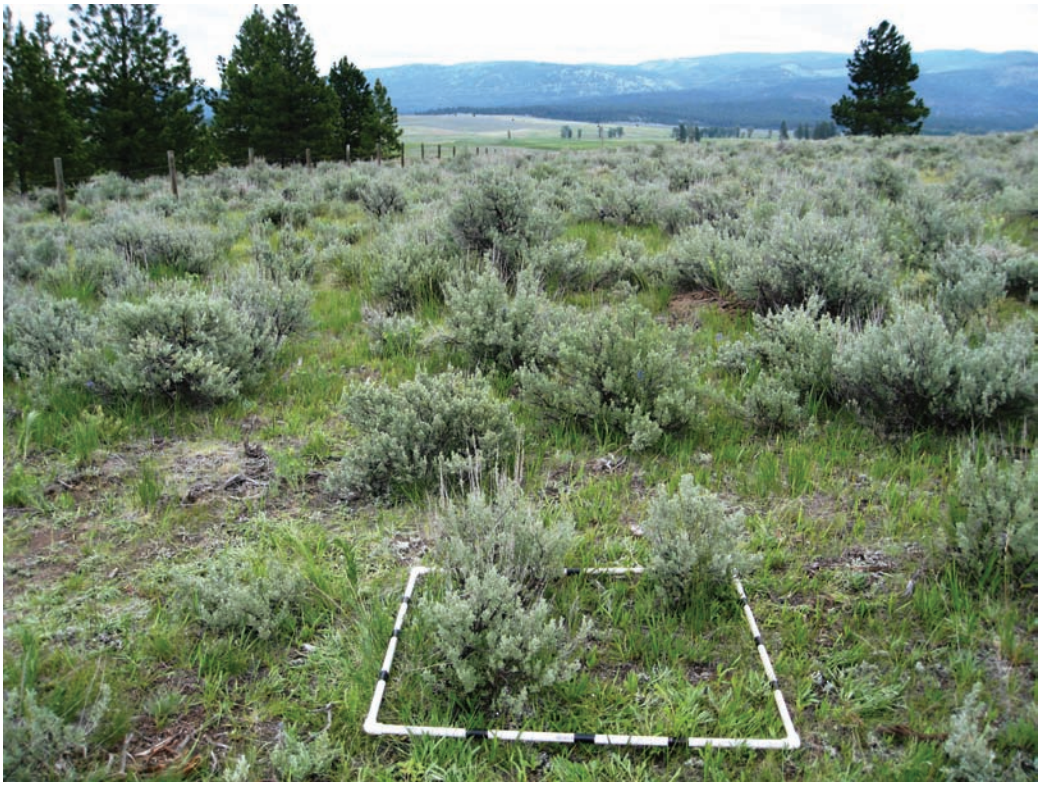
Stand type: SRM 403: Wyoming big sagebrush
Fuel type: shrub; low shrub

- Sparse, medium-sized juniper stand
- Dominant understory of sagebrush and snakeweed
- Few fine woody fuels
- Duff and litter layer 0 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	<0.01	<0.01
10 hr	0.02	0.01
100 hr	0.00	0.00
shrub	4.19	0.94
herb	0.13	0.03

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub



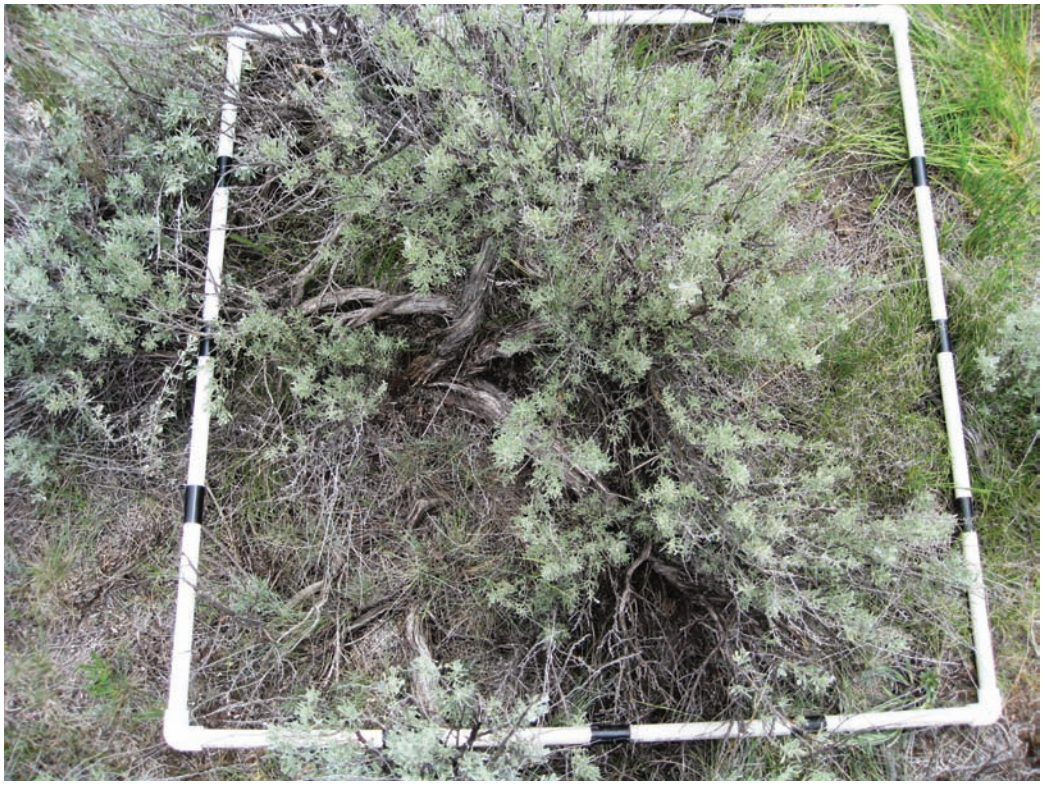


Stand type: SRM 402: Mountain big sagebrush
Fuel type: shrub; low shrub

- Low sagebrush shrubland
- Moderate graminoid cover
- Light fine woody fuels
- Shallow duff and litter layer 0 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.01	<0.01
10 hr	0.09	0.02
100 hr	0.00	0.00
shrub	1.46	0.33
herb	0.27	0.06

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub



Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

- Shrubland consisting primarily of low sagebrush with a few medium-sized sagebrush
- Moderate Idaho fescue cover and light fine woody fuels
- Shallow duff and litter layer 0.5 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.08	0.02
10 hr	0.16	0.04
100 hr	0.00	0.00
shrub	5.72	1.28
herb	0.16	0.04

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

- Low sagebrush shrubland with light fine woody fuels
- Shallow duff and litter layer 1 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.16	0.04
10 hr	0.20	0.05
100 hr	0.00	0.00
shrub	2.69	0.60
herb	0.19	0.04

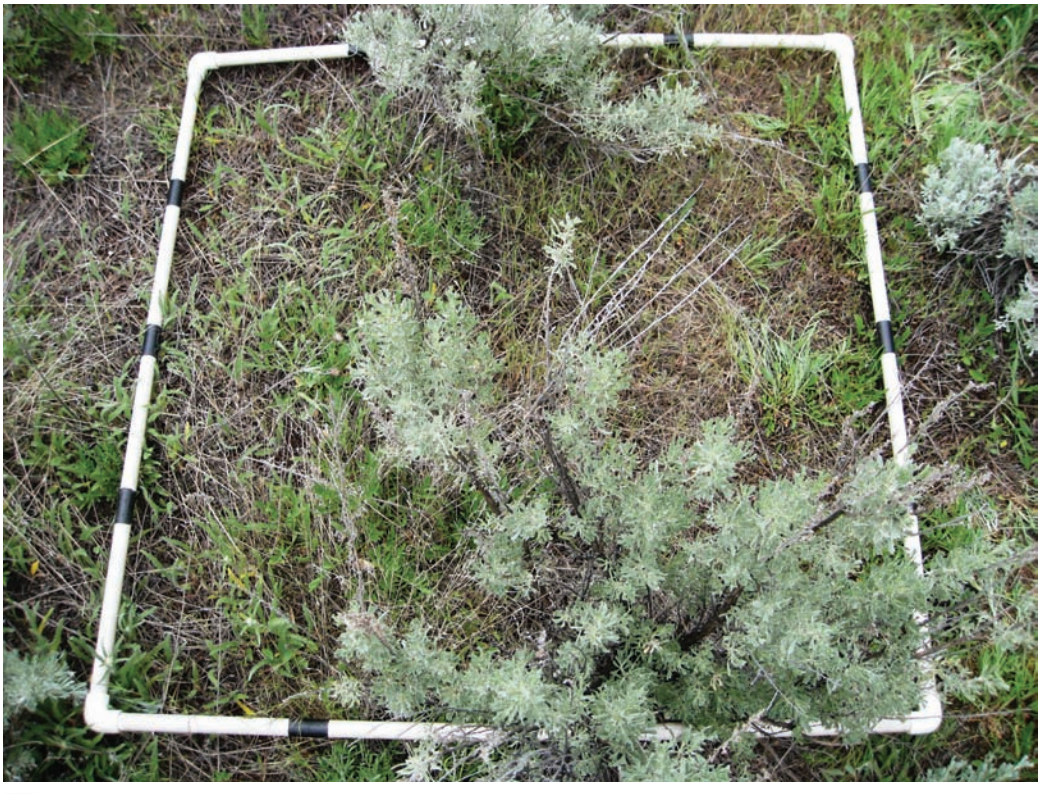
Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

- Low sagebrush shrubland with few fine woody fuels
- Shallow duff and litter layer 0.5 to 1 cm, composed mostly of litter

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.02	<0.01
10 hr	0.32	0.07
100 hr	0.00	0.00
shrub	1.12	0.25
herb	0.24	0.05

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; medium shrub



Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; medium shrub

- Medium and low sagebrush shrubland with heavy cheatgrass cover
- Light fine woody fuels
- Duff and litter layer 1.5 to 2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.01	<0.01
10 hr	0.02	<0.01
100 hr	0.00	0.00
shrub	1.82	0.41
herb	0.44	0.10

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

- Medium and low sagebrush shrubland with light fine woody fuels
- Heavy cheatgrass cover
- Duff and litter layer 1.5 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.02	<0.01
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	12.45	2.79
herb	0.07	0.02

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; low shrub

- Low sagebrush shrubland with moderate sedge cover
- Light fine woody fuels
- Duff and litter layer 0.5 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.04	0.01
10 hr	0.04	0.01
100 hr	0.00	0.00
shrub	1.00	0.22
herb	0.22	0.05

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; medium shrub

Stand type: SRM 402: mountain big sagebrush
Fuel type: shrub; medium shrub

- Medium and low sagebrush shrubland with a moderate sedge cover
- Moderate 1 and 10 hr fuels (no 100 hr fuels)
- Duff and litter layer 2.5 to 7 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.11	0.02
10 hr	0.08	0.02
100 hr	0.00	0.00
shrub	6.32	1.42
herb	0.13	0.03

Series 3—Grasslands

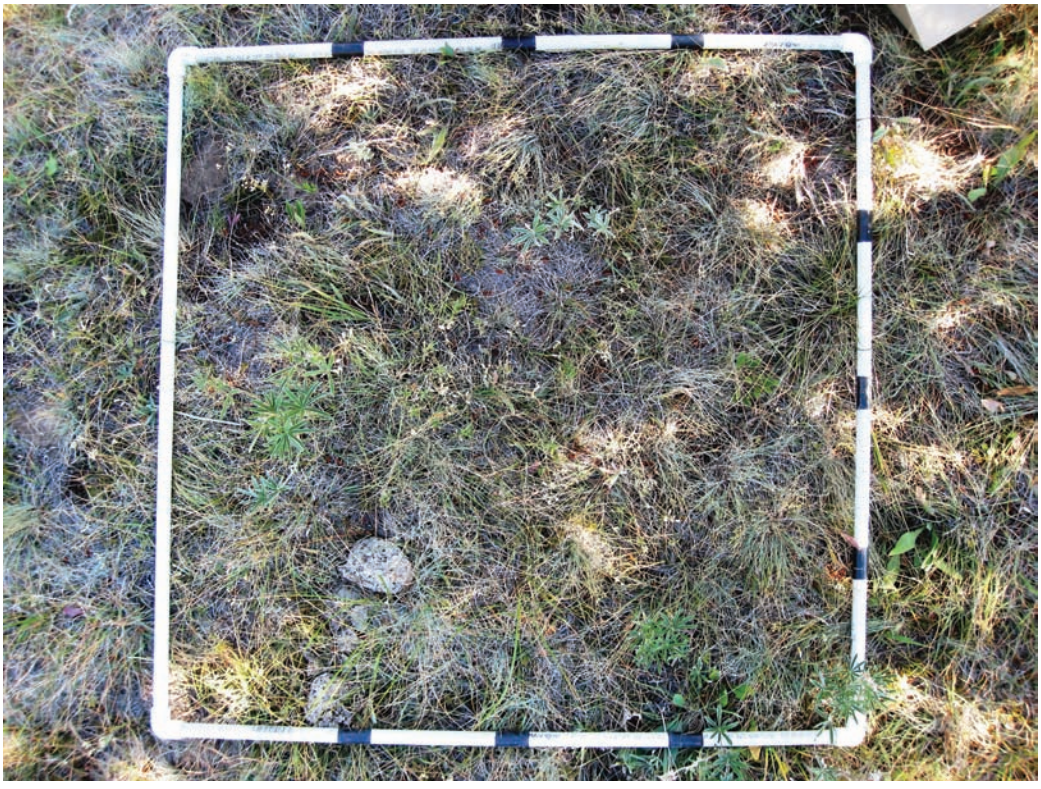
Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

- Grassland with no fine woody fuels
- Thin duff and litter layer 0 to 0.7 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.60	0.13

Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid



Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

- Fescue grassland with no fine woody fuels
- Duff and litter layer 0.2 to 1.2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.46	0.10

Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

- Fescue grassland with no fine woody fuels
- Thin duff and litter layer 0 to 1.3 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.47	0.11

Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

- Fescue grassland with no fine woody fuels
- Thin duff and litter layer 0.4 to 1.4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.01	<0.01
herb	0.19	0.04

Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

Stand type: SRM 312: rough fescue-Idaho fescue
Fuel type: herb; graminoid

- Fescue grassland with no fine woody fuels
- Thin duff and litter layer 1 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.39	0.09

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- 0.5 to 2 ft tall grassland
- Understory of bluebunch wheatgrass and arrowleaf balsamroot
- Duff and litter layer 0 to 2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.70	0.16

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- 0.5 to 2 ft tall grassland
- Understory of bluebunch wheatgrass and arrowleaf balsamroot
- Duff and litter layer 0 to 2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.91	0.20

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grassland with no fine woody fuels
- Shallow duff and litter layer 0.2 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	1.15	0.26

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grassland with no fine woody fuels
- Duff and litter layer 0.5 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.62	0.14

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grassland with moderate forb cover
- No fine woody fuels
- Duff and litter layer 0.2 to 0.8 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.47	0.11

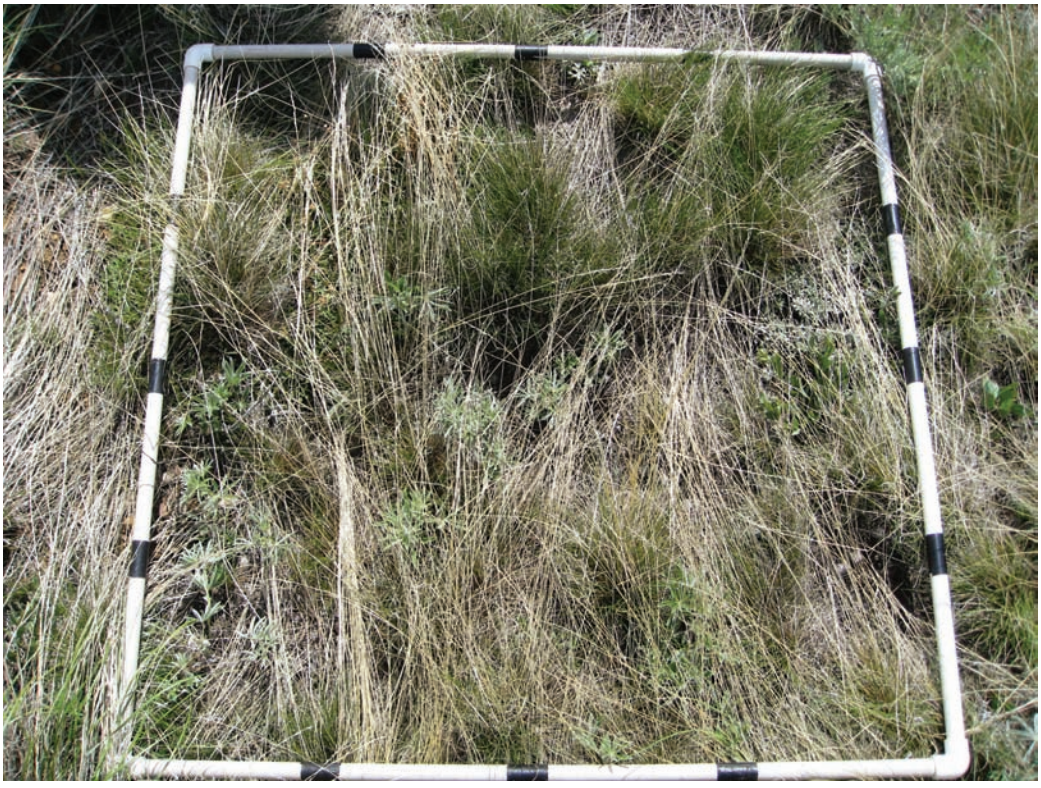
Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grassland with a heavy cover of forbs
- No fine woody fuels
- Duff and litter layer 1 to 2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.07	0.02
herb	1.02	0.23

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid



Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grassland with moderate forb cover
- No fine woody fuels
- Shallow duff and litter layer 0.2 to 1.8 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	1.27	0.29

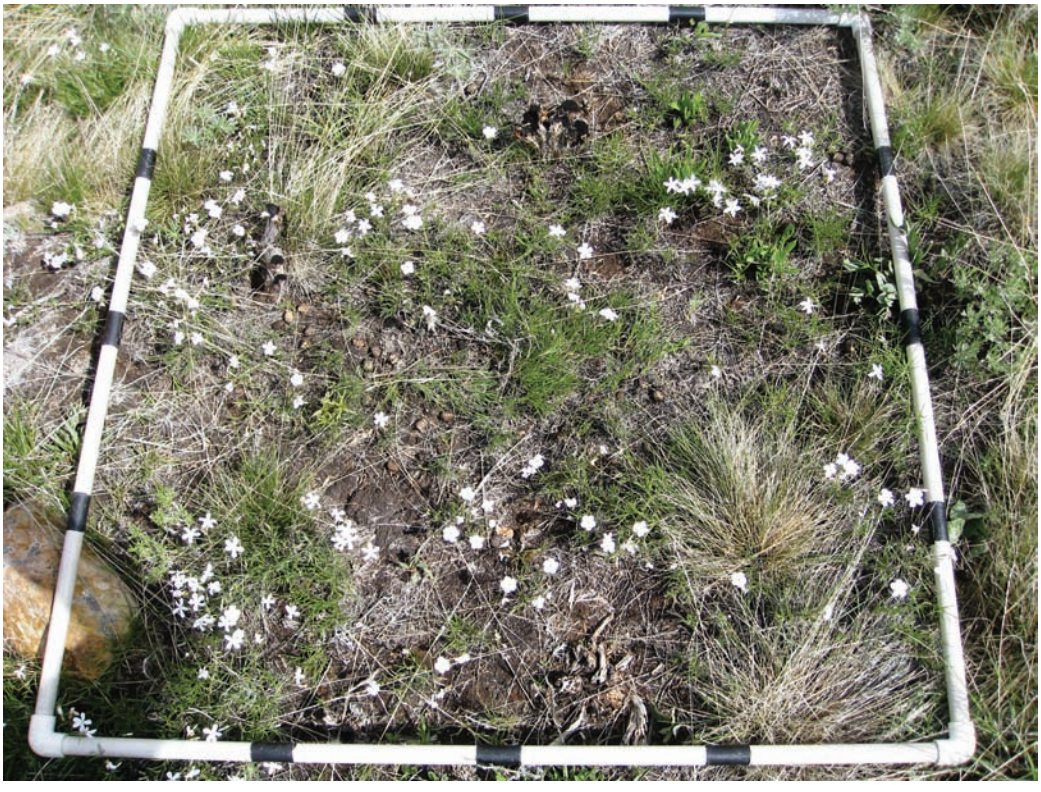
Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grass cover
- Moderate forb cover
- Few 1 hr fuels and no 10 or 100 hr fuels
- Duff and litter layer 0 to 2.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	<0.01	<0.01
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.02	<0.01
herb	0.47	0.11

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

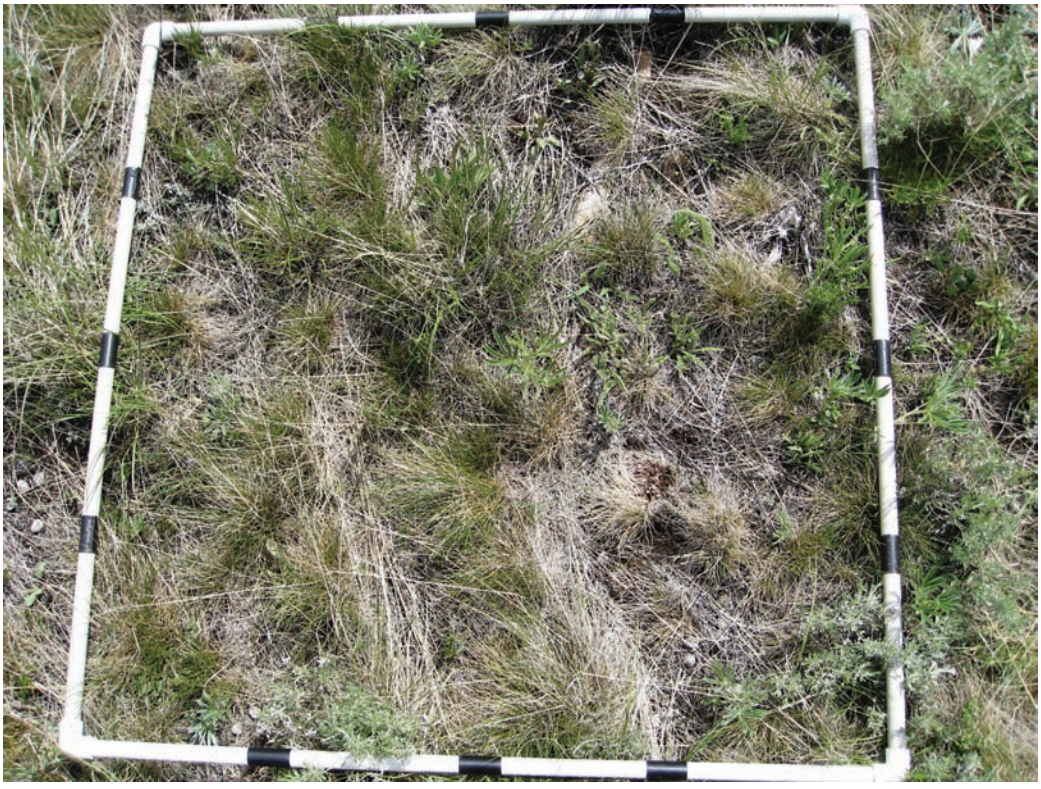


Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grass and forb cover
- Light low shrub cover
- No fine woody fuels
- Duff and litter layer 0.5 to 2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.01	<0.01
herb	0.54	0.12

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

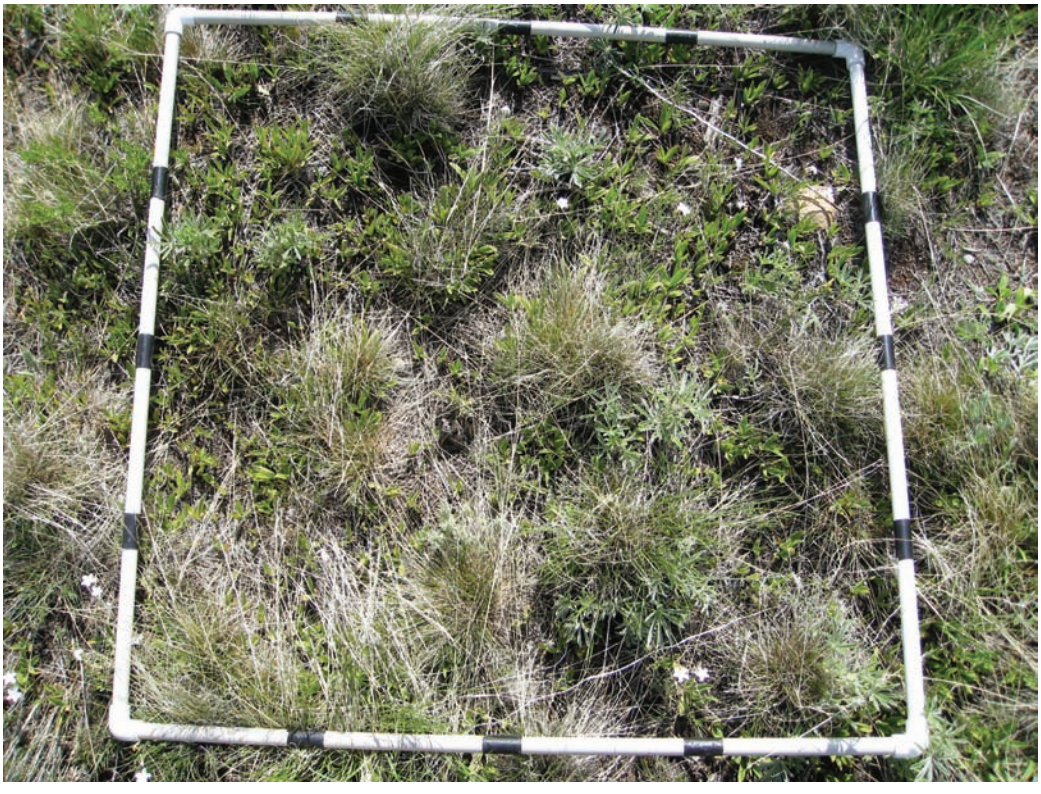


Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grass cover and moderate forb cover
- Light low sagebrush cover
- No fine woody fuels
- Duff and litter layer 0.2 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.05	0.01
herb	0.59	0.13

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

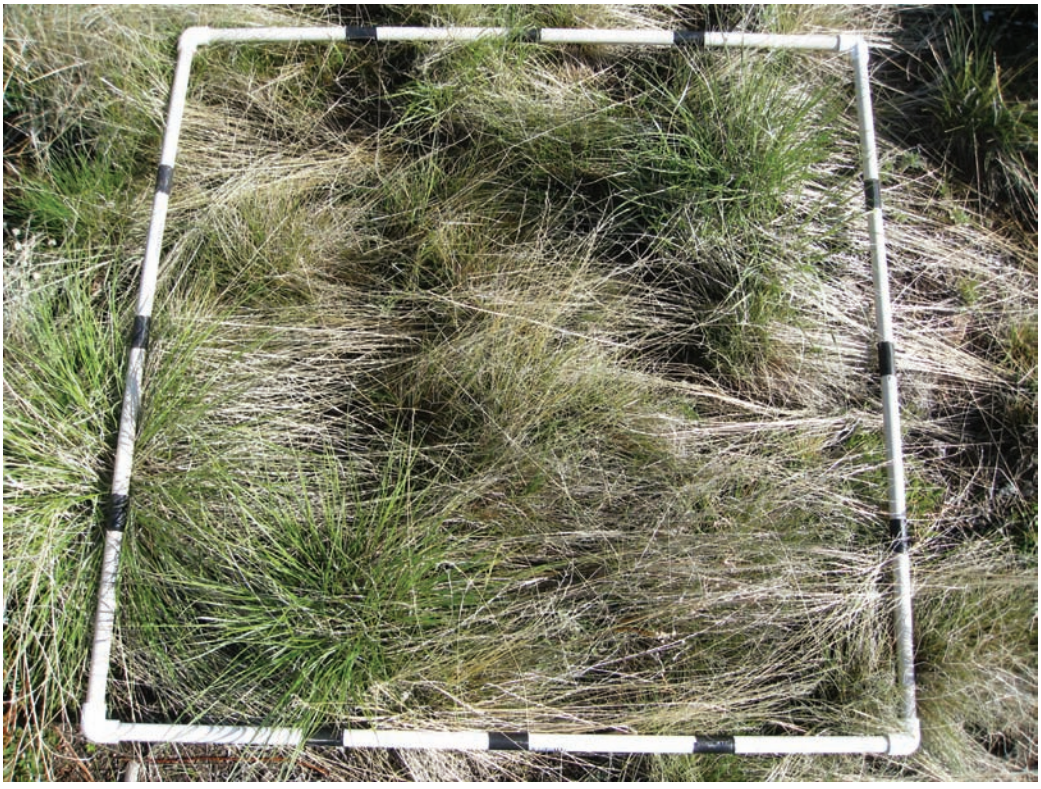


Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grassland with moderate forb cover
- Light fine woody fuels
- Duff and litter layer 0.5 to 2.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.04	0.01
10 hr	0.01	<0.01
100 hr	0.00	0.00
shrub	0.01	<0.01
herb	0.78	0.18

Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid



Stand type: SRM 311: rough fescue-bluebunch wheatgrass
Fuel type: herb; graminoid

- Heavy grassland with moderate forb cover
- No fine woody fuels
- Shallow duff and litter layer 0.1 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.07	0.02
herb	1.75	0.39

Stand type: SRM 402: mountain big sagebrush
Fuel type: herb; graminoid

Stand type: SRM 402: mountain big sagebrush
Fuel type: herb; graminoid

- Moderate grass, forb, and low sagebrush cover
- Light 1 hr fuels
- Duff and litter layer 0.1 to 1.2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.10	0.02
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.07	0.02
herb	0.60	0.13

Series 4—Disturbed activity areas

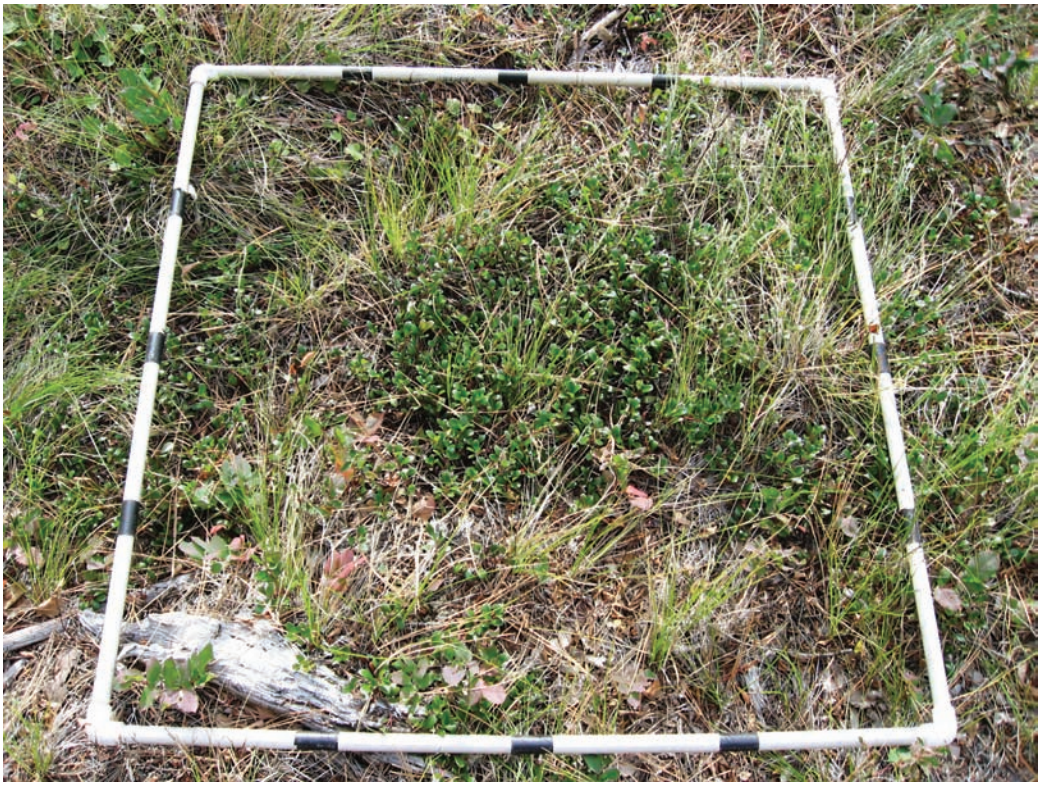
Stand type: SAF 218: lodgepole pine
Fuel type: woody; 10 hr and 100 hr

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 10 hr and 100 hr

- Clear-cut
- Sapling-sized lodgepole stand
- Understory huckleberry and lupine dominated with heavy fine woody fuels
- Duff and litter layer 0.2 to 0.6 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.17	0.04
10 hr	1.18	0.27
100 hr	3.38	0.76
shrub	0.51	0.12
herb	0.13	0.03

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low shrub



Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low shrub

- Medium- and pole-sized Douglas-fir and lodgepole pine
- Graminoid and shrub understory with fine and coarse woody debris
- Duff and litter layer 1 to 4 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.01	<0.01
10 hr	0.34	0.08
100 hr	0.00	0.00
shrub	0.74	0.17
herb	0.21	0.05

Stand type: SRM 403: Wyoming big sagebrush
Fuel type: woody; 10 hr

Stand type: SRM 403: Wyoming big sagebrush
Fuel type: woody; 10 hr

- Masticated juniper stand
- No overstory
- Understory of shrubs and masticated fuels
- Duff and litter layer 0 to 2 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.02	<0.01
10 hr	0.15	0.03
100 hr	0.14	0.03
shrub	0.00	0.00
herb	<0.01	<0.01

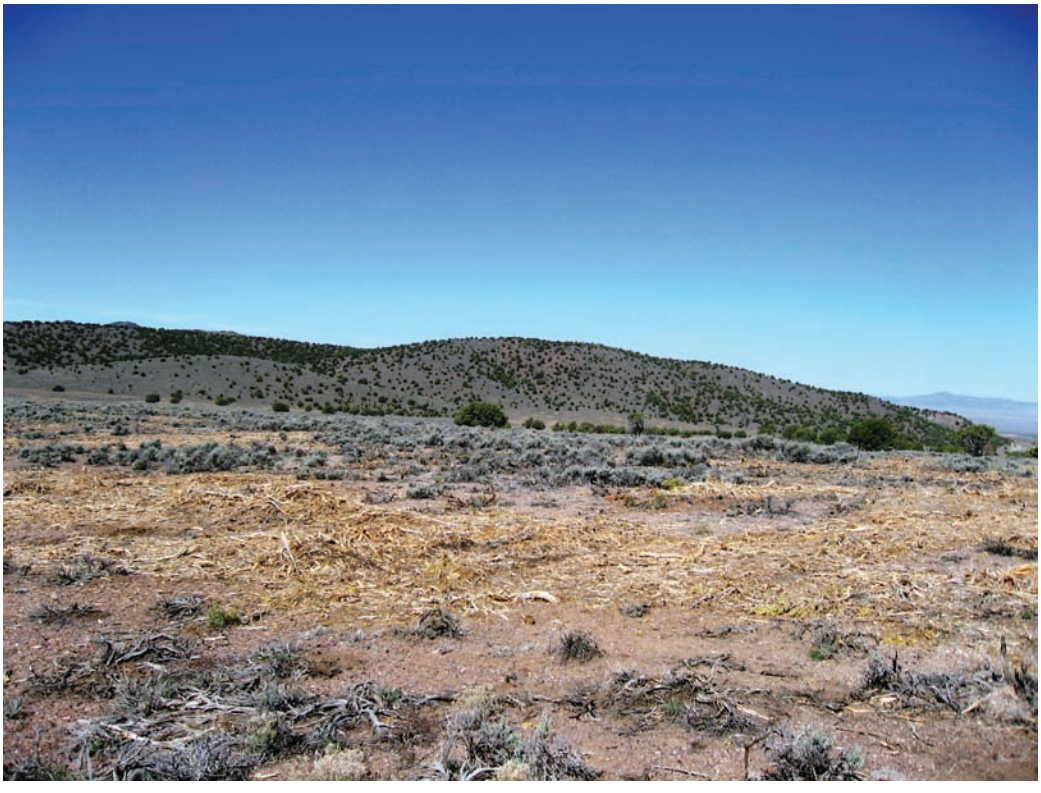
Stand type: SRM 403: Wyoming big sagebrush
Fuel type: woody; 1 hr

Stand type: SRM 403: Wyoming Big Sagebrush
Fuel type: woody; 1 hr

- Masticated juniper stand
- No overstory
- Understory of sagebrush and masticated fuels
- Thick duff and litter layer 4 to 11 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.11	0.02
10 hr	0.61	0.14
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.00	0.00

Stand type: SRM 403: Wyoming big sagebrush
Fuel type: woody; 10 hr

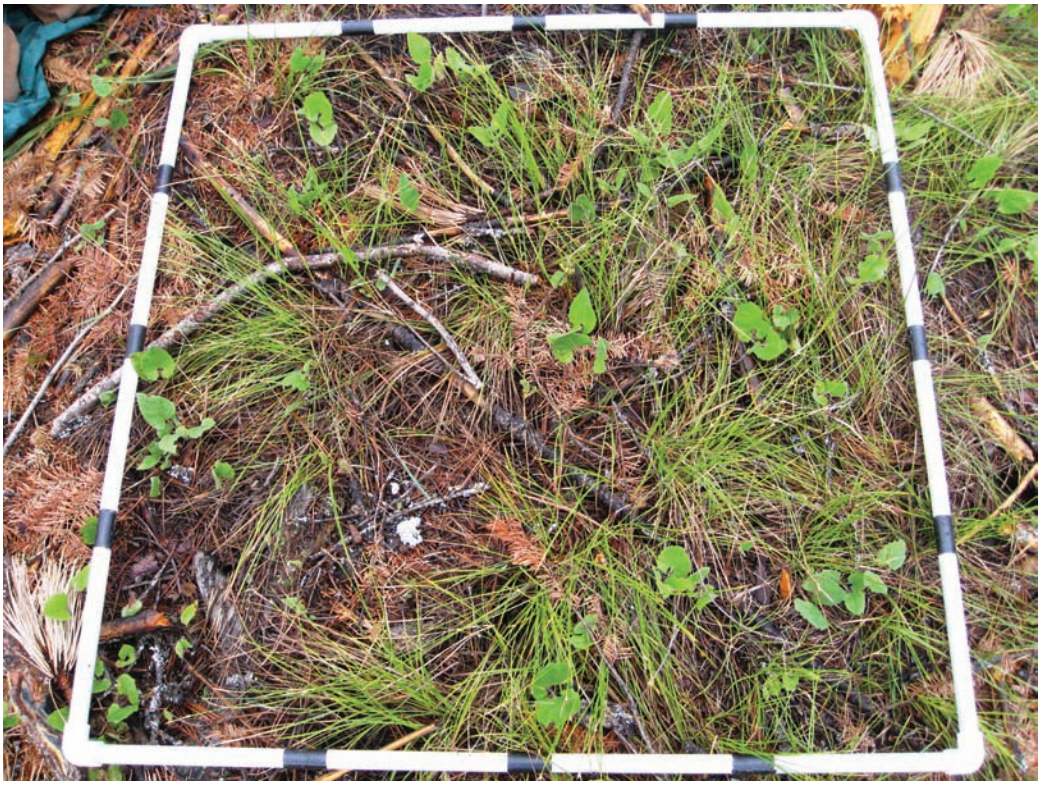


Stand type: SRM 403: Wyoming big sagebrush
Fuel type: woody; 10 hr

- Masticated juniper stand
- No overstory vegetation
- Sparse sagebrush understory
- Mixed 1, 10, and 100 hr fuels
- Duff and litter layer 0 to 7 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.53	0.12
10 hr	2.08	0.47
100 hr	0.55	0.12
shrub	0.00	0.00
herb	0.01	<0.01

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 10 hr



Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 10 hr

- Medium- and pole-sized ponderosa pine dominate overstory
- Moderate herb and forb cover
- Moderate fine woody fuel cover
- Duff and litter layer 6 to 9 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.40	0.09
10 hr	2.10	0.47
100 hr	0.59	0.13
shrub	0.00	0.00
herb	0.56	0.12

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 10 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 10 hr

- Medium-sized ponderosa pine overstory
- Light low shrub cover and light herb cover consisting primarily of broadleaf arnica and sedge
- Heavy 10 and 100 hr fuels
- Duff and litter layer 5 to 8.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.35	0.08
10 hr	4.46	1.00
100 hr	4.71	1.06
shrub	0.01	<0.01
herb	0.03	0.01

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 10 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 10 hr

- Medium-sized ponderosa pine stand with broadleaf arnica and sedge dominating the understory
- Heavy litter and fine woody debris
- Duff and litter layer 3 to 4.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.11	0.02
10 hr	2.11	0.47
100 hr	0.82	0.18
shrub	<0.01	<0.01
herb	0.29	0.07

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 100 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 100 hr

- Medium-sized ponderosa pine stand with broadleaf arnica dominating the understory
- Heavy woody fuels with a heavy litter layer
- Duff and litter layer 2.5 to 5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.24	0.05
10 hr	0.90	0.20
100 hr	9.98	2.24
shrub	0.00	0.00
herb	0.10	0.02

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 10 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 10 hr

- Medium-sized ponderosa pine stand with heavy woody fuel loads dominating the understory
- Duff and litter layer 2 to 5.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	2.17	0.49
10 hr	9.34	2.09
100 hr	1.14	0.26
shrub	0.01	<0.01
herb	<0.01	<0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low shrub

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low shrub

- Medium-sized ponderosa pine dominated overstory with ninebark, kinnikinnick, and silvery lupine dominating the understory
- Light fine woody fuels
- Duff and litter layer 4 to 7 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.04	0.01
10 hr	0.13	0.03
100 hr	0.00	0.00
shrub	1.15	0.26
herb	0.15	0.03

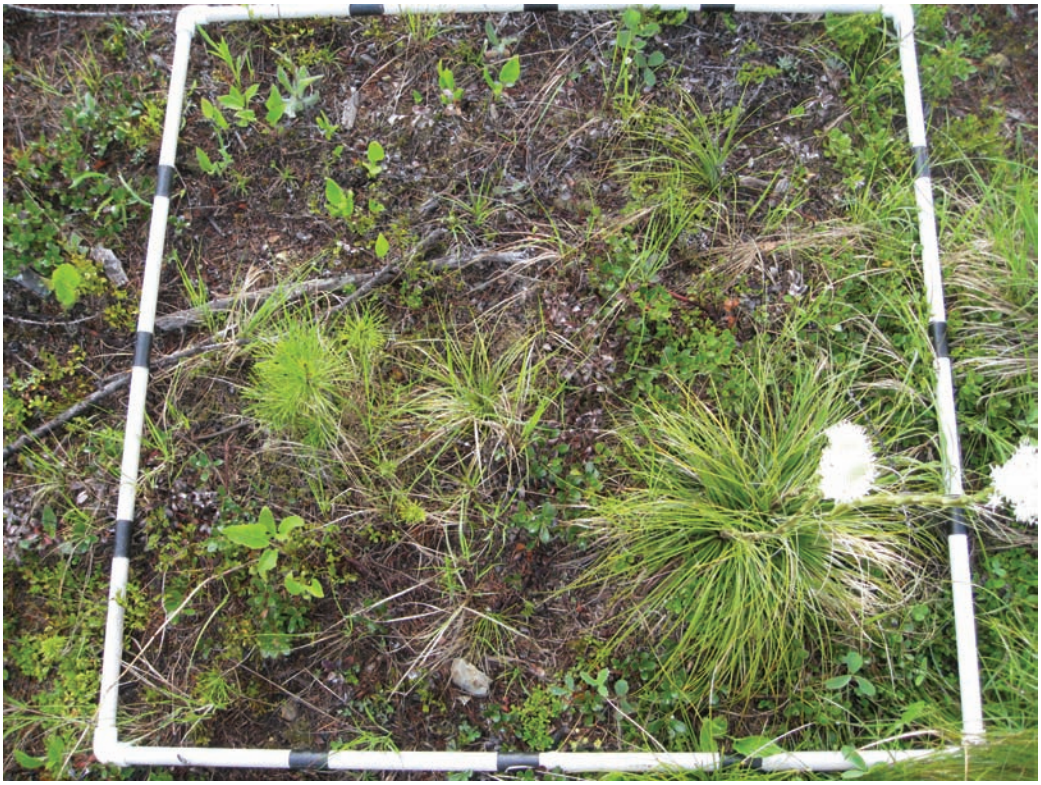
Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 10 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 10 hr

- Medium-sized, mixed stand of ponderosa pine, Douglas-fir, and western larch
- Understory dominated by heavy woody fuels
- Duff and litter layer 0 to 4.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	1.06	0.24
10 hr	5.30	1.19
100 hr	2.59	0.58
shrub	0.00	0.00
herb	<0.01	<0.01

Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low shrub

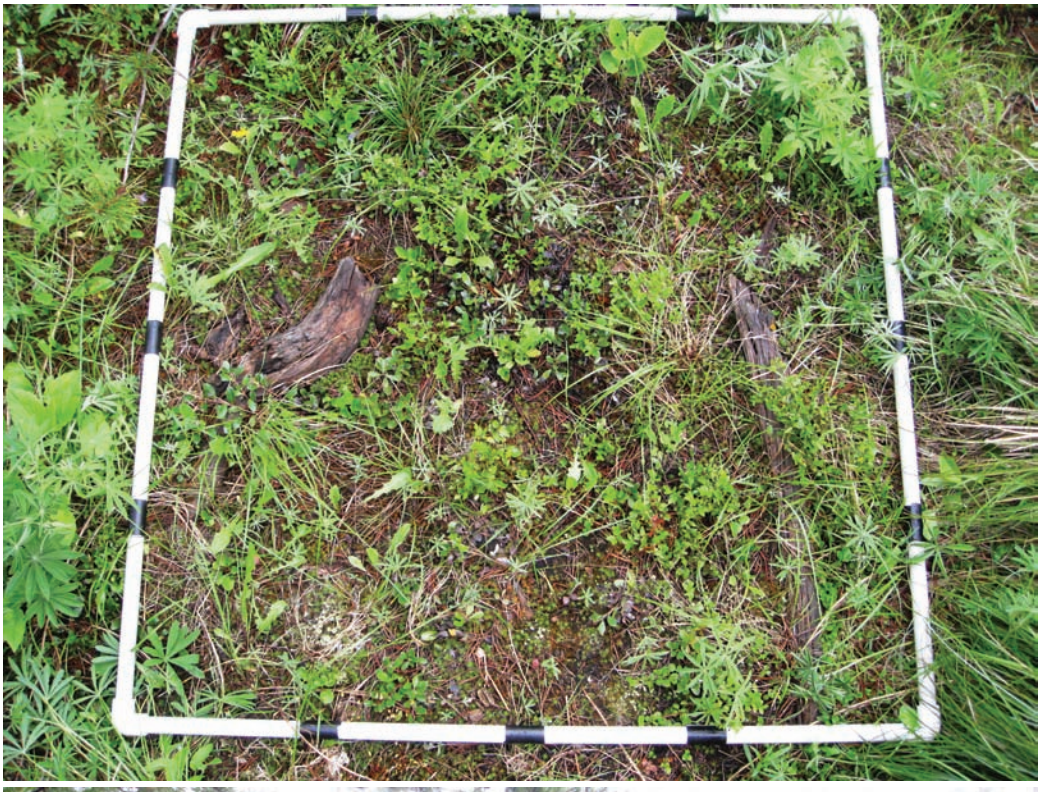


Stand type: SAF 210: interior Douglas-fir
Fuel type: shrub; low shrub

- Seedling- and sapling-sized stand of Douglas-fir, lodgepole pine, and subalpine fir
- Mixed herb and low shrub understory consisting primarily of kinnikinnick, grouse whortleberry, and beargrass
- Light fine woody fuels
- Duff and litter layer 0.5 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.10	0.02
10 hr	0.36	0.08
100 hr	0.00	0.00
shrub	0.64	0.14
herb	0.45	0.10

Stand type: SAF 218: lodgepole pine
Fuel type: herb; forb



Stand type: SAF 218: lodgepole pine
Fuel type: herb; forb

- Lodgepole pine dominated pole- and sapling-sized stand
- Mixed low shrub and herb understory
- Light fine woody fuels
- Duff and litter layer 1 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	<0.01	<0.01
10 hr	0.00	0.00
100 hr	1.15	0.26
shrub	0.28	0.06
herb	0.18	0.04

Stand type: SAF 237: interior ponderosa pine
Fuel type: herb; graminoid

Stand type: SAF 237: interior ponderosa pine
Fuel type: herb; graminoid

- Overstory of burned Douglas-fir and ponderosa pine
- Understory primarily cheatgrass
- No fine woody fuels
- Duff and litter layer 0 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	1.61	0.36

Stand type: SAF 237: interior ponderosa pine
Fuel type: herb; graminoid

Stand type: SAF 237: interior ponderosa pine
Fuel type: herb; graminoid

- Overstory of burned Douglas-fir and ponderosa pine
- Dominant understory of cheatgrass and broadleaf arnica
- Light fine woody fuels
- Duff and litter layer 0.5 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.03	0.01
10 hr	0.02	<0.01
100 hr	0.84	0.19
shrub	0.00	0.00
herb	0.58	0.13

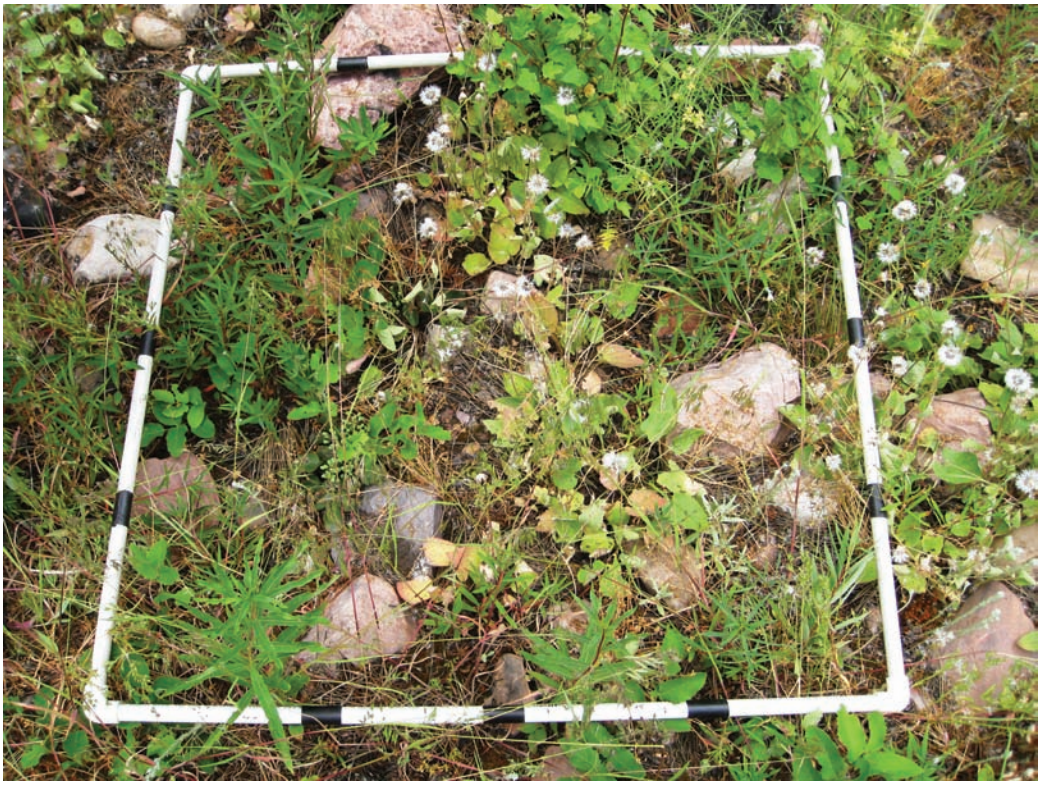
Stand type: SAF 237: interior ponderosa pine
Fuel type: shrub; low shrub

Stand type: SAF 237: interior ponderosa pine
Fuel type: shrub; low shrub

- Dominant overstory of dead Douglas-fir and ponderosa pine
- Dominant understory of ninebark, cheatgrass, and broadleaf arnica
- Light fine woody fuel load
- Duff and litter layer 0 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.03	0.01
10 hr	0.09	0.02
100 hr	0.00	0.00
shrub	0.74	0.17
herb	0.60	0.13

Stand type: SAF 237: interior ponderosa pine
Fuel type: herb; graminoid



Stand type: SAF 237: interior ponderosa pine
Fuel type: herb; graminoid

- Overstory of dead Douglas-fir and ponderosa pine
- Understory dominated by mixed low herbs
- Light fine woody fuels
- Duff and litter layer 0 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.04	0.01
10 hr	0.13	0.03
100 hr	0.00	0.00
shrub	0.19	0.04
herb	0.54	0.12

Stand type: SAF 237: interior ponderosa pine
Fuel type: shrub; low shrub

Stand type: SAF 237: interior ponderosa pine
Fuel type: shrub; low shrub

- Overstory of burned Douglas-fir and ponderosa pine
- Dominant understory of cheatgrass, broadleaf arnica, fireweed, and snowberry
- Moderate 100 hr fuel loading
- Duff and litter layer 0.5 to 1.5 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.03	0.01
10 hr	0.19	0.04
100 hr	4.76	1.07
shrub	0.15	0.03
herb	0.21	0.05

Stand type: SAF 237: interior ponderosa pine
Fuel type: shrub; low shrub

Stand type: SAF 237: interior ponderosa pine
Fuel type: shrub; low shrub

- Stand of burned Douglas-fir and ponderosa pine
- Understory dominated by cheatgrass, broadleaf arnica, and snowberry
- Light fine woody fuels
- Duff and litter layer 0.5 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.02	0.01
10 hr	0.04	0.01
100 hr	0.00	0.00
shrub	1.11	0.25
herb	0.02	0.01

Stand type: SAF 218: lodgepole pine
Fuel type: herb; graminoid

Stand type: SAF 218: lodgepole pine
Fuel type: herb; graminoid

- Clear-cut
- Pole- and sapling-sized lodgepole pine and western larch stand
- Pinegrass understory with no fine woody fuels
- Duff and litter layer 0.1 to 1 cm

Fuel type	tons acre $^{-1}$	kg m^{-2}
1 hr	0.00	0.00
10 hr	0.00	0.00
100 hr	0.00	0.00
shrub	0.00	0.00
herb	0.42	0.10

Series 5—1000 hr log plots

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Medium-sized ponderosa pine stand
- Understory consisting mostly of fescue with some low snowberry
- CWD fuelbed composed of 19 down sapling- and pole-sized ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	50.04	11.22

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Medium-sized ponderosa pine stand
- Dominant understory of fescue
- CWD fuelbed consisting of one sapling-sized down ponderosa pine log

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	0.54	0.12

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Medium-sized ponderosa pine stand with a graminoid understory of fescue and some low and medium snowberry
- CWD fuelbed consisting of 10 down pole- and medium-sized ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	25.09	5.62

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Pole-sized Douglas-fir and medium-sized ponderosa pine in the overstory
- Carex and snowberry dominate the understory
- Fuelbed composed of seven pole-sized Douglas-fir and ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	8.93	2.00

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Medium- and large-sized mixed ponderosa and Douglas-fir overstory with low blue huckleberry dominating the understory
- Seven medium-sized ponderosa pine and pole-sized Douglas-fir down logs creating the CWD fuelbed

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	26.98	6.05

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Ponderosa pine overstory of pole-, medium-, and large-sized trees
- Graminoid dominated understory
- CWD fuelbed consisting of 13 sapling- to medium-sized ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	19.71	4.42

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Medium- and large-sized ponderosa pine stand with an understory of bluebunch wheatgrass
- CWD fuelbed consisting of five sapling- and pole-sized down ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	5.29	1.19

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Medium- and pole-sized ponderosa pine stand with a bluebunch wheatgrass understory
- CWD fuelbed consisting of four sapling- and pole-sized down ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	11.81	2.65

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Medium- and pole-sized ponderosa pine stand with an understory of carex and kinnikinnick
- CWD fuelbed consisting of one medium-sized down ponderosa pine log

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	3.57	0.80

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Medium- and sapling-sized ponderosa pine and Douglas-fir stand with an understory of mixed low shrub species and fescue
- CWD fuelbed consisting of one sapling-sized ponderosa pine log

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	0.66	0.15

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Mixed-size ponderosa pine and Douglas-fir stand with an understory of fescue and mixed low shrub species
- CWD fuelbed consisting of four sapling-sized down ponderosa pine and Douglas-fir logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	1.84	0.41

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Sparse canopy of medium- and large-sized ponderosa pine
- Understory of fescue and mixed low shrub species
- CWD fuelbed consisting of six sapling- and medium-sized down ponderosa pine and Douglas-fir logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	7.38	1.65

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Sparse canopy of medium- and large-sized ponderosa pine
- Understory of fescue and mixed low shrub species
- CWD fuelbed consisting of six sapling-, pole-, and medium-sized Douglas-fir and ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	10.67	2.39

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Medium- and pole-sized mixed lodgepole pine, Douglas-fir, and western larch stand
- Low shrub and graminoid understory dominated by Oregon grape and white spirea
- CWD fuelbed consisting of one pole-sized down Douglas-fir

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	0.28	0.06

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Medium- and pole-sized mixed lodgepole pine, Douglas-fir, and western larch stand
- Low shrub and graminoid understory dominated by Oregon grape and white spirea
- CWD fuelbed consisting of four sapling- and pole-sized down Douglas-fir logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	1.26	0.28

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

- Pole-sized lodgepole pine stand with an understory dominated by low shrubs, primarily including kinnikinnick and dwarf bilberry
- CWD fuelbed composed of three sapling-sized lodgepole pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	4.80	1.08

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Medium-sized ponderosa pine stand with an understory dominated by fescue and pinegrass
- CWD fuelbed consisting of five medium- and large-sized ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	24.13	5.41

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Medium- and large-sized ponderosa pine stand with an understory dominated by fescue and pinegrass
- CWD fuelbed consisting of 14 sapling- and pole-sized ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	22.74	5.10

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Medium-sized ponderosa pine and Douglas-fir overstory
- Understory dominated by fescue and pinegrass
- CWD fuelbed composed of 16 pole-sized ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	39.26	8.80

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

- Medium- and pole-sized lodgepole pine stand with an understory dominated by low shrubs, primarily twinflower and kinnikinnick
- CWD fuelbed composed of 10 sapling- and pole-sized lodgepole pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	19.64	4.40

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

- Sapling-, pole-, and medium-sized lodgepole pine stand with an understory dominated by low shrubs, including kinnikinnick and twinflower
- CWD fuelbed composed of 12 sapling-, pole-, and medium-sized lodgepole pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	20.54	4.61

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

- Pole-sized lodgepole pine stand with an understory dominated by kinnikinnick and twinflower
- CWD fuelbed composed of six sapling-sized lodgepole pine logs and one medium-sized lodgepole pine log

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	5.87	1.32

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

- Medium-sized lodgepole pine stand with an understory of low shrubs and graminoids composed mostly of kinnikinnick and twinflower
- CWD fuelbed consisting of 10 sapling-sized lodgepole pine logs and one medium-sized lodgepole pine log

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	8.28	1.86

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

Stand type: SAF 218: lodgepole pine
Fuel type: woody; 1000 hr

- Pole-sized lodgepole pine stand with a mixed low shrub and graminoid understory
- Dominant understory species of twinflower and pinegrass
- CWD fuel loading consisting of five sapling-sized lodgepole pine logs and one large-sized western larch log

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	39.98	8.96

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Medium-sized Douglas-fir and ponderosa pine stand
- Snowberry and pinegrass dominate the understory
- CWD fuelbed is a slash pile of 73 primarily ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	61.56	13.80

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Mixed sapling-, pole-, and medium-sized Douglas-fir and ponderosa pine stand
- Snowberry and pinegrass dominate the understory
- CWD fuelbed is a slash pile of 21 sapling- to medium-sized primarily ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	15.07	3.38

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

Stand type: SAF 237: interior ponderosa pine
Fuel type: woody; 1000 hr

- Pole- and medium-sized ponderosa pine stand
- Understory dominated by pinegrass and snowberry
- CWD fuelbed consisting of 13 ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	57.82	12.96

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Pole- and medium-sized Douglas-fir and medium-sized western larch stand
- Understory dominated by graminoids and low shrubs
- CWD fuelbed composed of eight sapling-sized Douglas-fir logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	7.96	1.78

Stand type: SAF 206: Engelmann spruce-subalpine fir
Fuel type: woody; 1000 hr

Stand type: SAF 206: Engelmann spruce-subalpine fir
Fuel type: woody; 1000 hr

- Pole-sized lodgepole pine and pole- and medium-sized Engelmann spruce stand
- Understory a mix of broadleaf arnica and queen's cup
- CWD fuelbed consisting of 33 medium- and pole-sized Engelmann spruce

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	55.21	12.38

Stand type: SAF 212: western larch
Fuel type: woody; 1000 hr

Stand type: SAF 212: western larch
Fuel type: woody; 1000 hr

- Stand of large- and very large-sized western larch with a few pole- and medium-sized Douglas-fir
- Understory dominated by pinegrass and Oregon grape
- CWD fuelbed consisting of sapling- and medium-sized western larch logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	39.49	8.85

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Sapling- and pole-sized Douglas-fir and ponderosa pine stand
- Rocky understory with low and medium shrubs
- CWD fuelbed consisting of five sapling-sized ponderosa pine and Douglas-fir logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	6.52	1.46

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Sapling- and pole-sized ponderosa pine and Douglas-fir stand with an understory of mixed forbs and low- to medium-sized shrubs
- Dominant understory species is spreading dogbane
- CWD fuelbed consisting of nine sapling- and pole-sized ponderosa pine and Douglas-fir logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	7.74	1.74

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Medium- and pole-sized ponderosa pine stand
- Understory dominated by fescue and white spirea
- CWD fuelbed consisting of one pole-sized ponderosa log

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	4.31	0.97

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

Stand type: SAF 210: interior Douglas-fir
Fuel type: woody; 1000 hr

- Medium- and pole-sized ponderosa pine stand with an understory dominated by graminoids and forbs, primarily fescue and penstemon
- CWD fuelbed consisting of five sapling and pole-sized ponderosa pine logs

Fuel type	tons acre $^{-1}$	kg m^{-2}
1000 hour	5.58	1.25

Appendix A—Photoload Plot Form

Plot ID: _____ **FIREMON Plot ID:** _____ **Date:** _____

Examiner: _____ **Stand ID:** _____

Subplot: _____

Fuel Component	Adjustments									Calculations	Final Load
	Rot Adj Factor	Height			Diameter			Spatial Distribution			
		Obs Ht	Photo Ht	Adj Factor	Obs QMD	Photo QMD	Adj Factor	Weighted Average	Loading		
1 hr											
10 hr											
100 hr											
1000 hr											
Shrub											
Herb											
Other											

Subplot: _____

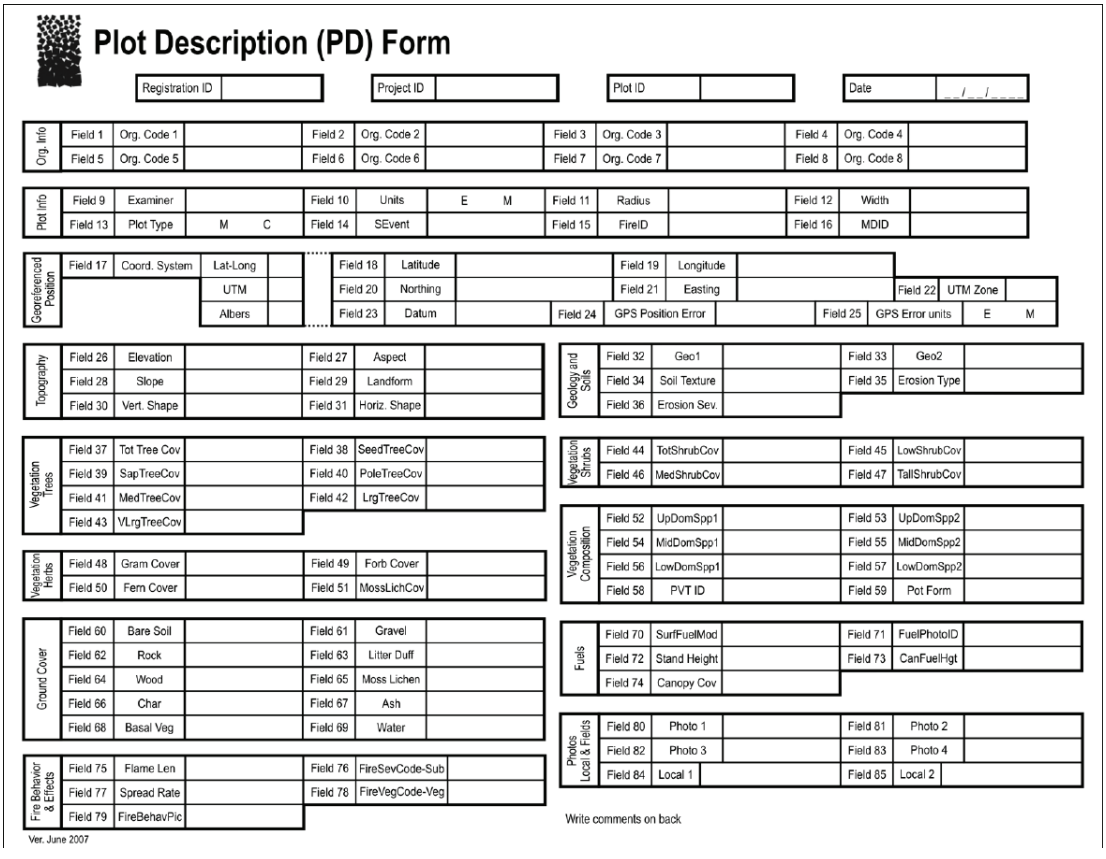
Fuel Component	Adjustments									Calculations	Final Load
	Rot Adj Factor	Height			Diameter			Spatial Distribution			
		Obs Ht	Photo Ht	Adj Factor	Obs QMD	Photo QMD	Adj Factor	Weighted Average	Loading		
1 hr											
10 hr											
100 hr											
1000 hr											
Shrub											
Herb											
Other											

Appendix B—1000 Hr Fuel Plot Form

Date: Examiner:

Sample Unit			Photoload Loadings (kg m^{-2} or T $acre^{-1}$)						
Stand	Plot	Subplot	1hr	10hr	100hr	1000hr	Shrub	Herb	Other

Appendix C—FIREMON Plot Description (PD) Form Example



Plot Description (PD) Form

Registration ID		Project ID		Plot ID		Date	_ _/_ _/_ _ _ _

Org. Info

Field 1	Org. Code 1		Field 2	Org. Code 2		Field 3	Org. Code 3		Field 4	Org. Code 4	
Field 5	Org. Code 5		Field 6	Org. Code 6		Field 7	Org. Code 7		Field 8	Org. Code 8	

Plot Info

Field 9	Examiner		Field 10	Units	E M	Field 11	Radius		Field 12	Width	
Field 13	Plot Type	M C	Field 14	SEvent		Field 15	FireID		Field 16	MDID	

Georeferenced Position

Field 17	Coord. System	Lat-Long		Field 18	Latitude		Field 19	Longitude				
		UTM		Field 20	Northing		Field 21	Easting		Field 22	UTM Zone	
		Albers		Field 23	Datum		Field 24	GPS Position Error		Field 25	GPS Error units	E M

Topography

Field 26	Elevation		Field 27	Aspect	
Field 28	Slope		Field 29	Landform	
Field 30	Vert. Shape		Field 31	Horiz. Shape	

Geology and Soils

Field 32	Geo1		Field 33	Geo2	
Field 34	Soil Texture		Field 35	Erosion Type	
Field 36	Erosion Sev.				

Vegetation Trees

Field 37	Tot Tree Cov		Field 38	SeedTreeCov	
Field 39	SapTreeCov		Field 40	PoleTreeCov	
Field 41	MedTreeCov		Field 42	LrgTreeCov	
Field 43	VLrgTreeCov				

Vegetation Shrubs

Field 44	TotShrubCov		Field 45	LowShrubCov	
Field 46	MedShrubCov		Field 47	TallShrubCov	

Vegetation Composition

Field 52	UpDomSpp1		Field 53	UpDomSpp2	
Field 54	MidDomSpp1		Field 55	MidDomSpp2	
Field 56	LowDomSpp1		Field 57	LowDomSpp2	
Field 58	PVT ID		Field 59	Pot Form	

Vegetation Herbs

Field 48	Gram Cover		Field 49	Forb Cover	
Field 50	Fern Cover		Field 51	MossLichCov	

Ground Cover

Field 60	Bare Soil		Field 61	Gravel	
Field 62	Rock		Field 63	Litter Duff	
Field 64	Wood		Field 65	Moss Lichen	
Field 66	Char		Field 67	Ash	
Field 68	Basal Veg		Field 69	Water	

Fuels

Field 70	SurfFuelMod		Field 71	FuelPhotoID	
Field 72	Stand Height		Field 73	CanFuelHgt	
Field 74	Canopy Cov				

Fire Behavior & Effects

Field 75	Flame Len		Field 76	FireSevCode-Sub	
Field 77	Spread Rate		Field 78	FireVegCode-Veg	
Field 79	FireBehavPlc				

Photos Local & Fields

Field 80	Photo 1		Field 81	Photo 2	
Field 82	Photo 3		Field 83	Photo 4	
Field 84	Local 1		Field 85	Local 2	

Write comments on back

Ver. June 2007

The Rocky Mountain Research Station develops scientific information and technology to improve management, protection, and use of the forests and rangelands. Research is designed to meet the needs of the National Forest managers, Federal and State agencies, public and private organizations, academic institutions, industry, and individuals. Studies accelerate solutions to problems involving ecosystems, range, forests, water, recreation, fire, resource inventory, land reclamation, community sustainability, forest engineering technology, multiple use economics, wildlife and fish habitat, and forest insects and diseases. Studies are conducted cooperatively, and applications may be found worldwide.

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