

EXAMPLE SPECIFICATIONS FOR FUELS TREATMENT CONTRACT

Wayne D. Shepperd
RMRS

Background

The recent impetus to reduce wildfire risk in urban interface forests of the Colorado Front Range has resulted in the adoption of mechanized thinning to reduce forest density. Lack of suitable markets for the resulting biomass has further prompted the use of in-the-woods chipping and mastication (chunking) to reduce the flammability of the material and scatter it on-site. While these techniques are effective in reducing wildfire risk, little is known about the effect that leaving this biomass has on subsequent understory vegetation recovery and soils. This document describes an area on the Manitou Experimental Forest selected for treatment and outlines mechanical treatments needed to install a study to compare fuel manipulation techniques and subsequent effects on understory vegetation and soils.

The object of this research is to compare the effects of in-the-woods chipping of unmerchantable wood biomass versus mechanical mastication, or “chunking” of the material on subsequent understory vegetation development and soil nutrient dynamics. Therefore, it is necessary to require that the contractor have equipment available to accomplish these treatments. Specifically, such equipment should be capable of harvesting trees up to 18 inches in diameter, then chipping and chunking unmerchantable biomass and scattering the material on-site.

Treatment Area

The treatment area is located in Teller County, CO on the Manitou Experimental Forest at Latitude N39.11145°, Longitude W105.07726°. The approximately 45 acre site adjoins the Ridgewood subdivision within the experimental Forest.

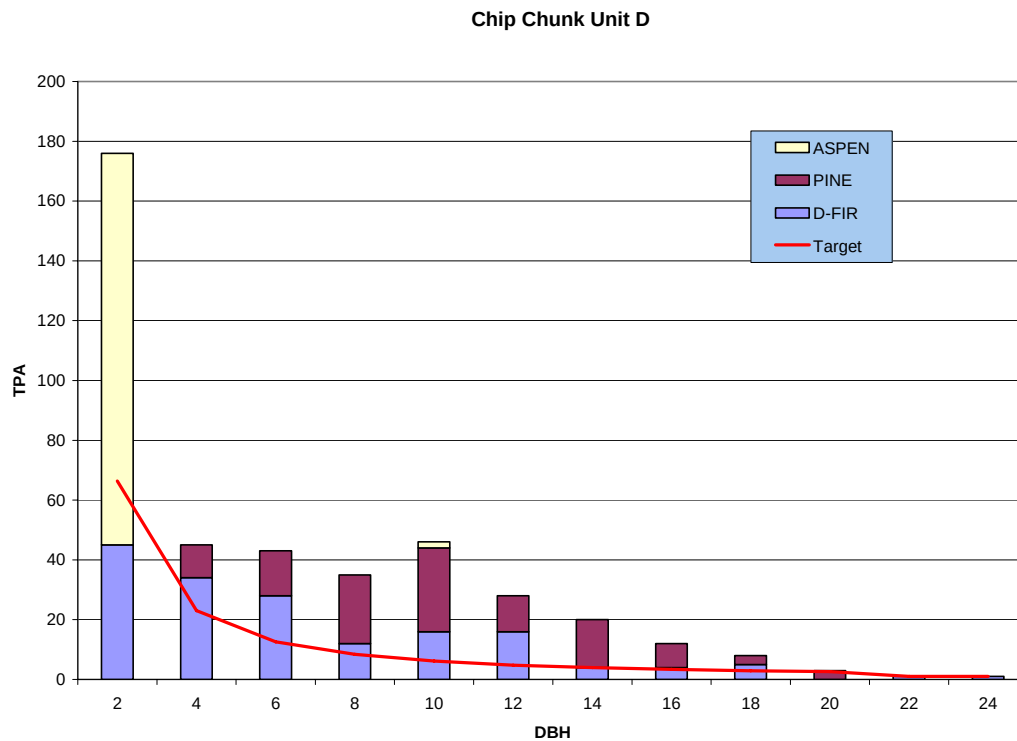


Terrain within the site consists of a series of small, west-sloping draws and intervening ridges with slopes up to 30%. Access to the site is from the west up these draws and ridges (slopes >30% on the north boundary of the site will be excluded from treatment). The site is stocked with a mixture of ponderosa pine, Douglas-fir and aspen and contains 111 ft² of basal area/acre. The following table shows stocking, gross cubic volumes (including stump and top) and merchantable Scribner board foot volumes obtained from 28 cruise plots placed within the stand. Approximately 2% of this volume is dead trees.

DBH	TPA	D.FIR		TPA	PINE		TPA	ASPEN		TPA	TOTAL	
		CUVOL	SCRIB		CUVOL	SCRIB		CUVOL	SCRIB		CUVOL	SCRIB
2	45	5	0				131	0	0	176	5	0
4	34	18	0	11	4	0				45	22	0
6	28	44	0	15	22	0				43	66	0
8	12	47	33	23	85	113				35	132	146
10	16	130	347	28	204	424	2	4	14	46	338	785
12	16	222	769	12	147	449				28	369	1218
14	4	79	301	16	309	1183				20	388	1484
16	4	91	362	8	207	857				12	298	1219
18	5	164	694	3	104	456				8	268	1150
20	0	17	72	3	113	510				3	130	582
22	1	38	181							1	38	181
24	1	37	188							1	37	188
Total	166	892	2947	119	1195	3992	133	4	14	418	2091	6953

Treatment Prescription

Trees range from 2 – 24 inches in diameter, with pine predominating in the mid-size diameter classes and Douglas-fir and aspen predominating in smaller classes. The following figure shows a breakdown of stocking by species and diameter classes, along with the desired treatment target for the number of trees per acre to remain after treatment.



Rather than marking individual trees to be cut, we propose to achieve this target by designating trees to be removed using the following description:

1. Remove only damaged or mistletoe infested trees less than 4 inches in diameter breast height (dbh).
2. Remove 3 out of four (75%) of the trees in the 6-16 inch dbh classes, balancing the cut between pine and Douglas-fir. Remove mistletoe-infested trees where possible.
3. Remove larger trees only if they are severely mistletoe-infested, or in poor shape, but retain at least 10 trees per acre larger than 16 inches.
4. Retain any trees with cavities used by wildlife.

Estimated biomass to be treated

This treatment should result in the removal of about 280 trees per acre containing 545 cubic feet of biomass, with about 1900 gross Scribner board feet (no allowance for defect) available from merchantable-sized trees. We propose that the contract be structured to allow removal of merchantable material with the remaining biomass treated by mechanical chipping and chunking and scattered on-site.

Schedule of Work

To avoid excessive soil compaction and wildlife disturbance, we request that work begin after September 1, 2003 and be completed by June 1, 2004. This site typically remains snow free throughout much of the winter.

Postscript: Lessons Learned from using this contract

Things we should have specified, but didn't:

- *Equipment, specifically type of machine, horsepower, chip and chunk sizes produced. We didn't quite get the chunking treatment that we intended because the prime mover wasn't powerful enough to keep the head spun-up. We also were pleasantly surprised by the performance of the Morbark self-propelled chipper with its own tree shear. It maneuvered well in the trees and was able to negotiate surprisingly steep slopes. Many types of equipment exist to do these jobs. Understand what will be needed for your project and what the trade-offs are.*
- *Better work schedule and deadlines with penalties. Our contract should have been finished by June, but crept into mid July when bark beetles were flying*
- *Stringent clean-up and rehab clauses. We didn't specify water-bar dimensions and slashing requirements and wound up having to do those activities ourselves.*