4A.6 FUEL MANAGEMENT THROUGH CRUSHING AND BURNING

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1. INTRODUCTION

A technique to manage chaparral fuels has been advanced by the County of Los Angeles Fire Department. Prescribed burning literally "Under the eaves" requires a significantly precise burning prescription. A method to reduce flame lengths, reduce down wind spotting and reduce emissions while meeting fuel reduction requirements was found by Crushing chaparral, and allowing it to cure for several days prior to burning. Bull dozers were used to crush the Chaparral, but were limited by slopes exceeding 25%. The dozers would slip and slide over the crushed biomass on steeper slopes. A search ensued for a tool that would work on steep slopes, economically.

It was found that soil in areas that were crushed and burned displayed no hydrophobic characteristics as was encountered when chaparral was burned standing. This phenomenon was attributed to the evaporation of volatile oils from the chaparral after crushing. The burning chaparral with lower oil content produced lower flame lengths (1.6 m as opposed to 19.5 m on standing brush), thus producing less combustion byproduct to coat soil molecules.

A second positive product of crushing and burning was the significant regeneration that occurred. Biologists from USDA-Forest Service and UCLA conducting separate studies, found regeneration in broad leaf chaparral, specifically *ceanothus sp. w*as of a magnitude of 5 over shrubs that were not crushed.

A third positive result from crushing and burning was found by USDA-forest Service scientists regarding lower emissions than burning standing brush.

A gravity roller, used in New Zealand by Mr. Lex Norton, a heavy equipment contractor, and patented as the "Norlin Gravity Roller" was the ideal concept. A FEMA grant was secured and the Florida firm "Supertrak" was selected build a prototype roller, under agreement with Mr. Norton's company, Lyndale Holdings Ltd.

2. SUPERTRAK GRAVITY ROLLER

The Supertrak prototype roller is a 4.34m diameter Steel drum weighing 9,200 kg. (this has since been augmented by a smaller drum weighing 4600 kg). The drum is connected to a D-8 dozer by two cables and two high speed winches, with a 186 m fetch. The entire system is controlled hydraulically by the dozer operator and can work on work on slopes exceeding 80%. Hourly production rates exceed 8.5 ha. L.A. County Fire took delivery of the initial model in April of 2000.

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3. GRAVITY ROLLER RECORD

Upon delivery, t he Supertrak Gravity Roller was put to work on a project in the Charmlee Park area of Malibu, covered with extremely heavy chaparral, over thirty years of age. The area was crushed and burned. Then it was moved down to the Malibu coast where a series of small projects were planned, adjacent to million dollar homes. These burns were completed satisfactorily.

January 6, 2003 brought catastrophic wind to Malibu (wind was gauged at over 150 km/hr) and blew down several high voltage power lines, igniting brush immediately. The fires burned in and around areas that had been crushed and burned almost 2 years previously, with NO STRUCTURE LOSS! This was significant, because historically, dating back to 1927, in the Malibu area high, wind driven fires had contributed to extensive structure loss. Reduced fuel loads created by the crush and burn project as well as a more restrictive brush fire ordinance enacted in 1995 proved effective. The original Charmlee Park burn, done in may of 2000 was key to curtailing the fire as the off-shore winds subsided and the fire came roaring back upslope toward the Malibu enclave of La Chusa.

This past year a similar project was completed in the Sierra Madre Mountain range adjacent to the community of LaCanada Flintridge. The area treated was adjacent to million dollar homes as well as extremely high value watershed.

4. CONCLUSION

Crushing and burning has proven to be a highly successful tool in managing vegetation at the urban wildland interface.

5. REFERENCES

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