

REGRESSION AND SIMULATION MODELS FOR ANALYSIS OF
RESIDUE RECOVERY IN ASSOCIATION WITH SAWLOG HARVESTS

A Thesis

Presented in Partial Fulfillment of the Requirements for the

DEGREE MASTER OF SCIENCE

With a

Major in Forest Products

In the

GRADUATE SCHOOL

UNIVERSITY OF IDAHO

By

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Abstract



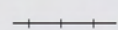



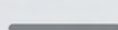



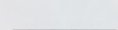

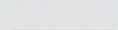


Simulation was used to examine equipment alternatives and costs associated with recovery and processing of logging residue. Equipment models were developed from data recorded during harvesting operations involving residue recovery. Tests were performed on the validity of various models to establish their credibility for use with the SAPLOS harvesting system model. Simulation comparisons were made between the original yarding equipment studied on four sites and possible alternative yarders. Harvesting methods included a concurrent and double entry approach for the recovery of the logs and residue. Recovery costs were estimated for the various alternatives and conclusions drawn from the comparison of the simulated results. In smaller second growth timber, a concurrent recovery of the material was the better choice based on production and economics. For old growth stands containing a mix of large and small diameter timber, the double entry harvesting method was the favored alternative. Simulation can be used to plan the most economical balance of harvesting method and equipment.

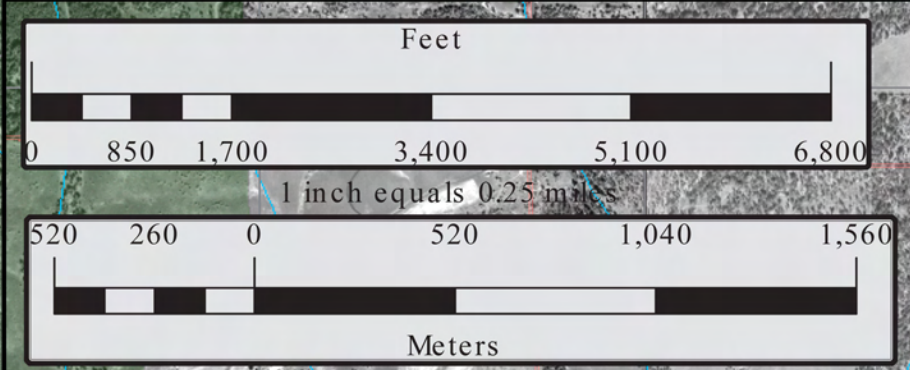
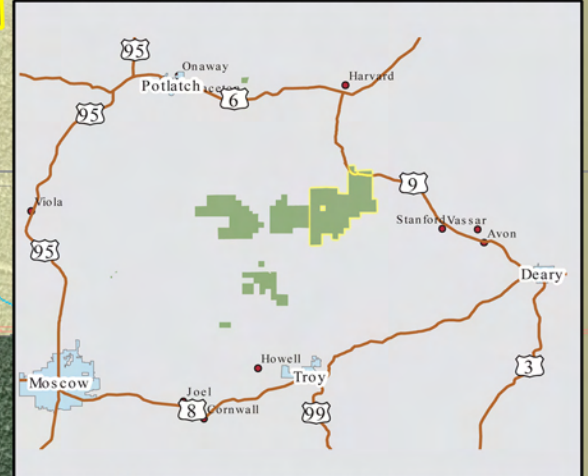
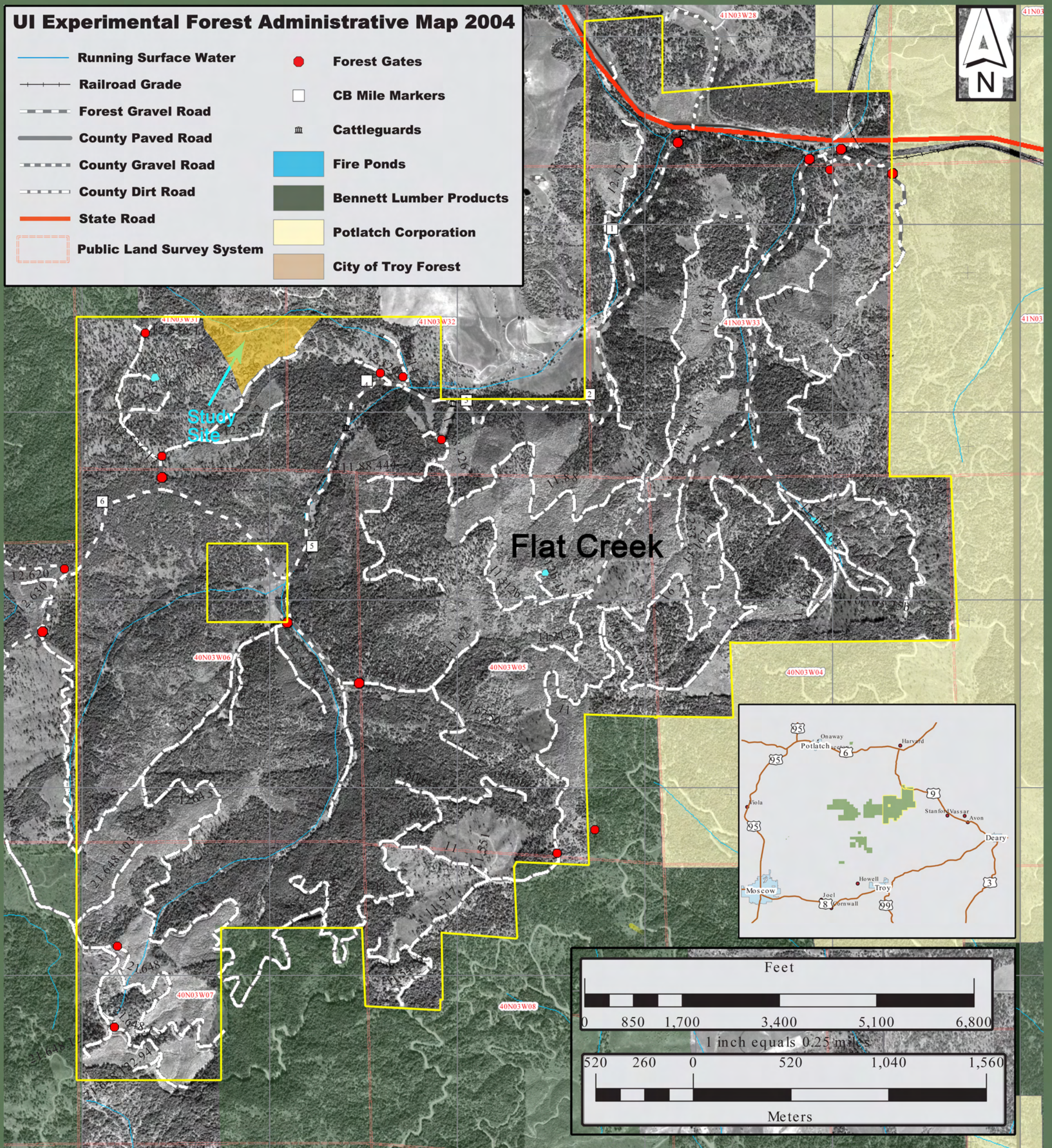
A case study for a double entry approach of complete residue recovery and processing system was examined. The first entry yarders included in Washington Skylok yarder and an American yarder. The simulation included a hot loading operation. Simulation of the second entry included the Kwik and Kludt yarders. Three types of residue processors were also...(rest of abstract missing from document)

Study Site

The simulations were conducted on one of four units on two separate sites observed during residue recovery projects. The Experimental Forest clearcut was a 4.9 acre site in the Flat Creek Unit of the University of Idaho school forest. Average yarding conditions for the site included a 36 percent slope and a distance of 254 feet. The Kludt yarder utilized four settings during the harvesting operation of the area. The stockpile location for residue was located approximately one mile from the site. Transportation of this material from the landings was performed by a modified dump truck. A total of 3,049 pieces were yarded from the site. The sawlogs and residue contained a volume of 33,018 cubic feet.

UI Experimental Forest Administrative Map 2004

- | | | | |
|---|---------------------------|---|-------------------------|
|  | Running Surface Water |  | Forest Gates |
|  | Railroad Grade |  | CB Mile Markers |
|  | Forest Gravel Road |  | Cattleguards |
|  | County Paved Road |  | Fire Ponds |
|  | County Gravel Road |  | Bennett Lumber Products |
|  | County Dirt Road |  | Potlatch Corporation |
|  | State Road |  | City of Troy Forest |
|  | Public Land Survey System | | |



Flat Creek



Location of Complete Research:

Author & Title: Lasiter, Mark
Regression and Simulation Models for Analysis of Residue
Recovery in Association with Sawlog Harvests

University of Idaho Library:

Call Number- SD544.L38 1984

College of Natural Resources:

Department- Forest Products

Other Sources: