

TR-124

Effect of Forest Site Preparation and Livestock Grazing on Stormflow and Water Quality in the South East

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The commercial forestlands of East Texas and Louisiana are the most water-efficient producing areas of the two states. Current and projected water shortages for Texas makes this water-rich area extremely important to future growth and development of Texas. However, little is known about the influence of intensive forest practices or livestock grazing on water quality, yield or site productivity in Texas. This is the only instrumented watershed study in Texas or Louisiana that is currently evaluating the influence of livestock grazing on water and the second study evaluating the impact of intensive forest practices on water.

This research is providing information that will enable forest managers, state and federal agencies to select livestock grazing and/or forest management practices that will maintain a productive forest environment and minimize off-site water quality impacts. It is imperative that if Texas in the next 30 years is: 1) to help meet the timber product demand that is projected to be placed on the Southeast, and 2) to meet the projected water shortages we need to understand the impact of intensive forest and livestock grazing practices on site productivity and water. This research is helping provide the basic information needed to manage Southeast forestlands for timber products, red meat and water.

The southern states are currently producing half of the nation's wood supply with large demands to increase timber production expected in the next 20 years. The challenge facing forestry in the South is in developing technology and management to meet this increased demand and maintain an acceptable forest environment in the face of increased taxes, rising labor, equipment and energy costs. The intensive forest management practices of harvesting and site preparation have been identified as causing potential declines in site production and as sources of nonpoint pollution. The Clean Water Act (PL 92-500 and PL 95-217) requires identification and control of silvicultural activities and livestock grazing which contribute to nonpoint source pollution. Implementation of "best management practices",

either voluntary or mandatory, are the suggested means for maintaining water quality and site productivity.

Hydrologic impacts of livestock grazing result primarily from the interactions of climate, vegetation, soil, and intensity and duration of livestock use. Thus, grazing impacts will vary naturally from area to area due to the normal variability of these factors. Few studies have attempted to account for these natural variations. Documentation of the intensity and duration of livestock grazing has been poor or completely ignored in most studies.

In East Texas, the impact of livestock grazing on water quality has had no research effort. Most research regarding the impact of grazing upon water quality has been conducted outside the Southern Region and, more importantly, outside of the Gulf Coastal Plains. Because geology, soils, topography, climate, etc. are different, extensions of that research to the East Texas and Louisiana areas may be misleading.

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