

# Land and Water

THE MAGAZINE OF NATURAL RESOURCE MANAGEMENT AND RESTORATION

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Excerpts from Jan/Feb 2003 publication

Hayman Fire, Platte River Watershed, Colorado

***For nearly a month last summer, more than 1,600 firefighters worked to contain the blaze known as the Hayman fire, in central Colorado, south and west of Denver. The fire, which broke out on June 8, destroyed more than 137,000 acres, over half of which burned so hot the soils became hydrophobic.***

On July 5, 2002, the US Forest Service Burned Area Emergency Rehabilitation (BAER) team report assessed the damage caused by the fire and called for a treatment of 30,000 acres, where there was the most serious threat of flood damage.



The BAER plan was designed to alleviate emergency conditions by stabilizing soil, controlling water flow, minimizing sediment and debris runoff, protecting the ecosystem and watersheds, and mitigating significant threats to health, safety, life and property. The BAER team consists of a group of hydrologists, range conservationists, soil scientists, engineers, biologists, silviculturalists, archaeologists and other resource specialists.

The Hayman fire BAER called for both ground and aerial operations to rehabilitate the lands. Plans for ground operations included the seeding and scarification of 13,000 acres, an archaeological assessment identified two sites needing protection with straw-bale check dams and levees; cleaning and reinforcement of culvert and stream crossings to prevent washout; installation of Remote Area Weather Stations (RAWS) in and around the area to facilitate early detection of rainfall for public evacuation and emergency warnings when needed; ground hydromulching to 1,500 acres; and the formulation and

implementation of Natural Resource Conservation Service plans with private landowners for rehabilitation. The aerial operation called for hydromulching on 1,500 acres; dry mulching of approximately 12,000 acres; and seeding on approximately 19,000 acres. A consortium of four companies for the United States and Canada was contracted by the US Forest Service to carry out the aerial hydromulching on severely burned areas inaccessible by other means of restoration.

Pacific Erosion Control and Sunwest Helicopter, both of Canada, worked together to complete the hydromulching on 15,000 acres. The land to be hydromulched included the roughest terrain and some of the hardest to reach areas of the entire Hayman site with 40 degree slopes, thousands of feet high. This land was some of the most severely burned and sits on the watershed that provides drinking water to Denver.



The aerial hydroseeding was to be done using seed mixed with wood pulp mulch, water and a tackifier or polymer that binds the material to the soil, holding the mixture together so the seed has the opportunity to sprout. Any rain is bound up in the mix, further helping the seed to become established.



The aerial operation began on Thursday, August 15 and continued for 32 days. The work started each day at dawn and continued until dusk. Every 4 minutes, pumps capable of feeding 2,000 gallons of mulch per minute shot another load of slurry into one of the Sikorsky Sky Crane helicopters, the world's largest nonmilitary helicopter. The choppers fly over the target area, releasing the load in such a way as to "paint" the hills with 1800 pounds per acre of the seed/water/mulch mixture. The massive scope of this project called for innovation and cooperation among the 4 principals involved.

During the project, three separate staging areas were used. With the cost of helicopter airtime as the greatest single expense, it was necessary to make efficient use of every minute the huge choppers were in the air.

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The seed, water and site specific tackifier were stored on-site in huge tanks. The slurry of seed, mulch, tackifier and water was mixed in the hydromulching machines and pumped into 10,000 gallon storage tanks before being pumped into the helicopters. In order to keep the mixture in suspension, the slurry

was constantly re-circulated. Ten hydro-mulchers were used on the staging site. Back-up equipment was also kept on-site to save time and money in the event of breakdowns.

The equipment was standardized to allow for rapid repair and helped keep everything running. The work took place at an astounding pace, with helicopters dumping the green mixture on the hillsides approximately 14 hours a day. "All you did was eat, sleep and work" said one of the project managers. "It was an incredibly intense operation." Each helicopter load brought the effort 2,100 gallons closer to completion of the huge job.

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Said one of the principals, "The cooperation and expertise of the four principals involved made it all work very well. Everyone knew their job well and worked very hard under sometimes stressful circumstances to make this project work."

A great deal was learned about carrying out a project the size and scope of the Hayman aerial hydromulching restoration project. The restoration work has been successfully completed and now Pete Robichaud, with the USDA Forest Service, Rocky Mountain Research Station Forestry Sciences Laboratory in Moscow, Idaho, will participate in long-term observation and analysis of the success of this kind of project. He and his crews have set up several 7 acre drainages near the Hayman restoration project to test the materials used on this job against other products and methods. Data will be collected or see how much sediment runs off each of the varying treatments.