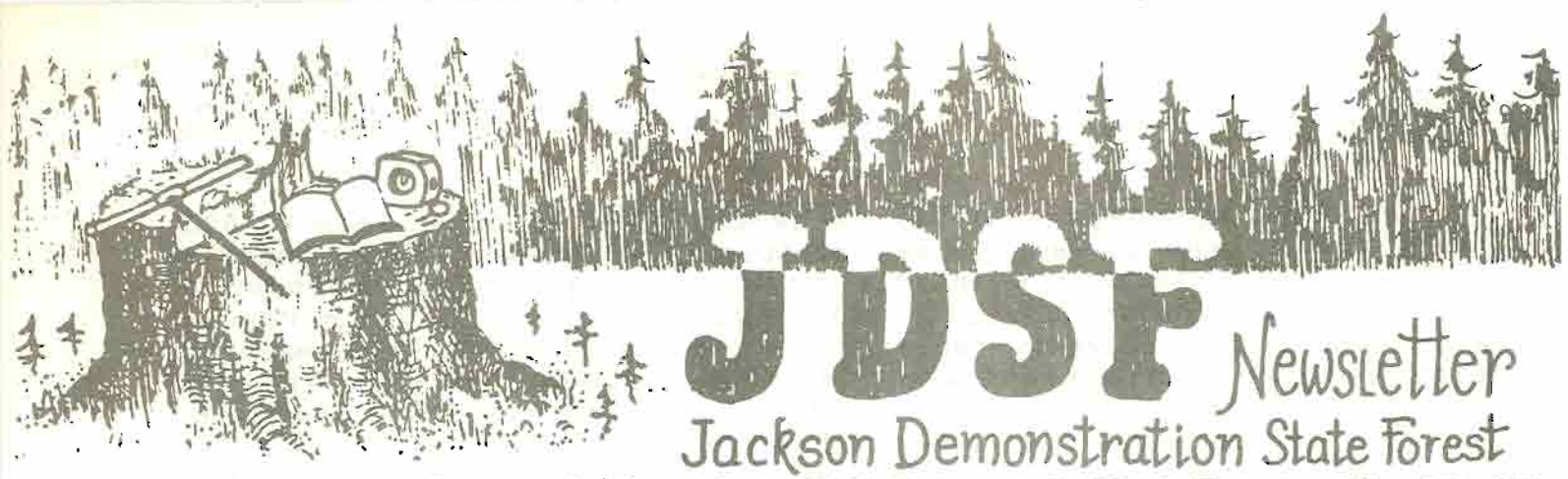

JDSF Newsletter

Jackson Demonstration State Forest

State of California Dept. of Forestry P.O. Box 1185 Fort Bragg, CA. 95437

No. 21 March 1986

HAUL ROAD DUST CONTROL USING CALCIUM CHLORIDE

Walt Decker

The Roadrunner, of cartoon fame, leaves impressive billowing clouds of dust as he travels the roads of his realm. Dusty forest roads are not likely to amuse the timberland manager or log hauling contractor, however. Such conditions indicate premature road surface deterioration, excessive vehicle wear, and often safety hazards caused by poor visibility.

Effective forest road maintenance usually includes some form of stabilization to provide a smooth, hard-wearing surface that will not wash or blow away. This is often accomplished by frequent watering and grading during periods of heavy use in the dry season. An alternative method, tested in conjunction with a recent JDSF timber sale, is to apply a stabilization chemical to the prepared road surface. In this case a deliquescent salt, calcium chloride, was used. Once incorporated into the road surface, it acts to minimize moisture content fluctuation by attracting and retaining ambient or applied water.

Calcium chloride was applied to 1/2 mile of JDSF Road 900 at a rate of 2.8 pounds per square yard for dust control and surface stabilization in the spring, just prior to hauling. The cost of material and application was $2,780. Subsequent to application, the treated area was watered once weekly, compared to daily watering of adjacent haul roads. Heavy truck traffic averaging 35 loads per day commenced shortly after application. During this time period, daily temperatures often averaged over 90 degrees F., and relative humidities were correspondiny low. By mid-morning the untreated road was usually dry and dusty, except in shaded areas, and by early afternoon heavy dust and poor visibility were common. By comparison, the treated portion of road retained a firm, stable, substantially dust-free surface for several days after water was applied. By mid to late week minor accumulations of dust in the center berm and on the outside of turns became airborne with the passage of vehicles. This was substantially less than in the untreated areas, however.

After approximately six weeks and 1,000 loads of logs (2,000 truck trips), the surface became noticeably deteriorated, especially in the turns. At that point the chemical supplier recommended a second appliction and advised against grading the existing surface, which would have unevenly redistributed and/or removed the remaining salt. Further applications were not made, however, as this was not anticipated in the preparation of this demonstration. The same watering schedule was maintained throughout the remainder of the sale. Although the treated portion of the road continued to deteriorate, dust control was noticeably better than on the untreated portions.

According to the timber operator, the salt treatment had several disadvantages. Since the firm, stabilized surface requires more time for water penetration than untreated road, water must be applied at least four hours prior to truck use. The road surface remains quite slick until applied water has penetrated and/or evaporated. In this case the applications were made during early evening rather than predawn hours. The salt solution is also quite corrosive to tanks and other application equipment which must be thoroughly flushed following use.

No detectable levels of salinity were observed in surface waters below the treatment area. Samples were taken in a Class I, fish-bearing stream 500 to 1,000 feet below the treatment area. Using a YSI Model 33 conductivity meter graduated to one part per thousand salinity, measurements were made during the operating season and following the first significant rainfall. No impact to flora or fauna was observed within or near the treatment area.

The cost of calcium chloride application appears to have been offset by reduced maintenance requirements. Road watering was reduced from daily application on untreated road to weekly application on the stabilized road, or one-fifth the cost, and grading was not required where the road was treated. This resulted in a safer road to travel with longer operating life and lower truck maintenance costs, and while there are many variables to consider, calcium chloride appears to offer a cost effective means of dust control.

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TIMBER SALES - 1985

Total volume harvested from JDSF in 1984 was 30.6 million board feet, returning revenues to the state of $6,013,008.10. This compares to 1984 figures of 26.6 million board feet harvested and returns of $4.97 million. As in 1983 and 1984, Class I sales (primarily firewood, but also salvage logs, burls, fish poles, redwood bark, ferns and mushrooms) yielded an additional $20,000.

JDSF sales activity generated approximately $90,000 in taxes for Mendocino County in 1985.

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JDSF NEWSLETTER INDEX: 1980-1985

The JDSF Newsletter has now been around for six years and we sincerely hope you have enjoyed and benefitted from our informal publication. As our audience has increased over this period of time, not everyone is aware of all the articles presented. Our prescription for this malady is a six year index of the main articles. Feel free to request a copy of one or more newsletters you do not have.

NEWSLETTER	AUTHOR	ARTICLES
#1 - APRIL 1980	JOHN GRIFFEN	A PRELIMINARY VOLUME TABLE FOR RESIDUAL OLD GROWTH REDWOOD
#2 - JUNE 1980	JOHN GRIFFEN	SUMMARY OF TIMBER SALES
#3 - DEC 1980	JOHN GRIFFEN	"TWO-STAGE" ROAD CONSTRUCTION
#4 - SEPT 1981	DANA COLE	A COMPARISON OF TWO LOG SKIDDING STRATEGIES ON A SELECTION HARVEST OF YOUNG GROWTH REDWOOD-A PROGRESS REPORT
	CRAIG ANTHONY	JACKSON TRIES TARIF
#5 - DEC 1981	DAVE ADAMS	AN INTRODUCTION TO BLACK STAIN ROOT DISEASE ON JDSF
	CRAIG ANTHONY	SUPER SPAN GIVES SUPER STREAM PROTECTION
#6 - MAR 1982	FOREST TILLEY	WOOD WASTE UTILIZATION
	DANA COLE	EXPERIMENTAL PLANTINGS - H.C.80 CLEARCUT
#7 - JUNE 1982	NORM HENRY	COOPERATIVE STUDY ON PRECOMMERCIAL THINNING OF "THIRD GROWTH REDWOOD AND ASSOCIATED CONIFERS
	DANA COLE	REDWOOD SPROUT STUDY
#8 - SEPT 1982	KAREN HARDISON	EFFECTS OF TIMBER HARVESTING ON THE LAG TIME OF A CASPAR CREEK WATERSHED-A STUDY IN PROGRESS
#9 - DEC 1982	JIM LINDQUIST	GROWTH OF A REDWOOD STAND FOLLOWING COMMERCIAL THINNING
#10 - MAR 1983	NORM HENRY	A NEW APPROACH TO MANAGING UNEVEN-AGED FOREST STANDS IN THE REDWOOD TYPE
	GLEN PINOLI	SOME CONSIDERATIONS FOR FOREST HAUL ROAD CONSTRUCTION AND MAINTENANCE
#11 - JUNE 1983	DANA COLE	RAILROADG. SILVICULTURAL DEMONSTRATION
	DANA COLE	JACKSON'S 200 "RESIDENTS"
#12 - SEPT 1983	NORM HENRY	TIMBER SALE DEMONSTRATION/EXPERIMENTAL PROJECTS
	GLEN PINOLI	FELLING DAMAGE IN OLD GROWTH OVERSTORY REMOVAL
#13 - FEB 1984	THOM SUTFIN & PETE CAFFERATA	SKID TRAIL TILLING TRIAL CONDUCTED
	GLEN PINOLI	IS THE HAMILTON E-Z BRIDGE E-Z?
#14 - MAY 1984	DANA COLE	HARDWOOD UTILIZATION EXPERIMENTS
	DANA COLE	REDWOOD REFORESTATION BY THE CASPAR LUMBER CO.
#15 - AUG 1984	PETE CAFFERATA	THE NORTH FORK OF CASPAR CREEK: A COOPERATIVE VENTURE BETWEEN CDF AND USFS
#16 - DEC 1984	DANA COLE	REDWOOD REFORESTATION BY THE CASPAR LUMBER COMPANY

#17 - MAR 1985	PETE CAFFERATA & THOM SUTFIN	PRELIMINARY RESULTS OF TILLING THE JAMES CREEK 83 TIMBER SALE
#18 - JUNE 1985	DANA COLE	ONE HUNDRED YEARS FOR "DAISY" OF CASPAR
	WALT DECKER	EVEN-AGED MANAGEMENT: SOME PRELIMINARY OBSERVATIONS
#19 - SEPT 1985	NORM HENRY	EARLY GROWTH AND YIELD THREE YEARS AFTER PRECOMMERCIAL THINNING IN "THIRD GROWTH" REDWOOD
#20 - DEC 1985	DANA COLE	NASA TESTS RADAR ON JDSF
	FOREST TILLEY	CDF AND USFS BRASS MEET
	GLEN PINOLI	PLASTIC CULVERTS

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STORMS OF '86

In some parts of northern California, the storms that occurred during the period of February 14-19 were the worst in 20 to 30 years. While rains here were not as intense or prolonged as in some other areas, JDSF experienced more damage to its road system than at any time since 1972. The Chamberlain Creek, James Creek, and Caspar Creek drainages were particularly hard hit by mudslides and roadbank failures. Surprisingly, no roads are known to have washed out as a result of culvert failure.

The "Storm of '86" really put the test to the watershed crew and equipment (see Newsletter #15). This storm was literally the first major storm which was monitored with all the flume and rated stations functional. The cooperative watershed project in the North Fork of Caspar Creek fortunately did not suffer any damage, but flows in the creek and tributaries triggered the equipment to pump a record number of samples. Over 1200 water samples were taken in a week's time requiring almost around the clock maintenance to insure that bottles were changed in the samplers and stored data were recovered. Total rainfall for the week's period averaged nine inches for three different locations around the watershed. The fifteen stations located throughout the watershed are accessible only by foot-trail and they were visited an average of eight times for a total of 116 visitations. Involved in this effort were five USFS personnel and five CDF personnel. The watershed lab was kept running around the clock as it was feared that our inventory of empty sample bottles would become exhausted.

We would like to acknowledge the help we received from a Parlin Fork Conservation Camp crew in transporting most of the samples from the watershed to our laboratory in Fort Bragg.

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STAFF NOTES

We are finally getting around to featuring **Lorraine Asher**, who, along with **Janice Tompkins** (see Newsletter No. 9), constitute our formidable front office team.

Lorraine has been with us almost two years, and in that time she has become indispensable in looking after much of our finances, including timber sales receipts and records. Before coming to us, she worked as a computer operator for four years at Georgia-Pacific's Fort Bragg office.

Lorraine grew up in northern California, and though she has always appreciated the region's natural beauty, she says her only previous "woodsy" experience was in the early years of her marriage when her husband, Ron, was a log scaler for Shasta Forest Products in Redding. He has long since moved on to become a California Highway Patrolman, and after two years of having to make sense of scale tickets and cutting reports, Lorraine can now hold her own in any discussions around the Asher dinner table concerning logs.

The Ashers have three "children," aged 16 to 26. When she isn't busy raising her family and working, Lorraine enjoys bowling, aerobics, and cooking, which most of us around the office have been fortunate enough to sample from time to time.

In other news, we want to bid a "see you later" (not goodbye) to the US Forest Service storm manning crew that has been with us the past winter. Geologist **Wes Marshburn**, forester **Marcus Brown**, and hydrologic technicians **Steve Petrin** and **Dave Salo** have returned to their summer hibernation grounds in the north country. Good work, gentlemen, and we look forward to your help next year.

We would like to extend a big welcome back to forestry aides **Fay Yee** and **Adam Wyman**. Fay has been busy the past three years having babies (two daughters: Camelia, 3, and Jasmine,1). She and we are glad she is resuming her forestry career. She and Adam are working primarily in the timber sales shop.

Finally, we are sorry to bid a fond farewell to **Darcie Mahoney**, who has been an aide with us and/or the Forest Service for the past few years. She worked primarily on the Caspar Creek watershed study, but also dabbled in sales from time to time. She has left public service to start her own garden business, supplying local restaurants with fresh produce. She also works at a plant nursery, so we trust she is keeping her thumb green. We truly miss her and wish her the best of success.

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Coming up in June or soon: JDSF makes a splash in New Zealand, fall and buck report, new Forest History trail, archaeological finds, and more!