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OCTOBER 30, 1985

RESOURCES, COMMUNITY,  
AND ECONOMIC DEVELOPMENT  
DIVISION

B-220729



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The Honorable Pete V. Domenici  
United States Senate

Dear Senator Domenici:

Subject: Information on the Forest Service's Efforts to Control the Spread of the Western Spruce Budworm in the Carson National Forest (GAO/RCED-86-8)

As requested in your August 15, 1984, letter and modified in subsequent discussions with your office on January 24 and July 2, 1985, this report provides information on the Forest Service's efforts to prevent and suppress the spread of the western spruce budworm in the Red River Canyon area of the Carson National Forest. During the two meetings your office stated that the information we provided covered your areas of concern. In addition at the July 2, 1985, meeting, we were requested to prepare a short letter synthesizing the budworm problem, the Forest Service's 1985 program to control the budworm in the Carson, and how the public influenced the Forest Service's decision to initiate a budworm suppression program in the Red River Canyon area.

THE WESTERN SPRUCE BUDWORM

The western spruce budworm is the most common, naturally destructive pest to the Douglas-fir, white fir, and spruce trees. The budworm's most destructive cycle begins in the spring when it feeds on trees' newly developing needles, flowers, and cones. The damaging effects may be the loss in seed production, resulting in slower forest regeneration; deformed or dead seedlings; reduced height, smaller diameter growth, and tree mortality in young stands; and reduced growth and tree mortality in mature stands. The budworm in the Carson National Forest has increased to such an extent that it is threatening the Douglas-fir, white fir, corkbark fir, Englemann spruce, and blue spruce trees. These species represent about 20 percent of the 1.5 million acres in the Carson National Forest. Although some of these species, especially the blue spruce, are not particularly valuable for timber production, they do provide aesthetic beauty to the forest environment.

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In the southwest, the budworm procreates once each year. In late July moths emerge from pupae and mate. The eggs, which are laid on needles, hatch in about 10 days. The larvae (caterpillars) do not feed, but seek hiding places on tree limbs or trunks. The caterpillars then hibernate in silken shelters for the winter. In the spring the caterpillars move to the foliage and bore into and damage expanding buds. As shoots unfurl, the caterpillars spin loose webs between needles and feed on the foliage, oftentimes destroying an entire tree. Caterpillars advance to pupae which mature to moths in 30 to 40 days and mate, starting the cycle over again with millions of new budworms.

### THE BUDWORM PROBLEM

The Carson National Forest and nearby state and private forests have experienced recurring outbreaks of the budworm throughout much of the Carson's history. Four major budworm infestations occurred in northern New Mexico from 1922 to 1966. The budworm population remained low from 1967 to 1974. In 1975, however, defoliation of trees caused by the budworm started to appear in the Taos Ranger District and in other forest districts in later years. By 1984, major budworm outbreaks had defoliated about 200,000 acres, or 67 percent, of the mixed conifer and spruce trees on the forest. Extensive defoliation had occurred on about 82,000 of the 200,000 acres, and dead trees covered about 7,000 acres. Tree mortality was heaviest in the Red River Canyon area of the forest, a scenic, recreational area in the Carson.

Several natural control factors, such as adverse climatic conditions, parasites, predators, and others normally keep the budworm population at a low level. However, the population increases when climatic conditions, such as warm, dry springs, exist. During these periods, predators and parasites are usually not able to suppress the increasing populations. No trend in duration of outbreaks has been established. Some outbreaks last a few years and subside without causing severe damage, while others expand over large areas and persist for many years, adversely affecting forest resource values and uses. Forest Service entomologists said that the forests in New Mexico are highly susceptible to the budworm and that the problem is expected to continue.

### Suppressing the budworm

The Forest Service has used insecticides to suppress the budworm. DDT was used until the mid-1960's when it was banned. Carbaryl, a common household and garden chemical pesticide generally known as Sevin, replaced DDT. A biological insecticide known as Bacillus thuringiensis is mainly used along streams, lakes, and close to residences, instead of a chemical insecticide.

Over the past years the courts have restricted the Forest Service's use of chemical insecticides. Faced with a law suit

over the use of chemical insecticides on the Carson National Forest, the Regional Forester in region 3, which includes Arizona and New Mexico, agreed in an out-of-court settlement in 1984 to halt for a period of 5 years any use of aerially applied chemical insecticides in areas of the Carson that the budworm had infested. Under the agreement region 3 can apply chemical insecticides from the ground. The Service can aerially spray chemical insecticides in forest areas that were not infested during the period 1975 to 1984, only after an environmental impact statement has been completed.

#### THE 1985 BUDWORM CONTROL PROGRAM

In the summer of 1984 a group known as Save the Trees Committee of Red River, New Mexico, campaigned to urge the Service to initiate suppression activities to prevent the further loss of trees, particularly in the Red River Canyon, which is situated in the forest's Questa Ranger District. The committee commented that further losses would adversely affect the aesthetic beauty of the forest, which they believed would be detrimental to the forest's value.

In response to the committee's concerns, the Service in May and June 1985 initiated a spruce budworm suppression project in selected portions of the Taos and Questa Ranger Districts and nearby state and private lands. The project included three phases (1) injecting trees with a chemical pesticide (2 campgrounds), (2) spraying trees with Bacillus thuringiensis (11 campgrounds), using ground spraying equipment, and (3) spraying Bacillus thuringiensis on about 25,880 acres of federal, state, and private land (about 17,900 of the 25,880 acres were on federal land) using aerial spraying equipment. The aerial treatment was done in cooperation with the state of New Mexico. The Service also plans to make two additional aerial applications of Bacillus thuringiensis--one in 1986 and one in 1988. According to the Service, spraying projects in 1987 and 1989 would be planned if budworm populations and tree damage projections warrant the projects. Region 3 officials said that the above actions were either undertaken or planned because the actions

- are compatible with the Forest Service's goals,
- will help maintain tourism and recreational opportunities,
- will maintain the natural state of the wilderness areas,  
and
- can be carried out in an economically efficient manner.

PUBLIC INFLUENCE ON THE  
SERVICE'S 1985 ACTIVITIES

Region 3 Forest Service officials and interest groups we talked with said that the public did influence the Service's decision to initiate a pest-suppression program in the Red River Canyon area. Red River citizens believed that they influenced the Service to recognize the importance of the forest's recreational and scenic beauty. Ski industry representatives believed that the public influenced the Service's decision to spray areas that are highly visible to tourists and skiers (roadways and ski areas).

In deciding to initiate the 1985 program, the Regional Forester listed certain factors which he said influenced his decision to treat the budworm infestation. These factors included:

- (1) New Mexico's concerns that any degradation of the recreational values in the Red River Canyon area may have detrimental effects on tax revenues and the stability of local and state economies.
- (2) Congressional concerns that a pest-suppression program should be undertaken.
- (3) A Red River Town Council resolution that expressed the need for the Service to have a pest-suppression program in 1985.
- (4) The local concerns that tourism income to small businesses would be reduced, the visual quality of the Red River Canyon would be impaired, and future property values would be depressed.

For these reasons, the Regional Forester believed that the 1985 program in the Red River Canyon area was needed.

AGENCY COMMENTS

The Forest Service provided official oral comments on a draft of this report. Several suggestions were offered to improve the technical accuracy of the report. We revised the report, where appropriate, based on the Service's comments.

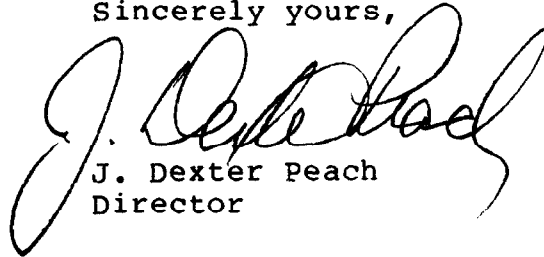
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During our review we interviewed Forest Service pest management officials in Washington, D.C.; Southwestern Region; Carson National Forest; and Questa Ranger District. We reviewed federal pest management laws and Service regulatory manuals. We also reviewed Service management documents associated with planning and reporting the results of pest control projects in the Carson National Forest. We met with local government officials,

the mayor of Red River, and interest groups in Red River. We also conducted telephone interviews with Service officials from each of the nine Service regional offices and the Office of the Chief, in Washington, D.C., to determine how the various multiple uses--timber, recreation, wildlife, scenic beauty--of the forest are considered and valued in the Service's management plans. We performed our review, which was from January 1985 to July 1985, in accordance with generally accepted government auditing standards.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 3 days from the date of the report. At that time, we will send copies of the report to the Director, Office of Management and Budget; the Secretary of Agriculture; and other interested parties. We will also make copies available to others upon request.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "J. Dexter Peach".

J. Dexter Peach  
Director

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