STUDY OF ALTERNATIVES

TO

STATE MANAGEMENT OF SPRUCE BUDWORM SPRAYING

Prepared for the

Maine Department of Conservation

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(NOTE: All Exhibits have been deposited and may be examined at the Maine Law and Legislative Reference Library, State House, Augusta, Maine.)

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SUMMARY

This report analyzes the legal and policy issues raised by an alternative administrative approach to spruce budworm management by the State. Several models are examined that may provide helpful analogies, including a New Brunswick corporation (Forest Protection Limited) that has been engaged in aerial spraying to combat spruce budworm for 25 years, agricultural pest management cooperatives, forest insect control zones, mosquito abatement districts and others. The report also considers liability questions posed by the transfer of responsibility for the operational aspects of aerial spraying in Maine.

Based upon the options studied, a new model is constructed which borrows certain features from each of the alternatives. The conclusion is reached that responsibility for the operational aspects of the program could be transferred to a private entity without reducing the effectiveness of regulatory control over the program. The study recommends shifting responsibility for the accquisition and application of chemical pesticides from the State to a private company, and ultimately shifting the cost burden entirely to private sources. The State would continue to be responsible for all other aspects of the control program, including insect population surveys, hazard assessment, environmental monitoring and enforcement of pesticide laws.

The study recognizes that exposure to liability presents an important policy question, and concludes that the proposed private entity would have exposure to aerial spray liability, unless granted immunity by the Legislature.

The report points out that the Maine Supreme Court has not yet decided an aerial spray case, but concludes that Maine law would probably impose liability on a negligence theory, under which the spray entity would be held to a very high standard of care. Landowners whose property is sprayed may also be liable. The report further concludes that potential liability for aerial spraying is an insurable risk, and that the proposed entity should be required to carry sufficient liability insurance rather than be relieved of liability for damage caused from spray operations.

In broad outline, the proposed private spray entity would function as follows:

1. The State would, with the assistance of affected landowners, designate areas to be sprayed and notify affected landowners of the designation.

2. The affected landowners would have the responsibility of spraying their own lands, and would presumably utilize the services of the private spray entity to perform this function.

3. The affected landowners would share costs attributable to spraying on a basis determined by them. In the absence of agreement, costs would be shared on an acreage sprayed basis.

4. Anyone whose lands had been designated to receive spray would have an opportunity to object before the Forestry Director. If all other affected landowners agreed, the objecting landowners' lands would be deleted from the program. Any disputes with respect to deletion of lands would be resolved by the Forestry Director under criteria to be established by regulation.

5. All costs attributable to spraying the timber of landowners who fail or refuse to voluntarily participate would be initially advanced by the State. The State would in turn impose a special assessment upon such lands which would include the costs billed by the spray entity and, in addition, a fair portion of the added administrative costs caused by the non-participation by such landowners.

6. The Director of the Bureau of Forestry (or possibly the Pesticides Control Board) would specify which chemicals may not be used. The Director would also specify what areas, at a minimum, should be sprayed and what kind of buffer zones should be employed. These specifications would be binding on the spray entity and the landowners.

7. Environmental monitoring would be the responsibility of a State agency other than the Bureau of Forestry, possibly the Department of Environmental Protection.

8. Silvicultural and new market withdrawals authorized under existing statutes could continue to be permitted.

9. Aerial applicators hired by the spray entity would be required to secure whatever permits and certifications are required under existing law.

10. Private landowners would not be permitted to require that any public lands be sprayed.

The report concludes that transferring the spray function to a private entity would advance several policy objectives which have previously been identified in connection with the State spray

program. These may be broadly summarized as follows:

1. The cost of the program may be reduced through the simplification of cumbersome state purchasing procedures and the elimination of certain double accounting procedures necessitated by current pre-funding practices.

2. The tax burden on landowners not being sprayed will be reduced since the proposal calls for the distribution of spraying costs solely among landowners whose lands are sprayed.

3. The increased cost burden occasioned by requiring only the landowners whose lands are sprayed to pay the full cost of spraying would provide an economic incentive on the part of landowners to cut down on the use of pesticides. Under current procedures the State and those landowners whose lands are not sprayed, but who nevertheless pay the budworm excise tax, subsidize part of the cost of spraying.

4. Landowners would have somewhat greater freedom than at present to choose to participate. Landowners who do not wish to have lands sprayed would be excused if they are able to secure the agreement of those landowners whose lands have been designated to be sprayed. Disputes regarding such withdrawals would be resolved by the Director of the Bureau of Forestry pursuant to criteria developed by the Bureau.

5. Maintaining responsibility for designation of areas to be sprayed in the Director of the Bureau of Forestry rather than shifting this responsibility directly to the affected landowners may tend to promote equitable distribution of losses attributable to budworm infestation, since the ultimate decision whether an area will be sprayed would be resolved by a "neutral" third party.

6. Enforcement of pesticide and environmental laws would be improved by separating the regulatory function from the operational function.

7. Placing more of the cost burden on private landowners may serve to encourage closer coordination bwtween management objectives and pesticide use than currently exists.

8. Transferring the business and operational responsibilities associated with spraying to a private entity would free state personnel to devote greater attention to other aspects of the budworm program, such as hazard assessment, and environmental monitoring.

9. Transferring the spray function to a private entity would provide the affected landowners a greater voice in the manner in which spray operations are conducted.

The report concludes that enforcement activities are somewhat confused with the State acting as both program administrator and as regulator. In addition to clearly separating these functions the report recommends strengthening the Pesticides Control Board so that it can deal more effectively with the increased use of pesticides.

INTRODUCTION

This paper examines alternative approaches to administering spruce budworm spray programs. The focus of the study is the spray entity itself, but other considerations necessarily appear, since questions regarding a proposed spray entity can be most meaningful addressed in the context of overall spruce budworm control and suppression strategies.

The merits of employing aerial spraying of pesticides to control spruce budworm has become a highly controversial issue in Maine and elsewhere in the northeast. There are those who maintain that aerial spraying is the only effective means presently available of dealing with the current outbreak. Others maintain that aerial spraying serves only to prolong the duration of the outbreak. One school argues that there is no evidence of any public health danger in prolonged and repeated use of the pesticides employed, and another argues that there is no evidence that a severe public health danger is not present. Large industrial landowners who depend upon a steady source of supply of raw material to feed their mills have been willing to expend considerable sums on aerial spraying. Other landowners, whose management objectives may be different, or who do not realize high value added yields through processing wood from their stands, are unwilling to spend large sums on aerial spraying.

This paper will not attempt to reconcile these various viewpoints, to find a solution to the budworm problem, or to debate alternative budworm control or suppression strategies. The relationships between the insect, the forests, and users on the one hand and the impact of pesticide application on the budworm, the economy of the state and the public health and welfare on the other hand present exceedingly complex issues that deserve further attention. They are, however, beyond the scope of this work.

Our task is to analyze the legal and policy issues raised by an alternative administrative approach to spruce budworm management by the State. Our approach will be to examine alternative models that may provide helpful analogies.

We will start with a detailed case study of Forest Protection Limited, a New Brunswick corporation that has conducted aerial spray operations to control budworm in that Province for the past 25 years. Forest Protection Limited presents an example of a combined industry-government effort, organized along the lines of a private business organization.

Consideration will be given to four different examples of pest management cooperatives, operating in an agricultural setting. One of these, Edgecombe Spray Program, Inc., which provides aerial application services to its members, will be discussed in somewhat more detail than the others.

We shall also generally consider various types of quasi-municipal and specially chartered government corporations and special districts with heavier attention on forest insect control zones, agricultural pest eradication districts, mosquito abatement districts and weed control districts, since these latter models appear more germane than the former.

We will examine the implications of giving other models the characteristics of a public utility. And, we shall refer to some examples of cooperative activity among private landowners within the State which may have some relevance to a cooperative spray program.

A separate section will analyze the foreseeable liability of a private or quasi-private state-regulated entity for budworm control in Maine.

Based upon these options, a new model is constructed which borrows certain features from each of the alternatives.

Based upon our examination of various models, and our review of the procedures currently being followed, we have concluded that the State could transfer the responsibility for the operational aspects of the spray program to a private entity without compromising regulatory control of the program and without imposing undue liability exposure upon such a private entity. Our research reveals that private spray enterprises have successfully functioned in other contexts, and that precedent exists for placing the primary responsibility for the implementation

of forest pest control and suppression efforts directly upon affected landowners.

We start with a brief discussion of the spruce budworm and a general review of the current suppression and control program.

The Spruce Budworm

The spruce budworm is an insect defoliator that feeds upon the needles of the balsam fir and spruces. Persistent defoliation by the budworm, which tends to feed on newer foliage, results in the death of trees. During periods of epidemic budworm populations, this defoliation, and consequent mortality, can extend over large areas of forest.

The budworm is a natural inhabitant of spruce-fir forests and has, during the last several hundred years, periodically erupted to epidemic proportions. The outbreaks have normally lasted from approximately 5 to 10 years with an interval of approximately 25 to 75 years between outbreaks.

There is convincing evidence that Maine has, in recent times, experienced two outbreaks. One arose in the Central Provinces about 1946, enlarged and spread eastward reaching a peak about 1956, covering approximately 150 million acres from Ontario through New Brunswick. This outbreak subsequently dwindled, and by 1965 was restricted to approximately 5 million acres in New Brunswick and extreme northeastern Maine. All of Maine's spraying from 1954 through 1970 was directed against the declining phases of this outbreak and was concentrated within an area of approximately 1 million acres in extreme northeastern Maine.

Around 1970, a second large outbreak appeared, again in Ontario and Western Quebec. As before, this outbreak enlarged and spread rapidly eastward, covering approximately 180 million acres (Ontario to Newfoundland) by 1975 or 1976. Maine's spraying since 1972 has been directed against this outbreak, and has involved virtually all susceptible forests in the State. An estimated 8 million acres of spruce-fir forest type, mostly in Aroostook, Penobscot, Washington, Piscataquis and Somerset Counties, have become infested.

Aerial Spraying

Maine first began aerial spraying against budworm in 1954 and spraying continued sporadically throughout the 1960s. Since 1972, the State has undertaken spraying each year, utilizing a variety of chemicals on areas ranging from approximately 200,000 to 3.5 million acres. The pesticides used in the program are registered with the EPA for use at specified dosages in accordance with their label instructions. Those used have been classified as "general use" pesticides, which means that under current law, dealers are not required to be licensed to sell such pesticides and that anyone may purchase and apply such pesticides himself to his own land without any permit or license from any federal or state agency.

The Current State Program

The Maine spruce budworm suppression program is currently governed by 12 M.R.S.A. c. 213, the "Maine Spruce Budworm Suppression Act."

In this act, the Legislature declared it to be the policy of the State to "undertake reasonable measures to control and suppress infestation of spruce budworm insects...during the years 1976-1981...." (§ 1011) The stated objectives of the suppression program are as follows:

1) minimize and equitably distribute the burden of losses attributable to budworm infestation;

2) maintain timber resources to sustain industrial capacity ("to permit the forest products industries of the State to operate as near to full production capacity as would be possible but for the existence of the budworm infestation," 13 M.R.S.A. § 1011);

3) promote maximum sustained yield harvest of the most valuable timber possible;

4) utilize the most cost-effective methods of budworm suppression and control.

The Act establishes a Spruce Fir Forest Protection District consisting of each of the municipalities and townships of the State in which the forest cover is to a substantial extent composed of spruce and fir trees subject to infestation and destruction by budworm. (§ 1013)

Funding for the program is derived from federal, state and private sources. The State's share is met by a general fund appropriation based upon percentages recommended by the Commissioner of the Department of Conservation. [§ 1014(2)] Persons owning

more than 500 acres of soft wood or mixed wood forest land within the Spruce-Fir Forest Protection District are subjected to an excise tax "on the privilege of owning and operating such forest land." [§ 1014 (3)]

In addition, up until this year, an amount equal to 1.5 mills multiplied by the State valuation of forest land in the unorganized territory subject to taxation under the Tree Growth Tax Law was earmarked for the program. [§ 1014(6)] This past session, the legislature repealed this provision. The legislature also enacted a supplementary excise tax upon all softwood and mixed forest land subject, in 1979, to the excise tax, as a contingency source of revenue in the event of the unavailability of anticipated federal funds, P.L. 1976, Chapter 69.

Areas to be sprayed are designated by the State Entomologist on the basis of data compiled for the Bureau of Forestry. And, forest land owners are provided an opportunity to submit their recommendations with respect to what areas should be sprayed. [§ 1016]

General authority to coordinate the program rests with the Director of the Bureau of Forestry. The Director has specific authority to recommend that the legislature declare a termination of infestation when he receives satisfactory information ". . . that the severity of the infestation . . . has declined to the extent that no spray program will be beneficial or cost effective in all of the years remaining . . . " during the Act. [§ 1021(5)]

The operational head of the program is the Forest Insect Manager, who is appointed by the Director of the Bureau of

Forestry. The Forest Insect Manager is "directly responsible for the development, coordination and implementation of policies and programs of the State of Maine as they relate to the control and suppression of the spruce budworm epidemic". [§ 1024(1)] He has specific authority to "enter into and administer contracts for the acquisition of chemicals, aircraft, personal services and other goods and services" necessary to carry out the project, but all such acquisition and contracts are subject to the laws governing appropriations and competitive bidding. [§ 1024(2)]

Areas may be withdrawn from the spray program under limited conditions: § 1017, Automatic withdrawals of not less than 500 nor more than 1,000 acres per owner; § 1018, Silvicultural treatment of not less than 500 acres where approved practices are utilized which are designed to minimize susceptibility and vulnerability to future budworm infestations; and § 1019, New market withdrawals of contiguous parcels of not less than 1,000 acres.

The Director of the Bureau of Forestry may make rules requiring the mandatory inclusion of parcels within the designated spray area when in his judgment such action is necessary because of the intensity of the infestation or because it would be excessively costly or logistically difficult to avoid applying pesticides and for like reasons. [§ 1023(4)]

The Forest Insect Manager may also spray areas outside the designated spray area upon application by the owners of such land. [§ 1024(3)]

Authorization for the annual program is automatic upon the determination by the Legislature of the amount, if any, which shall be expended for the program. [§ 1014(1)] Such determination also "shall supersede any requirements which may exist for the approval of this program by any other state agency"[§ 1014(1)], except for the requirements of certification and licensing of applications and pesticide dealers [P.L. 1976 c. 764, § 71].

Planning for the annual spray program begins in mid-summer with aerial surveys of feeding damage during the mid-summer "browning stage". Egg mass surveys are undertaken in July and August in order to estimate larval populations for the following spring. In addition, tree condition and defoliation surveys are made. All this survey work is conducted by the Entomology Division of the Maine Forest Service.

In October, the State Entomologist determines the biological need for control measures based upon the data obtained from the population and damage assessment surveys, and submits his recommendations to the Director of the Bureau of Forestry. This recommendation outlines the proposed spray area for the following spring. The recommendation is further refined by inspection of areas suggested by landowners, taking further samples of overwintering larvae and considering environmental hazards.

The areas delineated in the State Entomologists' biological recommendation tend to be irregular. Those irregular areas are then marked off into roughly rectangular spray blocks so that spraying may be conducted efficiently. In delineating spray

blocks, careful consideration must be given to aircraft capabilities and limitations (size, speed, turning radius, etc.).

Cutouts based on the occurrence of non-host forest and protective buffers around environmentally sensitive areas and habitation are determined based upon criteria established by the Department of Conservation. Where necessary, sensitive areas are visually marked on the ground by Maine Forest Service Personnel.

During the autumn insecticide and aircraft requirements are discussed with suppliers and in January bids are invited for these items. Because funding for the spray program usually is not complete at this time and because the Department of Conservation is prohibited from entering into contracts with suppliers until funds have been appropriated by the legislature, a practice called "pre-funding" has arisen. Under the "pre-funding" arrangement, bids are solicited by Great Northern Nekoosa Paper Company,* in place of the State. The invitation for bids provides that when and if state financing is obtained, the State shall have the right, but not the obligation to assume all rights and obligations under the contract.

By mid-winter insecticides have been purchased, aircraft have been contracted for, and plans to set up the organization necessary to implement the program have begun.

Following the application of the insecticide, post-spraying evluations are conducted by entomologists. Effectiveness

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*Great Northern acts as agent for a group of major landowners who share the financial obligations occasioned by pre-funding.

is rated by estimating mortality of insects on sprayed and unsprayed plots and by measuring the reduction in foliage loss (i.e., the degree of foliage protection) due to spraying.

Environmental monitoring of the spray program (studies to identify and measure the effects of insecticides on non-target organisms) is funded directly by the spray project. Studies currently in process include the effects of Orthene on certain fish, birds and amphibians, the effects of Dylox on softshell clams and smallmouth bass, and the effects of Sevin on wild bees and aquatic invertebrates in standing water and in streams. Most of these studies are being done under contract with faculty of the University of Maine.

The State program is coordinated with the United States Forest Service budworm suppression efforts. Under the Cooperative Forestry Assistance Act, the Secretary of the U. S. Department of Agriculture is authorized to provide financial, technical and related assistance to "state foresters or equivalent State officials, subdivisions of States, agencies, institutions, organizations, or individuals on non-Federal lands" [16 U.S.C.A. § 2104(b)] with respect to insect and disease control.

The Act provides that operations planned to control or suppress insects on non-federal land shall not be conducted without the "consent, cooperation and participation of the entity having ownership of or jurisdiction over the affected land [16 U.S.C.A. § 2104(c)] and that no money shall be expended to suppress or control insects on non-federal land until the entity having ownership of or jurisdiction over the affected land contributes, or

agrees to contribute to the work to be done in the amount and in the manner determined by the Secretary [16 U.S.C.A. § 2104(d)].

It is the policy of the Department of Agriculture to only participate in spray programs on non-federal lands where a governmental agency is involved. The Department evidently will not directly afford assistance to individual companies or concerns.

In connection with the current state program, the U. S. Forest Service Research Branch provides scientific and technical studies of insect populations, silvicultural control measures, and related projects.

The State and Private Forestry Branch, Northeastern Area, provides technical and financial support for insect and disease surveys, spray projects, pilot testing of newly developed detection, evaluation and control measures.

PART I

FOREST PROTECTION LIMITED

Case Study

Introduction

During the late 1940's and early 1950's a spruce budworm outbreak occurred on Provincial Crown lands in northern New Brunswick. The infested lands, located in Restigouche County, were then under long term lease to New Brunswick International Paper Company. Bridges Bros. Ltd. v. Forest Protection Limited (FPL-Exhibit 1). Adjacent Crown lands were under long term lease to several other private companies engaged in the pulp and paper industry.

Surveys in the fall of 1951 indicated that in 1952 the infestation would be present in some 2,000 square miles with a high hazard area of 200 to 225 square miles. New Brunswick IP was particularly concerned about the survival of the stands under lease to it, and in the fall of 1951, it approached the Province with a proposal to conduct an experimental aerial spraying program. The Government approved the plan in 1952 and costs were shared between the Province and IP in the ratio of one third to two thirds (Affidavit of K. B. Brown, FPL-Exhibit 13, ¶2). International Paper managed the project, which in part involved building an airstrip and other facilities upon Crown lands. These facilities came to be known as "Budworm City." B. W. Flieger, "Forest Protection Limited, Company Organization and Background" (FPL-Exhibit 2).

The Forest Biology Division of the Canada Department of Agriculture recommended that the spraying be confined to the area of high hazard, and that DDT be used at the rate of one pound per acre. These recommendations were followed, and the results were perceived as being highly satisfactory--90% of the insects that would otherwise have survived were eliminated. Bridges Bros. Ltd. v. FPL(FPL-Exhibit 1).

The trial spray program impressed several other industrial landowners whose timber stands were also being attacked by the budworm, namely: Bathhurst Pulp and Paper Co. Ltd. (now Consolidated Bathurst Co.), Fraser Companies Ltd., and J. D. Irving Ltd. Representatives of these companies, together with representatives of New Brunswick IP and the Province, gathered in Fredericton in September of 1952 and formed Forest Protection Limited. Flieger, supra (FPL-Exhibit 2).

Organizational Structure

Forest Protection Limited (FPL) is a Letters Patent company (the equivalent of a Maine General Business Corporation), incorporated under the New Brunswick Companies Act, Chapter 88 of the Revised Statutes, 1927; Chapter 33 of the Revised Statutes, 1952. [FPL-Exhibit 2(a)]. The purpose of the corporation, as expressed in its charter, is simply "To protect the forests." (FPL-Exhibit 3). The chief place of business of the company is in Fredericton, the Provincial capital.

Letters Patent (the corporate charter) were originally issued to FPL on September 6, 1952 (FPL-Exhibit 3). Supplementary Letters Patent, which authorized the issuance of 500 shares of Common stock having a par value of $10.00 each, rather than 50 shares having a par value of $100.00 each as provided in the original charter, were issued March 30, 1953. (FPL-Exhibit 4).

The company is a close corporation; that is to say, no shares of capital stock may be transferred to any person not being a shareholder, except under limited conditions not here relevant. Corporate Bylaws (FPL-Exhibit 5). FPL operates on a non-profit basis.

As a Letters Patent Company, FPL enjoys no special privileges or immunities, except as may arise by virtue to its relationship to the Province. This relationship shall be explored in greater detail hereafter.

Ownership

The original stockholders were the Province of New Brunswick and four companies engaged in the pulp and paper industry in New Brunswick: Bathhurst Pulp and Paper Co. Ltd., Fraser Companies Ltd., J. D. Irving Ltd., and New Brunswick International Paper Company. Of the 100 shares originally issued, 92 were held by Her Majesty in the right of the Province (or by nominees in her employ), and the remaining 8 shares were issued at the rate of 2 each to the nominees of the four industrial "sponsors" as they are customarily called. FPL Stockholder Records; see also The Queen

v. FPL, (1960) Ex. C.R. 263 (FPL-Exhibit 6).

The total number of shares currently issued and outstanding is 218, of which Her Majesty in the right of the Province holds 186.

An additional 15 shareholders (each of whom is on the Board of Directors) are designated in the corporate records as representing the Province.* They are:

- R. E. Hanusiak, Deputy Minister of Natural Resources;
- Dr. F. E. Webb, Special Advisor, Department of Natural Resources;
- Honorable J. W. Bird, Minister, Department of Natural Resources;
- Honorable J. M. Simard, Chairman, Treasury Board;
- Honorable Malcolm MacLeod, Minister, Department of Agriculture and Rural Development;
- Honorable D. J. Kipping, Minister, Department of Environment;
- Honorable Brenda Robertson, Minister, Department of Health;
- Dr. T. R. Tarn, Past President, Conservation Council of New Brunswick;
- Dr. T. W. Ker, Dean, Faculty of Forestry, University of New Brunswick;
- R. S. Watson, Coordinator, Policy and Planning, Department of Natural Resources;
- E. T. Owens, Assistant Deputy Minister, Department of Natural Resources;
- Dr. R. M. Bergh, Nominee of the New Brunswick Medical Society;
- R. A. Redmond, Director, Forest Management Branch, Department of Natural Resources;
- J. Levy, Nominee of the New Brunswick Federation of Wood Producers;
- H. J. Irving, Managing Director, Forest Protection Limited.

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*Certain shareholders such as Dr. Tarn, Dr. Ker and Dr. Bergh may not consider themselves as "representatives of the Province," since they have no affiliation with the Province.

The remaining 17 shares are held by nine (9) private companies, as follows:

- Consolidated Bathurst Ltd. (Bathurst)- 2 shares;
- Fraser Companies Ltd. (Edmundston) - 2 shares;
- Irving Pulp & Paper Ltd. (Saint John) - 2 shares;
- New Brunswick International Paper Co. (Dalhousie) - 2 shares;
- Acadia Forest Products Ltd. (South Nelson) - 2 shares;
- Georgia Pacific (Woodlands, Maine) - 1 share;
- MacMillan Rothesay Limited (Saint John) - 2 shares;
- St. Anne - Nackawic Pulp & Paper Company Ltd. (Nackawic) - 2 shares;
- Boise Cascade Canada Ltd. - 2 shares.

The number of the industry sponsors has grown and changed over the years principally as a result of two factors: (1) the predominance of Crown lands under license to private landowners and (2) the path of the budworm infestation.

The total land area in the Province, including waste land, is 18,082,000 acres. Of this, 7.424 million acres belong to the Provincial Government. The Federal Government owns 331,000 acres. 3.717 million acres are in large freehold ownership (greater than 500 acres) and 4.743 million acres are in small freehold ownership. 387,000 acres are covered by water. (All figures supplied by R. E. Hanusiak, Deputy Minister, Department of Natural Resources).

The total forest land is 15.594 million acres of which 15.311 million are considered productive forest land and 283,000 non-productive. 7.080 million acres (slightly less than 50%) of the productive forest land is owned by the Provincial Government, 323,000 acres are Federal Crown lands, 3.612 million acres are

large freehold lands and 4.579 million acres are small freehold lands. (All figures supplied by R. E. Hanusiak.)

The heaviest concentrations of Provincial ownership are found in the northern areas. See topographical map (FPL-Exhibit 7). In the northern one-third of the Province there are relatively few large freehold blocks of land (i.e., lands held in private ownership) although there is a ribbon of small freehold (less than 500 acres) along the main valleys. By contrast, in the southern one-third of the Province, there are many large freehold blocks (greater than 5,000 acres).

The Crown does not conduct logging operations on its own lands. Instead it issues licenses to privately owned pulp and paper companies to harvest the timber.

Initially, the budworm infestation was concentrated in the northern sectors of the Province where limits (public land) had been licensed to New Brunswick IP, Fraser Companies Ltd., Bathurst Pulp and Paper Co. Ltd. (now Consolidated Bathurst Co.), and J. D. Irving Ltd. Moderate to severe infestation extended southward during the mid-1950's, but it receded in the southern areas during the late 1950's. By 1967, however, the budworm had spread to the extreme southern portion of the Province where Rothesay Paper Corp. (now MacMillan Rothesay Corp.) had established a mill at St. John (the mill was not in existence when FPL was first formed in 1952). Rothesay Paper Corp., held leases to Crown lands and became a stockholder in 1967. The story is similar with respect to the St. Anne-Nackawic Pulp & Paper Co. Ltd., who had established a mill at Nackawic in Central New

Brunswick. St. Anne-Nackawic became a stockholder in 1969.

Miramichi Timber Resources Ltd. (now Boise Cascade) purchased the Fraser Companies mill at Newcastle, located in northeast New Brunswick, and became a stockholder in FPL in 1970. Acadia Pulp and Paper Ltd., had built a mill at Chatham (next to Newcastle) in the early 60's and became a stockholder in 1971. Both of these companies held leases to Crown lands. Georgia Pacific became a stockholder in 1974. (All information from stock record books and from an interview with H. J. Irving).

While the foregoing eight companies comprise the major landowners and major lessees of Crown lands in the Province, there are others who have not become sponsors. In fact, attracting sponsors has been somewhat of a problem for FPL over the years. The subject of financing the industry share of the program was a frequent subject of discussion at the Directors' meetings.* Among those invited to join, who did not do so were South Nelson Forest Products Corp. (a sawmill), (Minutes Oct. 19, 1965); Nashwaak Pulp and Paper (Minutes Oct. 19, 1965); St. Croix Pulpwood Ltd., Harry A. Corey (sawmill) and Ashley Colter (sawmill) (Minutes Nov. 8, 1966); Airscrew Weyrock, Fundy Forest Products and Pejebscot Paper Division of Hearst Corp. (Minutes Nov. 5, 1971). Some of these individuals and companies did, however, on occasion, make a financial contribution to FPL. (Minutes Oct. 19, 1965).

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*E.g., see Minutes of Oct. 16, 1953; Dec. 16, 1953; April 30, 1956; May 14, 1958; Sept. 18, 1959; Oct. 1, 1964; June 29, 1965; Oct. 19, 1965; Nov. 8, 1966; April 20, 1967; Oct. 16, 1968; Aug. 28, 1970; Dec. 4, 1970; Nov. 5, 1971; April 18, 1975.

While sponsorship has at all times been voluntary, the Province has from time to time exerted pressure on industry to participate (Minutes Nov. 8, 1966; April 20, 1967). Inasmuch as the Government owns nearly 50% of the productive forest land in the Province, and it would be practically impossible for the pulp and paper companies to secure sufficient product for their mills without the right to cut upon Crown lands, it is not surprising that all major landowners (or limit holders) have become FPL stockholders.

Board of Directors

According to the bylaws, the affairs of the company are to be managed by a Board of Directors, each member of which, at the time of his election and throughout his term of office, must be a stockholder of at least one fully paid up share of capital stock in the company (FPL-Exhibit 5, ¶ 13). The term of each director is one year (FPL-Exhibit 5, ¶14).

For the first 18 years of the company's existence there were 10 directors, and five constituted a quorum. In 1970, 1972 and 1974 the number of directors was increased to 19, 20 and 22, respectively, with no change in the quorum provisions. In 1975 the Board was increased to 23 members and the quorum requirements increased to six. In 1976 the Board was decreased to 21 members with no change in quorum requirements. And in 1976 the Board was again increased to 22 members and the quorum requirements increased to 11 members. (Corporate Records; and see Affidavit of Harold E. O'Brien, FPL-Exhibit 8). In 1978 the Board was increased to

24 members, and 12 members constitute a quorum.

Although the Province has owned more than a 85% controlling interest in FPL from inception, it was not until 1976 that it exercised its control in the election of Board members.

Of the original Board, four members were company Presidents, A. Crabtree (Fraser Companies Ltd.), K. C. Irving (Irving Pulp & Paper Co. Ltd.), V. E. Johnson (Canadian IP) and R. L. Weldon (Bathurst Pulp & Paper Co. Ltd.); one was a General Manager, G. C. Chalmers; and two were Woodlands Managers, F. A. Harrison (Canadian IP) and R. G. MacFarlane (Fraser Companies Ltd.). J. K. Irving (Irving Pulp & Paper Co. Ltd.) was also on the original Board. The Province seated only two representatives on the original Board, W. W. McCormack and J. H. Ramsy , both of the New Brunswick Department of Lands and Mines (the predecessor to the Department of Natural Resources) (Corporate Records).

In 1975, the industrial sponsors held from 18 to 20 positions on the Board (depending whether one counts FPL personnel among this group). The Department of Natural Resources placed three representatives on the Board (Corporate Records).

In August, 1976, largely as a result of increased public opposition to the spray program and certain other events described below, the Government exercised its control as the predominant shareholder and seated a majority of public officials and other "public" members upon the Board.

The current Board of Directors consists of 24 members, 13 of whom are public officials or representatives of the general

public. These include the Minister of the Department of Natural Resources, the Deputy Minister of the Department of Natural Resources, the Director of the Forest Management Branch of the Department of Natural Resources, a Coordinator of Policy and Planning of the Department of Natural Resources, a Special Advisor to the Department of Natural Resources, the Minister of the Department of Environment, the Minister of the Department of Agriculture and Rural Development, the Minister of the Department of Health, the Chairman of the Treasury Board, a representative of the Conservation Council of New Brunswick, a representative of the Agriculture Canada Research Station, Research Branch and the Dean of the Faculty of Forestry of the University of New Brunswick (Corporate Records).

Each of the industrial sponsors currently has one (1) representative on the Board.

During the early years of FPL's operation, the company was, for all practical purposes controlled by the industrial sponsors and particularly Canadian I.P. During this period, industry managed Crown Lands as if they were their own. Besides providing the impetus for the creation of FPL, Canadian I.P. dispatched several of its employees to FPL. B.W. Fleiger, Manager until 1972 and President from 1972-1975; F. A. Harrison, Vice-President from 1959-1967; and S. A. Aggiman, Treasurer 1954 and Secretary-Treasurer from 1955-1971, were all Canadian I.P. employees. Mr. Fleiger maintained an office at Canadian I.P.'s headquarters in Montreal until 1976. (Interview with H. J. Irving)

Industry control of the company was so pronounced that on at least one occasion, when the directors were deliberating whether to approve the spray program, the two directors representing the Province were asked to withdraw and did so.

> "After discussing various alternatives and their implications, the Chairman asked the Hon. Minister of Lands and Mines (predecessor to the Department of Natural Resources) if he was prepared to go before the Treasury Board with the company's proposal and he replied that he would be glad to follow the decision of the Directors.
>
> The Chairman then referred to the absence of the Bathurst Pulp and Paper Company representatives and asked that the two directors representing the Province be excused from voting. The request was acceded to and the Provincial representative withdrew". (Corporate Minutes, Minute Book 2, Directors' Meeting Nov. 8, 1963)

Throughout most of this period, there was little opposition to the spray program, and most landowners were pleased to have their timber stands sprayed by FPL. (Bridges Bros. Ltd. v. FPL.) However, during the late 1960's and early 1970's as the path of the budworm spread to lands under private ownership, concern over the environmental consequences of spraying increased, and the question of FPL's authority to spray private lands, and liabilility therefor surfaced. (Minutes, August 28, 1970; Nov. 24, 1972)

During the 1970's, FPL was confronted with major litigation concerning alleged damage to the environment and to human health arising out of the spray program, and critics of the program began receiving more attention from the media.

Disagreements between the industry sponsors and the Province began to develop with respect to the operation of the

program. In 1975, FPL overspent its budget by over $1,000,000 of which over $600,000 was the government's share. (Affidavit of R. E. Hanusiak, FPL-Exhibit 21). At the meeting of the Directors on April 30, 1976, the Directors, a majority of whom were then company representatives, voted to abstain from spraying non-member lands, and those of non-consenting owners, in the absence of an indemnity from the Province. (Minute Book, Directors Meeting April 30, 1976)

This action placed the Provincial Government in the embarrassing position of having to explain to the public how a company in which it owned a controlling interest and to which it provided two-thirds of the funding could dictate whether and to what extent there would be a protection program against budworm in the Province.

At the Annual Meeting held on August 11, 1976, Deputy Minister Hanusiak nominated a new slate of 12 directors who would represent the Province's interests. The official explanation for this action was as follows:

> "Mr. Hanusiak in reply to questions from industry regarding the change in shareholders stated that since the shares of the company are held in a majority portion by the Province of New Brunswick he felt that the Province should have majority representation on the Board of Directors." (Minutes of Annual Meeting, August 11, 1976)

Since August 11, 1976, FPL has been tightly controlled by the public representatives on the Board as shall be discussed in greater detail hereafter.

Officers

The Bylaws specifically provide for the offices of Chairman of the Board, President, Vice-President, Secretary and Treasurer, any two of which may be held by the same person. Neither the Secretary nor the Treasurer need be a director of the Company, but presumably, the other officers must also be directors. (By-laws, ¶22, FPL-Exhibit 5)

The Chairman of the Board presides at all meetings of the shareholders, and of the Board, and is charged with the general supervision of the affairs of the Board. (Bylaws, ¶23)

The President is charged with the general supervision of the affairs of the company. (Bylaws, ¶24)

The Vice-President is charged with the same responsibilities as the President, and acts in the President's absence. (Bylaws, ¶25).

The Secretary and Treasurer perform the functions usual to those offices. (Bylaws, ¶¶26, 27)

The operational head of the company is its Managing Director, who oversees all aspects of the company's program, and who is instrumental in preparing and carrying out the spray program.

During most of its existence, the company was managed and operated by Mr. B. W. Flieger, an employee of Canadian International Paper Company. Mr. Flieger was Manager of FPL from its formation in 1952 until becoming Manager Director and eventually President until 1975 when H. J. Irving became President.*

*Mr. Irving had worked for FPL during the early years while he was an employee of New Brunswick I.P.

In 1972, the office of Chairman of the Board was established. Since 1973, that office has consistently been held by a public official, and since 1976 the offices of Chairman, President and Secretary have been held by public officials. The Minister of the Department of Natural Resources serves as Chairman, the Deputy Minister as President and an employee of the Department as Secretary.

Employees

The company currently employs 29 persons on a full time basis. There is the managing director, a treasurer, an operations manager, an accountant, an office manager, two (2) entomologists (Masters degrees), six (6) persons having entomological background who do population assessment and surveys, a draftsman, a paymaster (who also helps out with the preparation of maps), a chief pilot, a chief engineer, an internal operations auditor, three (3) mechanics who work on loading facilities, a navigator, two (2) aircraft parts employees, a truckdriver, a secretary, a warehouse foreman, a mechanical superintendent (ground) and one long time employee who functions in a general advisory capacity. Organizational charts showing all employees are annexed hereto as FPL-Exhibits 9(a) and 9(b).

In 1974 the company had only 11 full-time employees, two of whom were on the payroll of industrial sponsors (Minutes, Dec. 17, 1974, and see also Minutes, Jan. 15, 1970).

In 1977 total salaries and wages including both full time and part-time employees, were $866,311. In 1978 the figure was $999,120. (Auditor's Report as at Oct. 31, 1978, FPL-Exhibit 22)

Assets

Immediately after the company's formation, the Directors authorized the construction of airstrips to be used in the spray program (Minutes Sept. 24, 1952). By 1956, the company had constructed 11 airfields (Minutes Sept. 23, 1956). Today FPL actually owns only three airstrips, two of which have for all practical purposes been abandoned. Eleven others, although built by FPL, are either on public lands and are the property of the Crown or are on private lands and are the property of the landowner. (FPL-Exhibit 20, Map of Airstrips throughout Province)

In 1974, FPL purchased 11 TBM planes to use for spraying. More planes were purchased in 1975 and 1976 so that the present fleet consists of 22 aircraft.

FPL's balance sheet as of October 31, 1978 showed:

Land	$132,565
Buildings and mobile units	451,000
Aircraft	601,119
Equipment	663,278

(Source: Auditor's Report, FPL-Exhibit 22)

Finances

Funding for FPL's operations is provided through a cost sharing agreement between industry and the Province. The industry sponsors have annually contributed approximately one-third of the total cost regardless of the number or makeup of industry sponsors

involved. The Province has assumed the remaining two-thirds.

From 1953-1968 Ottawa reimbursed the Province for 50% of its two-thirds share (FPL-Exhibit 2, and Aerial Control of Forest Insects in Canada (FPL-Exhibit 10). Since 1968, federal participation has continued to diminish, and presently there is no direct federal funding for the program. In 1975, the Federal Government, through the Department of Regional Economic Expansion, agreed to the use of $6,000,000 in federal funds for the construction of woods roads, although the purpose of this construction was not solely for combatting the budworm directly through harvesting. (Interview with Dr. M. M. Neilson and see FPL-Exhibit 10). Pursuant to a cost-sharing agreement between the Federal Government and the Province, over $5,000,000 was contributed in 1976 for spruce budworm spraying (Letter from H. E. Hanusiak dated June 3, 1979, FPL-Exhibit 25).

As the territorial dimensions of the program have continued to expand and the spray operations have benefitted more diverse interests, such as lumber mill owners and small landowners, the industry sponsors have expressed increased dissatisfaction about the absence of financial support from these non-member groups.

Shortly after the company was formed the industry representatives on the Board made it clear that their voluntary financial support of the program was predicated upon the understanding that they would not be taxed for the Province's share of the costs. The minutes of the January 23, 1953 Director's meeting state that:

> "...the Province would not impose any new taxation on the participating companies for the purpose of raising the province's share of the funds required by Forest Protection Limited." (Minutes of Directors Meeting, Jan. 23, 1953)

The subject of increasing the number of industry participants was frequently discussed during the 1950's, 1960's and early 1970's. (Minutes of Meetings Jan. 23, 1953; Oct. 16, 1953; Dec. 16, 1953; April 30, 1956: at this meeting, management was instructed to prepare a list of all holders of Crown leases or forest lands of 20 square miles or more and for the President to canvas these companies for a contribution on the basis of one-third of FPL's operating costs per acre; Oct. 19, 1965; June 24, 1966; Nov. 8, 1966 Minutes report a letter having been sent out to holders to timberlands in excess of 100,000 acres, suggesting a financial contribution on the basis of their holdings. The sponsors voted that any contributions "shall be credited to the four original industrial participants in the proportion in which they have contributed to the cost of spraying operations"; Apr. 20, 1967; Oct. 16, 1968; Aug. 28, 1970; Nov. 5, 1971; April 18, 1975: suggestion to broaden industrial contributing base to include additional softwood using industries other than those in pulp and paper industry.)

In recent years, the Province has agreed to defray the costs of the program attributed to these groups, so that in 1978 the industrial sponsors actually contributed only 30.18% of the total costs and the remainder was assumed by the Province.

Until recently, the industrial sponsors decided each year among themselves how to allocate costs as between them. The manner in which costs were subscribed was of passing concern to FPL so long as it continued to receive the one-third from industry. However, there has not always been unanimity among the industrial sponsors with respect to the formula for funding the industry share.

During the 1950's and most of the 1960's, costs were shared solely on the basis of acreage. In 1967, K. C. Irving suggested for the first time that wood usage and consumption also be considered in arriving at a fair distribution of costs among industry members (Minutes, April 20, 1967; July 18, 1967). In 1970 a committee was appointed to develop a new funding formula (Minutes, Dec. 4, 1970), but the traditional method of funding based upon acreage continued. (Minutes, Nov. 5, 1971)

In 1974 a new funding approach was agreed upon. Industrial cost sharing was based upon consumption of round wood and chips by the pulp and paper mills for the calendar year 1973, the usage figure (in cunits) to include only wood originating in New Brunswick. Each company initially provided FPL with $25,000 and the balance of the sponsor's respective shares would be calculated on consumption figures submitted by the companies involved. (Minutes Aug. 1, 1974)

Several companies expressed dissatisfaction with the formula based solely on consumption, and in 1976, Dr. J. W. Ker (Dean of the School of Forestry at the University of New Brunswick,

and a recently elected "public" member of the Board) was appointed to look into the question (Minutes, Sept. 10, 1976). Dr. Ker developed a two-part formula that took both acreage owned (or leased) and wood consumption into account[(FPL-Exhibits 11(a) and 11(b)].

The division of costs among the industry shareholders is currently based upon a formula devised by the Department of Policy and Planning (Department of Natural Resources) by Robert S. Watson [FPL-Exhibits 12(a) and 12(b)]. The formula is based principally upon two factors, proportionate mill consumption of wood from Crown land, and the proportionate amount of freehold ownership of each company. Tables 1, 2, 3 and 4 show the proposed allocation of costs for 1979.

TABLE 1

LAND OWNERSHIP - ACREAGE[2)]

('000 Acres)

Type	Productive Forest Land	Forested Land	Total[2)] Land	% Share
Provincial Crown	6,809	6,913	7,224	45.5313
Large Freehold	3,422	3,459	3,589	22.6207
Small Freehold	4,768	4,856	5,053	31.8480
Sub-total	14,999	15,228	15,866	100.0000
Federal	--	--	349	
Total			16,215	

Source: Prov. Forest Inventory

F.P.L. COMPANIES - FREEHOLD[1)]

	'000 Acres	% of 15,866,000 A
Frasers	758	4.7775
NBIP	219	1.3803
C-B	25	0.1576
MTR	22	0.1387
Acadia	16	0.1008
St. Anne	81	0.5105
M-R	185	1.1660
Irving	1,321	8.3260
G.-P.	375	2.3635
F.P.L. Cos.	3,002	18.9210
Other Large Owners[3)] >10,000 A	300	1.8908
Small Holdings & Residual	5,340	33.6569

1) Acreage provided by each company.

2. All Forest Land plus "Waste" excludes cultivated land and occupied la

3) Est. from Tax Rolls.

TABLE 2 Allocation of Crown Land Share of Total (45.53%) By Crown Wood Consumption

	(1) R'dwood, Softwood* Used ('000 cunits)	(2) % of Crown Wood	(3) % of Total Costs
F.P.L. Co's	1,060.7	92.28	42.02
Frasers	205.1	21.77	9.91
N.B.I.P.	123.6	13.12	5.97
C - B	35.3	3.74	1.70
Boise-Cascade	169.0	17.93	8.17
Acadia	81.0	8.60	3.91
St. Anne	44.0	4.67	2.13
M - R	109.4	11.61	5.29
Irving	102.2	10.84	4.94
G - P	0	0	0
Other**	72.7	7.72	3.51
TOTAL	942.3	100.00	45.53

* All softwood except Cedar and W. Pine, consumed from Crown land based on information provided to the Department of Natural Resources by the firms in the 1977 survey of wood demand.

(2) Column 1 / 942.3

(3) Column 2 x 45.53%

** Wood consumed by non-member companies.

Table 3

Proposed Cost-Sharing for Budworm Spray Program 1979

	(1) Percent Share For Freehold land	(2) Percent Share for Crown	(3) Total Share	(4) 50% Subsidized Share 1978	(5) 1979
F.P.L. Co's	18.92	42.02	60.94	30.18	30.47
Frasers	4.78	9.91	14.69	7.56	7.345
N.B.I.P.	1.38	5.97	7.35	3.90	3.675
C - B	0.16	1.70	1.86	1.41	0.930
M.T.R.	0.14	8.17	8.31	3.27	4.155
Acadia	0.10	3.91	4.01	1.64	2.005
St. Anne	0.51	2.13	2.64	1.07	1.320
M - R	1.17	5.29	6.46	2.25	3.230
Irving	8.33	4.94	13.27	7.88	6.635
G - P	2.36	0	2.36	1.18	1.180
*Others	35.55	3.51	39.06	69.82	69.53
- Other landowners and firms	35.55	3.51	39.06	19.82	19.53
Crown Subsidy	-	-	-	50.00	50.00
TOTAL:	54.47	45.53	100.00	100.00	100.00

* Province's Share.

(1) Taken from Table 1.
(2) Taken from Table 2, column 3.
(3) Column (1) plus (2).
(4) Last year's share (1978).
(5) Proposed shares for 1979.

TABLE 4

FOREST PROTECTION LIMITED

ASSESSMENT ALLOCATION FOR 1979 BASED ON PERCENTAGES APPROVED AT DIRECTORS' MEETING DECEMBER 14, 1978

Name of Participant	Percentage for 1979	Amount for 1979	Cr. Dec.15, Call	Balance for 1979	Feb, 15 Call	Mar, 15 Call	Apr. 15 Call	May 15 Call	June 15 Call
Acadia Forest Products Ltd.	2.005	172,430.00	10,025.00	162,405.00	20,050.00	30,075.00	40,100.00	40,100.00	32,080.00
Consolidated Bathurst Ltd.	0.930	79,980.00	4,650.00	75,330.00	9,300.00	13,950.00	18,600.00	18,600.00	14,880.00
Fraser Companies Ltd.	7.345	631,670.00	36,725.00	594,945.00	73,450.00	110,175.00	146,900.00	146,900.00	117,520.00
Georgia Pacific Corp.	1.180	101,480.00	5,900.00	95,580.00	11,800.00	17,700.00	23,600.00	23,600.00	18,880.00
Irving Pulp & Paper Co. Ltd.	6.635	570,610.00	33,175.00	537,435.00	66,350.00	99,525.00	132,700.00	132,700.00	106,160.00
K&Millan Bathesay Ltd.	3.230	277,780.00	16,150.00	261,630.00	32,300.00	48,450.00	64,600.00	64,600.00	51,680.00
The N.B. International Paper Co.	3.675	316,050.00	18,375.00	297,675.00	36,750.00	55,125.00	73,500.00	73,500.00	58,800.00
The Ontario-Minnesota Pulp & Paper Company Ltd.	4.155	357,330.00	20,775.00	336,555.00	41,550.00	62,325.00	83,100.00	83,100.00	66,480.00
St. Anne Nackawic Pulp & Paper	1.320	113,520.00	6,600.00	106,920.00	13,200.00	19,800.00	26,400.00	26,400.00	21,120.00
Province of New Brunswick	69.530	5,979,580.00	347,650.00	5,631,950.00	695,300.00	1,042,950.00	1,390,600.00	1,390,600.00	1,112,480.00
TOTALS	100.005	8,600,430.00	500,025.00	8,100,405.00	1,000,050.00	1,500,075.00	2,000,100.00	2,000,100.00	1,600,080.00

P. M. Boudreau
January 19, 1979

Control of the Spray Program

A. Statutes and Regulations

Until recently, there was little in the way of governmental regulation of pesticide application or use in New Brunswick. While the Pest Control Products Act (now R. S. of Canada, 1970, C. P-10) was in force since 1939, this act was utilized principally for registration and labelling of pesticides. (FPL-Exhibit 26). Accordingly, during the first 22 years or so of FPL's existence, there were no formal regulations governing the application of the chemicals FPL had selected for use in the spray program (Minutes, April 18, 1975).

In 1974 this situation changed with the issuance of Trade Memorandum 104. This protocol, which was issued under authority of the Pest Control Act, applied in those Provinces where there was no legislation requiring an application to regulatory authorities to conduct a forest pest control project, and where there was no provision for interdisciplinary review and approval of that project.

T-104 required applications to be made to the District Supervisor of the Plant Products Division, Agriculture Canada, who in turn arranged for interdisciplinary review from federal and provincial authorities. The Interdisciplinary Committee consisted of a Director of the Maritimes Forest Research Center; a representative of the Canadian Wildlife Service; Chief, Water Quality Branch Programs, Atlantic Region, Environment Canada; Head, Ecological Effects Section, Environment Protection Service,

Environment Canada; a representative of the Department of National Health and Welfare; a representative of Agriculture Canada; a Special Advisor to the Department of Natural Resources; a representative of the Department of Natural Resources; a representative of the Fish and Wildlife Branch, Department of Natural Resources; the Director, Environment Services Branch, Department of Fisheries and Environment; Director, Public Health Inspection Branch, Department of Health; a Pesticide Specialist, Plant Industry Branch, Department of Agriculture and Rural Development; District Supervisor (Maritimes), Plant Products Division; Forester, Forest Branch, Department of Natural Resources; a representative of the Biological Station, Environment Canada.

As amended in 1975, T-104 required the applicant to provide the following information [FPL-Exhibits 16(a) and 16(b)]:

> a) A map showing the area to be sprayed, together with a statement of the purpose and justifications for the treatment, including the level of infestation and the expected benefits;
>
> b) Name of each control product to be used and reasons for selection, together with the dosage rate, and reasons for the dosage rate. If selection of the product and dosage rate was recommended by another party, the name and qualifications of that party. And, if monitoring to determine the effect of the program is to be carried out by the party applying the spray, the application should so state.

c) A description of the application equipment and why the particular type was selected for the project.

d) A description of the systems to be used for guidance.

e) Safety precautions to be taken to protect personnel involved in the project, the public at large and to avoid environmental damage.

f) Qualifications of key personnel involved in the project.

In 1973, the Province passed the Pesticides Control Act, R.S.N.B. 1973, C. P-8 (proclaimed 1976).(FPL-Exhibit 27) The Act creates a Pesticides Advisory Board composed of seven members appointed by the Lieutenant-Governor in Council as follows:

a) the Director, as Chairman;

b) two members from the Department of Agriculture and Rural Development;

c) two members from the Department of Fisheries and Environment;

d) one member from the Department of Health; and

e) one member from the Department of Natural Resources [C. P-8, § 4(1)].

General supervision of the Act is vested in the Minister of Agriculture and Rural Development, who, on advice of the Board may "restrict or prohibit the sale, supplying or use of any pesticide and may impose such conditions with respect to the sale, supplying or use of the pesticide as he considers necessary"[C. P-8, § 8(1)].

The Act provides for the issuance of a vendor's license and a pesticide applier's license [§ 10(1)] and prohibits sale or application of pesticide without such a license [§§ 14, 15 and 16].

The Act authorizes the Board, with the approval of the Minister of Fisheries and Environment, to issue a permit authorizing the application of a pesticide to a body of water [§ 12(1)]. "Body of water" is defined as including "a natural or artificial lake, pond, river, bay, marsh, shore water, creek, brook or stream" [§1].

The Regulations require the applicant for a permit to submit information concerning:

1) the pesticide to be used;

2) the area to be treated;

3) the purpose of the pesticide application;

4) the equipment to be used in connection with the application;

5) the detoxification procedures for the pesticide;

6) the weather, temperature and other conditions under which the pesticide application is to be carried out; and

7) such other information as required by the Board.

[Regulation 77-20 § 14(2), FPL-Exhibit 28]

An example of an application submitted by FPL is set forth in the Appendix. [FPL-Exhibit 17(a)]

Under Regulations promulgated under the Act, two permits are required from the Pesticides Control Board in order for FPL to carry out its spray program: one permit is required to apply pesticides to the forest, and a second permit is required to apply pesticides to a body of water. In the application for the latter permit, FPL seeks permission to apply pesticides to all bodies of water within the area delineated for the 1979 program with the proviso that the pesticide will not be directed toward the control of any marine organism and that FPL will not intentionally spray any body of water except where such spraying is necessarily incidental to the spraying of the surrounding forests. [FPL-Exhibit 17(b)]

Since the passage of the Provincial Pesticides Control Act, T-104 technically no longer applies. Nevertheless, FPL has continued to subject its spray program to scrutiny before the federal Interdisciplinary Committee prior to submitting its application to the Provincial Pesticide Advisory Board (Interview with H. J. Irving).

Authority to carry out a spray program in New Brunswick flows from the Forest Service Act. The pertinent provisions of this Act will be discussed in the following section.

B. Formal Agreements

Shortly after FPL was formed, the Federal Government was requested to support the spray program, and Ottawa agreed to provide financial assistance to the extent of one-third of the

cost of the operation with the understanding that the Province and the participating pulp and paper companies would assume the other two-thirds of the costs.

An agreement dated April 28, 1953, was signed on behalf of Canada by the Minister of Resources and Development of Canada, and on behalf of the Province by the Minister of Lands and Mines. Among other things, the agreement provided that:

1) the contribution of Canada, not exceeding $3,000,000, would be applied to spraying expenditures between September 13, 1952, and March 31, 1956;

2) the Province would furnish the federal Minister with such plans, programs and other information as he might require regarding the spraying and afford him every facility for inspection and examination of the work;

3) the agreement would not be construed so as to vest in Canada any proprietory interest in the project; and

4) the Province would indemnify and save harmless Canada of, from and against all claims of whatsoever nature arising from and out of anything done under the agreement. The Queen vs. FPL, (FPL-Exhibit 6).

During 1953, 1954, 1955 and a short period in 1956, FPL conducted spraying operations in the northern sector of New Brunswick, over an area of approximately 4,000 square miles. However, in the summer of 1955, it was observed that the infestation had spread south beyond the limits of the area covered by the 1953

agreement, and the Province requested that Canada agree to an extension of the limits of the area to be sprayed and to an extension of the period of the agreement.

A new agreement dated August 24, 1955, was entered into which set no limits on the area to be sprayed, with the proviso that the program for each year would be subject from time to time to the approval of representatives of both Canada and the Province. The new agreement also extended the term of the original agreement for a period of three years with the understanding that the total cost to the federal government for past and future spraying would not exceed the original amount of $3,000,000. The Queen v. FPL.

In order to give FPL authority to carry out the spray program, an Order-in-Council 53-376 was issued by the Lieutenant Governor in Council on May 7, 1953. This Order authorized the Minister of Lands and Mines (the predecessor to the Minister of Natural Resources) to engage FPL to conduct annual spray operations under authority of the Forest Service Act, R.S.N.B. 1952, C. 93, § 3. Affidavit of K. B. Brown (FPL-Exhibit 13).

Pursuant to the Order-in-Council, an ageeement was entered into between the Government of the Province of New Brunswick and FPL, which provided, inter alia:

1. FPL agreed to undertake and manage an aerial spray operation in the northern part of the Province designated to cover at least 1,000,000 acres in the spring of 1953 and such acreage as agreed upon between the parties during the springs of 1954 and 1955. [Affidavit of K. B. Brown (FPL-Exhibit 13)]

2. FPL agreed to furnish the Minister of Lands and Mines of the Province, and through him, to the Minister of Resources and Development of Canada, such plans, programs and other information relating to the aerial spray operation as they may require.

3. FPL agreed to afford the two ministers and their representatives every facility for the inspection and examination of work carried out in connection with the spray operation and to make available for examination and audit such records of expenditures and vouchers as they may require.

4. Subject to the terms of the agreement and to necessary funds being appropriated by the Legislative Assembly of the Province, the Province agreed to pay to FPL, two-thirds of the amount of the expenditures of the aerial spray operation, with total payments not to exceed $6,000,000.

5. The Province was not liable to make any contribution for work done or materials supplied other than by contract unless the Minister of Lands and Mines approved such material and the performance of such work. And, the Province was not liable to make any contribution for work done or materials supplied under contract unless the Minister approved, before the contract was awarded, the method of awarding the contract and its award and unless the Minister was satisfied that in each case the contract had been satisfactorily fulfilled. (In fact, up until 1976, FPL rarely secured ministerial approval. Interview with H. J. Irving.)

6. The Province was not liable to make any payment with respect to a request for payment by FPL received by the Minister after February 29, 1956. [Affidavit of K. B. Brown (FPL-Exhibit 13)]

The terms of this agreement were continued in force during the period 1956-1975 on a year to year basis by oral agreement between the Minister and FPL. During this period the cost of the program was shared in the same ratio, and each year the then estimated cost of the Government's share was included in the estimates for the Department of Natural Resources which were submitted to and approved by the Legislature. [Affidavit of K. B. Brown (FPL-Exhibit 13)]

In recent years the Legislature has debated the estimates for the spray program and the spray proposal developed by FPL has been made available to members of the Legislature on request. (Hanusiak Affidavit, FPL-Exhibit 21)

Since 1976, the spray program has been conducted pursuant to annual written agreements between FPL and the Minister of Natural Resources for the Province. The statutory authority for this arrangement may be found under section 3 of the Forest Service Act, chapter F-23 of the Revised Statutes of 1973 (FPL-Exhibit 29), which provides:

> "3(2) Subject to the approval of the lieutenant Governor in Council, the Minister [of the Department of Natural Resources] may enter into agreements with the Government of Canada or with any person to undertake and carry out operations for protecting the forests from fire, insects and disease; and the Minister may delegate to such party any authority as may be deemed necessary for the effectual carrying out of the agreement."

Pursuant to this law, the Lieutenant Governor in Council issues an order that (1) approves the proposed aerial spray program, (2) authorizes the Minister of Natural Resources to enter into an agreement with FPL to carry out the proposed spray program, and (3) indemnifies FPL to a limited extent for carrying out the program. The precise terms of the indemnity have, for the past three (3) years, been as follows:

> "The Province agrees to indemnify Forest Protection Limited with respect to claims for damages for injury to the health of any person directly caused by the application of chemical insecticides used for killing spruce budworms in the spray program for . . . [year].
>
> The Province's agreement to indemnify shall not apply (a) to lands owned or controlled by the sponsors of the spray program; (b) unless the chemical insecticide is mixed in the proper proportions and in accordance with any existing licenses, regulations, instructions or requirements; (c) with respect to the spraying of private lands contrary to any instructions which may be given by the Minister of Natural Resources from time to time; (d) in the event the application of the chemical insecticide is not carried out in a proper manner in accordance with reasonable standards of competence and safety or not to knowingly cause harm to the health of any persons." (FPL-Exhibit 14)

Based on the authorization of the Lieutenant Governor in Council the Minister of Natural Resources, in turn, enters into an agreement with FPL which, since 1976, has provided as follows:

> "Pursuant to Order-in-Council of the Lieutenant-Governor under...[date] and numbered..., I hereby authorize Forest Protection Limited to undertake and carry out the proposed...[year] aerial spray program for spruce budworm control of approximately...million acres of the forests of New Brunswick.
>
> Further, I hereby delegate to Forest Protection Limited, by the power vested in me under the Forest Service Act, whatever authority is necessary for you to effectually carry out the above program.

[continued]

> Please endorse the original and carbon copy of this letter by your authorized representative signifying your consent to this agreement.
>
> _____
> Minister of Natural Resources"
>
> (FPL-Exhibit 15)

It is noteworthy that in 1977, when R. E. Hanusiak, Deputy Minister of Natural Resources, was serving as President of FPL, the agreement was signed by the Minister of Natural Resources, who was a party to the agreement, and by the Deputy Minister on behalf of FPL.

C. Informal Working Arrangements

The specifics of the annual spray program have, since FPL's inception, been based in large measure upon information and recommendations provided by the federal government.

During the early years of the program and continuing up until quite recently, virtually all budworm population surveys and hazard assessment activities were conducted by the Federal Government. Each year, the results of these surveys and assessments would be shared with a FPL Spray Advisory Committee, made up of the manager and representatives of each of the industry sponsors, and the specifics of the spray program for the forthcoming year would be developed.

The level of federal participation has gradually been diminishing (Minutes Dec. 4, 1970) and presently federal employees serve more in an advisory capacity than as data gatherers. (Interview with M. M. Neilson)

Population surveys currently are a joint effort by FPL, the Maritimes Forest Research Center (the regional agency of the Canadian Forest Service, Environment Canada) and the Provincial Department of Natural Resources. Aerial surveys are made during early July to map the nature and extent of budworm feeding. FPL provides 7 observers, M.F.R.C. provides 2 observers and the Department of Natural Resources provides 4 observers, all of whom work under the supervision of the Maritimes Forest Research Center. The cost of the airplanes used for these surveys (FPL contracts with independent contractors for these planes, instead of using its own) was shared between FPL and M.F.R.C. up until 1978. Since that time FPL defrays all such expenses (Interview with H. J. Irving).

Egg mass surveys are conducted during late July, August and early September by 8 full-time and 50 part-time employees of FPL, including two entomologists. This group works under the direct supervision of the M.F.R.C., which provides one professional and two technicians to do this work.

A hazard index is then compiled by FPL personnel with assistance from the Maritimes Forest Research Center using a formula developed by the Canadian Forest Service. The system used to rate hazard incorporates measurements of loss of old and new foliage, tree vigor and projected infestation levels. Weighted values are assigned to each of these measurements, the sum of the values then taken, and the areas rated in the following categories: (1) high to extreme hazard; (2) moderate hazard; and (3) low hazard.

Based on the information gathered in the manner outlined above, in the fall and early winter a spray plan recommendation is developed by a Technical Advisory Committee (a new creation since 1978), for presentation to the Board of Directors. The Committee consists of 2 representatives of the Department of Natural Resources, one representative of the Canadian Forestry Service, one representative from each of the industry stockholders of FPL, one representative of FPL, one representative of the Private Wood Producer Association of Southern New Brunswick and one representative of Valley Forest Products Ltd. Only one member of the Technical Advisory Committee (Dr. F. E. Webb, a special advisor to DNR) is also a member of the Board.* This group met twice in 1978 (once in October and once again in November) before submitting its final recommendations to the Board.

Prior to the formation of the Technical Advisory Committee, the program recommendations were developed by what was called the "Spray Advising Committee." The first such committee was organized in 1959 (Minutes, Sept. 18, 1959) and similar committees functioned up until 1976, when the Province assumed active control of FPL. Immediately after the Province took control, the President (then Deputy Minister of Natural Resources) was authorized to organize a Government and Industry advisory committee to establish criteria for the 1977 spray program (Minutes, Sept. 10,

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*Dr. Webb does not regard himself as a member of the Technical Advisory Committee. He has attended two or three meetings in all, in part to encourage full take-over of this responsibility by D.N.R. staff people (Letter from F.E. Webb dated May 30, 1979, FPL-Exhibit 30).

1976), and in 1977 the Deputy Minister appointed a committee chairman who was directed to seek representatives from each participating company, the Department of Natural Resources and the Federal Government (Minutes, Sept. 20, 1977). As noted earlier, in 1978, "public" membership on this committee was broadened even further, and the name was changed to "Technical Advisory Committee."

The spray proposal consists of a map depicting areas to be sprayed, the insecticides to be used and the number of applications and dosage.

After having received the recommendations of the Technical Advisory Committee, the Board undertakes its deliberations with respect to the spray program. Whereas in the past, the Board's decision with respect to the spray program was final subject only to last minute adjustments, under current procedures, the Board's action amounts to a recommendation to the Provincial Government, who has the last word regarding the program.

Indeed, under current procedures the Cabinet first determines whether or not there will be a spray program, reserving decision on the specifics of the spray plan. Once the spray program has been developed, and all necessary governmental permits have been secured, the Cabinet then decides whether the specific program meets with its approval (Minutes, Jan. 22, 1979; interviews with H. J. Irving and R. E. Hanusiak).

With only one exception, FPL has been the only company conducting aerial spraying for spruce budworm control in New Brunswick.

The one exception is Irving Pulp and Paper.

Irving felt that certain of its freehold lands were not being protected by FPL to the extent Irving deemed necessary. Accordingly, in the early 1970's Irving formed Forest Patrol Limited, to conduct additional spraying upon these lands.

Up until 1975, there was no coordination between FPL's spray program and Forest Patrol Limited's activities. This resulted in areas sprayed by FPL being resprayed by Forest Patrol Ltd., once and sometimes several times.

Since 1975, however, FPL's program and Irving's program have been conducted on a coordinated basis. FPL supplies insecticide and solvent to Irving at a negotiated price equivalent to what it would cost FPL to carry out applications on Irving lands in accordance with FPL standards, and Irving does the actual spraying. (Minutes, March 1, 1977. And see FPL-Exhibit 23, Agreement between Irving and FPL.)

The only other company to approach the Province with a proposal for aerial spraying was MIDAIR (CANADA) Limited. In 1973 this company submitted a proposal to the Minister of Natural Resources and claimed that the costs of a 2 million dollar program could be reduced by $300,000 mainly by obtaining insecticide at a lower price and reducing the number and cost of personnel. (Minutes, Jan. 29, 1973)

The proposal was referred to the FPL board, who attempted to learn something about MIDAIR. No further action was taken concerning MIDAIR's proposal.

D. Mechanics of Spraying

In terms of the mechanics of spraying operation, the following occurs. Once the hazard maps have been produced, spray lines in tiers of approximately 7-8 miles are laid out on topographic survey maps. (FPL-Exhibit 24(a), Spray Map for 1979. These maps are used for the guidance of spray plane teams and for recording applications after the fact. Spraying is done currently from specially equipped aircraft of the TBM type flying at altitudes of 100-150 feet. Spray aircraft work in teams of two or three and are guided or directed by radio instructions from two pointer aircraft flying above them at about 500 feet. The navigators and the pointer planes log spraying of each line on a record known as a pointer report.

E. Spraying on Lands of Non-Members

Throughout this period and continuing up to the present, FPL has conducted its spraying operations on both Crown lands and upon privately owned lands, whether or not the private lands were owned by industrial sponsors of FPL, and up until recently, no notice of intended spraying has been given to landowners. Presently, however, notice is given by publishing maps in all daily and weekly newspapers in the Province [FPL-Exhibit 24(b)],advertising a toll free telephone number for information (bilingual) and daily releases theough the wire services with respect to areas FPL anticipates spraying in the next 24 hours, weather permitting. Since 1976 FPL has gradually withdrawn spraying of forest near

year round habitation, using a one-mile buffer around such areas.

In Friesen v. FPL (FPL-Exhibit 31), the Supreme Court of New Brunswick ruled that FPL had no authority to spray on privately owned lands and was liable for such unauthorized spraying under nuisance and trespass theories. Following this decision legislation was passed under which the Minister of Natural Resources is expressly authorized to carry out aerial spray operations upon private land. Under this legislation (c. 24, N.B. Acts 1978 FPL-Exhibit 29), the owner of private land may, on or before March 1 each year request that the Minister exclude such land from aerial spray operations and "upon receipt of such request the Minister or his agent shall take all reasonable steps to ensure compliance with the request."

The 1978 act fuether provides that an action founded on nuisance or trespass shall lie against the Crown or its agents for carrying out aerial spray operations only where such nuisance or trespass results in actual injury to persons or actual damage to property.

F. Environmental Monitoring

Until quite recently, virtually all environmental monitoring of the spray program had been conducted by federal agencies and officials and at federal expense. However, in recent years the proportion of federal participation has diminished.

The earliest effort to organize a coordinated monitoring program may be traced back to 1958, when the Federal government established an Interdepartmental Committee on forest spraying

operations. This committee was made up of representatives of the Canadian Department of Fisheries, the Canadian Wild Life Service and the Forestry Branch of the Canadian Department of Agriculture. The purpose of this committee was

> "to review infestations that appear likely to warrant direct control operations, to arrange for exchange of information, and to promote cooperative research projects relating to the use of insecticide where fishery and resources may be in conflict." (Minutes, May 14, 1958).

FPL's corporate minutes do not reflect the company's participation in research projects until the 1970's. In 1970 the Forest Research Laboratory, a forerunner to the Maritimes Forest Research Center and the Chemical Control Research Institute (an agency within the Canadian Forest Service) embarked upon studies relating to spray cloud, the characteristics of several possible insecticides and an epicenter concept. FPL contributed $52,000 toward these research projects. (Minutes, April 10, 1970; Dec. 4, 1970)

In 1971, FPL was advised that if the company expected to have a continuing relationship with government research activities it would have to provide a more "meaningful contribution" (Minutes, Nov. 5, 1971). And in 1972, the Task Force on Budworm Research requested an additional $35,000 from FPL.

Presently environmental monitoring is being carried out by various agencies, the activities of which are reported upon by a group known as EMOFICO, which stands for "Environmental Monitoring of Forest Insect Control Operations." The group has no

formal status, or specific statutory powers.

EMOFICO was established in 1976 because of the concerns raised both by the Province and by Environment Canada over the minimum level of environmental monitoring that was occurring at that time. The stated reasons for the federal government undertaking responsibility for monitoring were that (a) it was responsible for registering chemicals, (b) Environment Canada provides technical advice on usage, and (c) the "moral if not legal obligation" to insure that the Department of Environment recommendations on dosages do not lead to lasting environmental damage (Letter from J. B. Seaborn, Deputy Minister, Environment Canada to Mr. R. E. Hanusiak, Deputy Minister, Department of Natural Resources. FPL-Exhibit 19).

Dr. I. W. Varty, an employee with the Maritimes Forest Research Centre, who had been conducting research in the field and who had previously taken steps to create a forum for members of the scientific community dealing with various aspects of budworm control and its effects on the environment, was appointed chairman of EMOFICO.

One year later the Atlantic Regional Director General of the Environmental Management Service (until April 1, 1979, the Canadian Forestry Service formed a part of this Agency) proposed that the proponents of the spray program both pay for and carry out environmental monitoring of the spray program. (Letter from M. M. Neilson, Director, Maritimes Forest Research Centre, FPL-Exhibit 32).

FPL and the Province preferred that the responsibility for coordinating and monitoring of the spray program remain in some outside agency. Accordingly, an understanding was reached whereby Varty became a Senior Research Associate within the Department

of Forest Resources at the University of New Brunswick. This placed the chair of EMOFICO in a supposedly neutral setting. It was agreed Varty's salary would be paid by the Federal government which in turn would be reimbursed by the university, and that FPL would make a grant to the university which covers Varty's entire salary, office and travel expenses.

As events have turned out, some members of the university community have expressed opposition to the spray program, and have argued that because FPL ultimately pays Varty's salary, that he is not as objective about the program as a totally independent chairman might be (Interviews with G. Baskerville and Dr. F. E. Webb).

In 1978, the Federal Government contributed $275,000 and the Province contributed $217,000 toward environment monitoring activities (figures provided by M. M. Neilson, and see FPL-Exhibit 18 setting forth a breakdown of these activities and the source of funds).

The membership of EMOFICO is set forth in FPL-Exhibit 19.

Before leaving the subject of environmental monitoring it is noteworthy that unlike the U.S. Forest Service, the Canadian Forest Service is essentially a research oriented agency. For this reason, it perceives its proper role to be limited to methodology and research, not straight monitoring (Interview with M. M. Neilson).

Liability for Spraying

The subject of liability for spraying was addressed by the Board of Directors early in the company's history. At a director's meeting held on October 29, 1952, the attorney who had prepared the organizational documents advised the Board that in his opinion, a statutory enactment would be required to absolve the company from liability. (Minutes, Oct. 29, 1952)

Discussions were entered into between representatives of FPL and the Provincial authorities to amend the Crown Lands Act so as to absolve FPL and those associated with FPL from liability for actions and damages "from the use of insecticides where there is no fault or neglect on the part of the operators". (Minutes, Jan. 12, 1953). However, the Crown Lands Act was not so amended, and there is no further mention of the subject in the corporate minutes.

As mentioned earlier, in 1976, FPL insisted upon and received an indemnity from the Province with respect to claims for damages for injuries to health caused by the application of chemical insecticides.

In the 27 years of FPL's existence, there have been five lawsuits brought against FPL arising out of its spraying operations.

(1) In the late 1950's an action was brought by the federal government, The Queen v. Forest Protection Limited (1961), C.R. 263, seeking damages for a fish kill occurring at the government's

Miramichi Atlantic Salmon hatchery. FPL raised several defenses based upon the federal government's participation in the establishment, funding and operations of the spray program. The Court rejected these defenses, found that FPL was liable for the damages caused by its unauthorized spraying of federal lands, and assessed damages of $500.00 plus costs.

(2) Bridges Brothers Limited v. Forest Protection Limited, 72 D.L.R. (3d) 335, was an action by a company engaged in the husbanding, harvesting and marketing of lowbush blueberries seeking damages and a perpetual injunction for unauthorized spraying of plaintiff's blueberry fields. Plaintiff alleged that FPL's spray operations (1) reduced the number of pollinators in its fields thereby adversely affecting the pollination of blueberry flowers and the fruit set which is dependent on pollination and (2) increased the number of birds feeding on ripe blueberries in the fields. Liability was alleged on theories of negligence, nuisance and trespass.

FPL asserted that it was statutorily authorized to spray on plaintiff's land, that it was not negligent and that FPL was an agent of the Crown within the meaning of the Proceedings Against the Crown Act, and, therefore, could not be enjoined for its activities.

The Court held that FPL was liable on theories of negligence and nuisance for the damages it caused to plaintiff. The Court rejected the trespass theory because the injury complained of (effect of the spraying upon pollination) was, in the Court's view,

consequential rather than direct. In order to succeed on a trespass theory, plaintiff would have had to have proved that the injury was direct.

The Court rejected FPL's defense that it was statutorily authorized to spray plaintiff's lands because of the absence of any evidence of formal documentation authorizing such spraying. It did find, however, that FPL was an agent of the Crown within the meaning of the Proceedings Against the Crown Act, and refused to issue a permanent injunction enjoining the spraying of plaintiff's lands.

Damages were assessed at $58,499.16 plus costs. Legal fees were $57,500.00.

(3) Friesen, et al. v. Forest Protection Limited was commenced in May, 1976. Plaintiffs were joint owners of a farm. They claimed that as a result of the spraying operations they suffered personal injuries (tingling of the gums, numbness of the mouth area, constriction of the chest, a sunburn effect under the eyes, an asthmatic attack, dizziness when rising and tiredness when driving a vehicle). They also claimed damage to bees, fiddleheads, birds and livestock. Liability was asserted on theories of trespass, nuisance and negligence. Punitive and exemplary damages were also sought.

FPL denied that plaintiffs were themselves sprayed or that their property suffered any injury or damage. In addition, FPL asserted that it performed its spray operations as an agent for the Crown under authority of statute and that plaintiffs, therefore,

were not entitled to any relief.

The Court ruled that the Forest Service Act did not authorize FPL to spray private lands and that FPL was, therefore, not immune from an action based upon trespass and nuisance. Damage on these two grounds were assessed in the sum of $1,328.20.

The Court did find that exposure to the spray (fenitrothion) did result in some minor physical irritation and that the spray contributed to some degree to an asthmatic attack suffered by the 12 year old. Other symptoms were found to be attributed to psychological factors. There was no finding of injuries to plaintiff's animals or crops.

(4) Lewis, et al. v. Town of St. Stephen v. Forest Protection Limited v. Conair Aviation, Ltd., was commenced in March, 1977. Plaintiffs claimed that as a result of the proximity of the runway at the St. Stephen Airport to their home, they have been subjected to low-flying aircraft which has caused their 16 year old daughter to suffer from what is described by a psychiatrist as "airplane phobia," resulting in mental anguish, loss of sleep and school disruptions. Monetary damages as well as a permanent injunction were sought.

The Town claimed indemnity from FPL who, in turn, claimed indemnity from Conair, based upon a written agreement.

The trial was completed in December, 1977, and the parties are awaiting a decision.

(5) Lucretia J. Guerin & Concerned Parents Group v. FPL was initiated in March, 1977. Plaintiffs swore 10 informations alleging offenses by FPL under The Fisheries Act and Pest Control Products Act, both federal legislation, and 10 summonses were served on FPL (subsequently, another 30 summonses were issued and served).

FPL took steps to have the actions stayed pending a determination whether FPL is a servant of the Crown of New Brunswick and, therefore, immune from prosecution under certain federal legislation.

Judgment was handed down in February, 1978, holding that FPL is not a servant of the Crown and not immune to prosecution.

The Supreme Court of New Brunswick reversed in part. It held that FPL is a servant of the Province of New Brunswick and as such is entitled to such immunity from prosecution as the Crown in the Right of the Province possesses with respect to the offences charged. The Appellate Court went on to hold that the federal Fisheries Act did not provide immunity to the Crown and that the Crown was not bound by the Pest Control Products Act, and that, therefore, FPL was not bound by such Act when it acts in the course of its employment and within the scope of its authority as a servant of the Crown (FPL-Exhibit 33).

INSURANCE COVERAGE

Set forth below is a schedule of insurance purchased by FPL in 1979:

Item	Limit	Deductible
Aircraft Hull - Spray	$27,000	$2,000 in Motion $1,000 Not in Motion
- Non-Spray	Actual value	$1,000 in Motion $100 Not in Motion
Aircraft Spare Parts	$250,000	$250
Aircraft Liability including Chemical (includes contractors' chemical liability)	$1,000,000	
Premises/Operations Liability	$1,000,000	
Aviation Products Liability	$1,000,000	
Non-Owned Aircraft Liability	$1,000,000	
Aviation Accident		
--Spray Pilots	$50,000	
--Non-Spray Pilots	$25,000	
--Other employees & guests	$25,000	
Personal Accident		
--FPL employees	$25,000	
Property		
--Trailers & contents	$100,000 any one location	$2,500
	$30,000 In Transit	
--Av. Gas, Chemicals, etc.	$1,000,000 any one loss	$5,000
	$250,000 In Transit	
Non-Spray Aircraft Liability	$1,000,000	
Vehicles	$1,000,000	$250 Collision $25 Comprehensive
Non-Owned Vehicle Liability	$500,000	
Office Buildings & Contents	$105,000	$500

Comment and Analysis

From inception FPL has functioned as the distribution and delivery system for the Provincial spray program. Until quite recently, the company also exercised a strong voice in establishing policy, and participated in environmental monitoring activities.

While FPL was being controlled by industry, decisions regarding the spray program appear to have been made quickly and decisively. During this period there were few laws regulating such activities and the Province appears to have been willing to provide as much funding as FPL required. Such policy objectives as may have existed were "hazy," and there appears to have been little concern about whether policy objectives were being carried out.

Since the Province has taken greater control, the amount and nature of protection afforded is being determined to a greater extent than previously by the Cabinet. The Government has understandably determined that it and not FPL will establish policy. By assuming these responsibilities, the Province has assured a greater measure of public accountability for the spray program. And, in view of the widespread public concern with respect to public health, the environment and the economy, this assertion of authority by the Province should be regarded as a desirable development.

Along with the increased role of the Government in the development of policy, as might be expected, FPL's role in this area has diminished. Today FPL is functioning more or less as a chemical application service for the Province and the participating pulp and paper companies. The company is well equipped to perform this service in terms of staff and capital equipment. However, even when the company had no planes and had little staff (other than employees provided by secondment from the sponsoring companies), FPL proved effective in terms of actual application of chemicals to the forest.

The economic relationship between industry and the Provincial Government is significantly different from the relationship between the Maine pulp and paper industry and state government. In New Brunswick, the pulp and paper industry could not function without the Crown forests which provide a large proportion of the raw materials for their mills. In Maine the situation is nearly the opposite--here the pulp and paper industry has virtually no dependence upon the State lands for raw material. Most of the forested area of Maine is owned by private interests, not by the State.

There appears to be pressure on Forest Protection Limited to monitor its own activities. It is doubtful that any entity can be a credible monitor of its own activities, particularly

an entity administering a program that has certain unknown risks to both public health and the environment associated with it. A more reasonable and credible way of handling monitoring would be to have the monitoring done by an independent agency.

PART II

AGRICULTURAL PEST MANAGEMENT COOPERATIVES

There are a variety of organizational models that farmers are using to obtain integrated pest management services.* Several models are discussed in Local Cooperatives in Integrated Pest Management, by Donald L. Vogelsang, FCS Report 37, Farmer Cooperative Service, U.S. Department of Agriculture (PMC-Exhibit 1), Establishing and Operating Grower-Owned Organizations for Integrated Pest Management, by J. M. Good, Ralph E. Hepp, Paul O. Mohn and Donald L. Vogelsang, Extension Service, U.S. Department of Agriculture PA-1180 (PMC-Exhibit 2); Alternative Delivery Systems For Farmers to Obtain Integrated Pest Management by Ralph E. Hepp, Agricultural Economics Report No. 298, June 1976 (PMC-Exhibit 3); and It's Time to Consider Integrated Pest Management by Donald L. Vogelsang, Farmer Cooperatives, March 1976 (PMC-Exhibit 4).

Set forth in the pages which follow are tables comparing the salient features of four organizational models. One is a regular corporation operating on a cooperative nonprofit basis

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*The Entomological Society of America defines integrated pest management as:

> "A pest management system that in the context of the associated environment and population dynamics of the pest species utilizes all suitable techniques and methods in as compatible manner as possible, and maintains the pest population at levels below those causing economic injury."

Integrated Pest Management Rationale, Potential, Needs and Implementation (ESA) Special Pub. 75-2, August 1975.

(Edgecombe Spray Program, Inc., North Carolina), the second is a nonprofit corporation (Growers Pest Management Corporation, Arizona), the third is a cooperative (Safford Valley Cotton Growers Cooperative, Inc., Arizona), and the fourth is a regular corporation operating as a cooperative (Servi-Tech, Inc., Kansas).

TABLE 1 - Crops grown and pest management recommendations

Grower-Owned Organization	Major Crops Grown by Participating Farmers	Crop(s) Included in the IPM Program
Edgecombe Spray Program, Inc. (North Carolina)	Corn, soybeans, cotton, tobacco, and peanuts	Cotton
Growers Pest Management Corporation (Arizona)	Grain sorghum, wheat, barley, alfalfa, cotton, and sugar beets	All major crops
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	Grain sorghum and cotton	Cotton
Servi-Tech, Inc. (Kansas)	Corn, grain sorghum, wheat, alfalfa, and soybeans	All major crops

TABLE 1 continued (pest management recommendations)

Crop Pest(s) Included in the IPM Program	Major Pest Control Means Utilized in the IPM Program
Insects, primarily boll weevil and bollworm	Insecticides and naturally occurring insect enemies
Insects, weeds, and diseases	Naturally occurring insect enemies, cultural practices, and pesticides
Insects, primarily pink bollworm	Naturally occurring insect enemies, pheromone traps, and insecticides
Insects, weeds, and diseases	Pesticides, naturally occurring insect enemies, cultural practices, and variety selection

TABLE 2 - Organizational characteristics

Grower-Owned Organizations	Form of Organization	Membership Qualifications and Voting
Edgecombe Spray Program Inc. (North Carolina)	Regular corporation operating on a cooperative nonprofit basis.	Cotton producers in corporation's area who purchase stock in the corporation. One vote per share of stock possible.
Growers Pest Management Corporation (Arizona)	Nonprofit corporation. Each member has a certificate of membership.	Agricultural producers in corporation's area who pay membership fee. One vote per member.
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	Cooperative organized to gin cotton. Informal committee of eight grower members (Pink Bollworm Committee) organize IPM program for cooperative.	Cotton producers who are members of the cooperative are appointed to the Pink Bollworm Committee. Committee is chosen to represent growers by geographic areas.
Servi-Tech, Inc. (Kansas)	Regular corporation operating as a cooperative.	Cooperatives that purchase shares of stock in the corporation. One vote per share of stock.

TABLE 2 - Organizational characteristics (continued)

Board of Directors and Officers	Employees	Who Determines IPM Program
Board of directors has 13 members of which three are chairmen of the operating committees: insecticide, scouting, and finance.	Part-time manager and scouts.	Board of directors, on recommendations by the three operating committees.
Board of directors: 3-25 members as determined by membership. Directors must be members of the corporation. Officers: president, vice-president, and secretary-treasurer.	Manager and part-time scouts.	Board of directors and manager.
Cooperative's seven-member board of directors approves policy and major expenditures for pest management. Approves membership on the Pink Bollworm Committee, which then selects its chairmen.	None for the pest management program. All services are contracted. Cooperative manager and bookkeeper's time provided free for pest management.	Pink Bollworm Committee upon approval by the cooperative's board of directors.
Board of directors: three to nine members as determined by shareholders. Officers: president, vice-president, secretary-treasurer.	Manager, crop specialists and part-time scouts.	Board of directors and manager.

TABLE 3 - Integrated pest management services provided crop-producing farmers

Name of Organization	Program Planning	Procuring Chemicals and Aerial Applicator Services
Edgecombe Spray Program, Inc. (North Carolina)	Plans and supplies complete package of services and chemicals. Assumes total responsibility for control of boll weevils and bollworms. Selects pesticides, determines rate of use and projects number of applications.	Solicits sealed written bids from chemical suppliers for season's needs delivered in truckload lots at manager's request. Negotiates detailed written contract with aerial applicator.
Growers Pest Management Corporation (Arizona)	Plans and supplies a complete package of pest management counseling but arranges for neither chemicals nor applicator services.	None by the organization. Each grower purchases his own chemicals and arranges for applicator services.
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	Plans and arranges for a complete package of services and chemicals for control of pink bollworms, including type of insecticide and rate of application. Grower retains responsibility for deciding if and when cotton will be sprayed.	Solicits sealed written bids for chemicals to be delivered, to one of two airstrips in less than truckload lots, as farmer indicates need. Negotiates verbal contracts with two applicators and one pest management consulting firm. Latter firm recommends pest controls and supplies pheromone traps. Arranges and extends credit for above services.
Servi-Tech, Inc. (Kansas)	Plans and supplies a complete package of crop-management counseling, including pest management. Arranges for neither chemicals nor their application.	None by the organization. Each grower purchases all chemicals and aerial application services for his crops.

TABLE 3 - Integrated pest management services (continued)

Pest Management (Scouting and Recommendations)	Types of Pest Control Provided	Program Records
Supervises field surveillance directly. Scouts check designated fields weekly. Make triplicate reports for farmer, Edgecombe Spray, and Extension Service. Pre-season recommendations altered only for special problems.	Applicator flew 13 sprayings in 1975 on entire cotton acreage at 5-to-7 day intervals. Manager, also a part-time employee of applicator service, coordinate pilots' activities. Chemicals are main pest control technique with fall diapause spraying saving two applications in following year.	Manager records all chemical applications on each field and findings from each scouting of sample fields.
Supervises weekly field checks for insects and periodic checks of other pests. Makes triplicate reports to grower, corporation, and Extension Service. Manager makes pest control recommendations.	None by the organization. Farmer decides if and when chemicals are used.	Manager maintains complete record of scout findings, pest control recommendations and actions on recommendations.
Supplies weekly scouting of every field through pest management company. Scouts fill out triplicate field reports for farmer, Extension Service, and pest management company. Consultant usually recommends action for handling pest outbreaks.	Only 5 percent of acreage received any insecticide during 1975, upon grower request. Heavy reliance placed on cultural practices and native, beneficial insects. Pheromone traps may become a major control device in future years.	Pest management company records findings from scout reports for each field. No regular recordings of insecticide applications are made. Co-op accounts for all costs incurred by each grower.
Fields scouted periodically for pests during growing seasons. Written reports made to farmer and member cooperative. Crop specialist makes pest control recommendations.	None by the organization. Each grower determines pest control program by his response to recommendations of crop specialist.	Organization maintains history of crops raised, scout findings, pest control recommendations, pest control measures, and their effectiveness.

TABLE 4 - Financing integrated pest management

Name of Organization	Capitalization of Organization	Refunds or Dividends
Edgecombe Spray Program, Inc. (North Carolina)	Organization is authorized to issue 20,000 shares of common stock at $5 par value. Minimum capitalization ($300) met through the sale of 60 shares.	Per acre refunds dispersed to shareholders at end of crop year to extent assessments exceed expenses and reserve set-asides for contingencies.
Growers Pest Management Corporation (Arizona)	Non-stock organization. No provisions made in bylaws for raising capital.	No interest or refunds paid by organization to members. Services provided at cost basis to the members.
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	No special capitalization required for Pink Bollworm Committee's activities. Cooperative's facilities are used by this grower committee.	Services provided at cost. No refunds are paid.
Servi-Tech, Inc. (Kansas)	Organization is authorized to issue shares of common stock to member cooperatives at $1 per share. Cooperatives must purchase a minimum of 5,000 shares at $1 per share.	Dividends upon capital stock may be declared by the board of directors and paid in cash, property or shares of capital stock. Some member cooperatives rebate to participating farmers a part of Servi-Tech charges if cooperative supplies most of farmer's purchases.

TABLE 4 - Financing integrated pest management (continued)

Cost of Services and Products to Grower		Grower Payment Plans
1975 payments at $52 per acre for old members and $53 per acre for new members; average 1975 per acre costs were:		Payment for services and products due in two equal installments:
Scouting	$ 3.03	1. May 15 of contract year, and
Spraying	44.71	
Misc.	.34	
Excess Chg.	3.92	2. July 15 of contract year.
	52.00	
Refund	4.10	
Net Cost	47.90	
1975 rates per acre:		Service fee paid by June 1 of contract year.
Cotton	$2.50	
Grain sorghum and sugar beets	1.00	
Small grains and alfalfa	0.10	
1975 charges per acre:		Payment of accrued costs made as a deduction from receipts for cotton ginned by co-op. Costs include chemicals and interest charges as well as pest management costs.
Pest management services:	$3.95	
Scouting and advice	(1.95)	
Pheromone traps	(2.00)	
Office services	0.00	
Spraying (at grower request)	1.75	
1975 rates per acre:		Service fee paid in three equal installments:
Irrigated corn and sorghum	$3.00	1. Contract time
Alfalfa, dryland sorghum, and soybeans	1.50	2. March 1 of contract year, and
Wheat	1.00	3. 30 days after harvest of the contracted crop.

Edgecombe Spray Program, Inc., is the only one of the four grower-owned organizations summarized above that has procured chemicals and furnished aerial applicator services to its members.

In past years, an Insecticide Committee, made up of the corporate chairman and four other members of the organization, have developed a program of chemicals, projections of the application rates and the number of applications per acre. These have been based in part upon recommendations of Agriculture Extension entomologists and past experience. (FCS Report 37, pp. 6, 9) Acreage is based upon member's growing plans. (FCS Report 37, p. 6) Members of the Insecticide Committee have served without pay.

In 1974, 117 cotton farmers participated in the Edgecombe Program. This group produced 7,904 acres of cotton (87% of the county cotton acreage) in 759 fields. Average field size was approximately 10 acres. [Conyard, Wosley and Farmer, a Progressive Community Cotton Insect Pest Management Program, Edgecombe County, 1974, North Carolina State University (PMC-Exhibit 5, p. 3)]

In 1975, 53 farmers contracted for Edgecombe's services, for a total of 3,373 acres. (FCS Report, p. 5)

Once a member has contracted with the company, responsibility for most decisions about pest control has rested with the company. Each member has contracted for a specified number of sprayings (in 1975, the program called for 12 scheduled applications). However, additional applications can be arranged if the farmer requesting additional treatment is prepared to defray the

additional costs involved. (FCS Report, p. 5)

The insecticide committee has contracted with an aerial applicator service to apply the pesticides. (FCS Report, p. 6) When the coop was most active during the mid 1970's, the manager of Edgecombe was an employee of the applicator service, who donated one half of his time to the activities of the coop. Among other duties for Edgecombe, the manager has coordinated application activities, recorded flying activities and helped service the planes. (FCS Report, p. 10)

The agreement between the applicator and Edgecombe has contained a provision holding Edgecombe harmless "for any injury or damages arising out of the duties and services performed by the Applicator." (Appendix B, Applicator Contract ¶10. FCS Report 37, p. 37)

Last year, the area served by the Edgecombe Spray Program became part of a pilot federal program to eradicate boll weevil. Under this mandatory program, all cotton growers in 15 counties in eastern North Carolina (20,000 acres) and part of Virginia (282 acres) are required to pay $24.00 per acre to help defray the costs of the program.

The three-year program has pre-empted Edgecombe Spray with respect to boll weevil control. However, the farmers still have to contend with other insects, such as bollworm. Thus, in the past two years, Edgecombe Spray's activities have been principally directed toward bollworm. At the conclusion of the pilot program, the growers will again have responsibility for boll weevil, if it

has not been eradicated.

Prior to the establishment of the spray cooperative, there had been no federal or state program which provided scouting and aerial spray services to interested growers. Since the coop has been in existence there was been no litigation with respect to any aspect of the program. (Telephone interview with Joe L. Perry, Extension Agent, Edgecombe County Extension Office, Tarboro, North Carolina).

* * *

None of the agricultural cooperatives serve anywhere near the kind of acreage involved in the Maine spruce budworm infestation area. At the height of its activities, Edgecombe Spray's activities were concentrated in an 8,000 acre area. This year's spruce budworm spray program treated 2.7 million acres of forest land.

On the other hand, the number of participants in the Edgecombe Spray Program has been quite large--117 cotton farmers participated in 1974. The number of owners subject to tax in the spruce fir protection district is under 200, and the number of large landowners are a fraction of the figure. Edgecombe has demonstrated that large numbers of landowners can be mobilized into a coordinated and sustained pest control program.

PART III

PUBLIC AUTHORITIES

There are numerous types of public authorities in operation in Maine and throughout the United States. Their structure, fiscal arrangements, board composition and relations to other agencies of government are so varied, that no single prototype emerges.

The following has been suggested as a definition:

> "Public Authorities generally are corporate bodies organized by legislative action to function outside of the regular structure of state government in order to finance and construct and usually to operate revenue-producing public enterprises. Their organizational structures and powers are of the type usually associated with public corporations and like the latter they have relative administrative autonomy. Public authorities are authorized to issue their own revenue bonds, which ordinarily do not constitute debt within the meaning of constitutional debt limitations, since they are required to meet their obligations from their own revenues. They lack power to levy taxes, but are empowered to collect fees or other charges for use of their facilities, devoting the resulting revenue to payment of operational expenses and to interest and principal on their debts. (Council of State Governments, Public Authorities in the States, 1953, p. 3; see also Council of State Governments, State Public Authorities, 1970, p. 2.)

There are various factors that tend to favor the creation of public authorities. Smith, in Public Authorities, Special Districts and Local Government, National Association of Counties Research Foundation, 1964, pp. 13-14, has identified five such factors as follows:

> "1) They make possible the financing of desperately needed capital construction which otherwise would be impossible under the present restrictive ceilings on debt and taxation, set by the states. They do so by floating bonds in the name of the authority, usually without obligation to existing governments, which will be self-liquidating through the collection of charges for the use of

facilities. After the bonded indebtedness has been paid, the facilities and functions are to revert to the parent government.

"2) As agencies each engaged in one particular function of importance to the community, they have a greater attraction to professional persons who think in terms of specialization. They thereby draw into participation in civic affairs the better citizens of the community, and may, in effect, represent interests at the same time that the existing governments' representation reflects the more conventional basis of population and geography.

"3) They must be 'business-like' by the very fact that they do not rely on direct taxation, but must finance themselves through the selling of their bonds and the maintenance of a bond rating. Their projects must meet the needs of the people or the public will not pay the user charges from which the bonded indebtedness is to be liquidated.

"4) They take 'out of politics' enterprises that are somewhere in between the private and public sectors, permitting their operation in the public interest but with the motivations of private business.

"5) They make possible, through their flexibility, the formation of more logical lines of jurisdiction, no longer tied to boundaries established centuries ago, but centering now on combinations of municipalities, or counties, or on a natural factor, such as a port or river valley. In this way, they adjust much better administration to area for the effecting of functional needs."

Some public authorities may sell bonds and let contracts by negotiation instead of by public bidding; and some, like the Maine State Housing Authority, for example, may make purchases, set salaries, and employ personnel without regard to State purchasing requirements, salary limitations or civil service regulations. [See 30 M.R.S.A. §§ 4602(c) and 4651(1) and (4), and see generally State Public Authorities, p. 12.]

Among the kinds of public authorities are road, bridge and tunnel authorities, port, dock and terminal authorities, building authorities, water and power authorities, agricultural, marketing,

hospital construction, park management authorities and others.

Form of Entity

Most often, authorities are organized as independent non-stock corporations. The Maine State Housing Authority, the Maine Guarantee Authority, and the Maine Turnpike Authority are examples. Many authorities organized as corporations may sue and be sued, are liable for torts, may purchase and lease real estate and equipment, may enter into contracts, and in general do whatever may be necessary to the accomplishment of the purposes for which they have been established.

Governing Boards

Governing boards of public authorities are generally patterned upon those of general business corporations. There are usually several members comprising the board which is charged with the responsibility of determining policy, and appointing officers within specific framework and under guidelines established by the legislature.

Alternative methods of selecting board members include appointment by the Governor, popular election, designation of certain state officials as directors, ex-officio, selection by affected interest groups, designation of individuals by the legislature, or by combination of some of these methods.

Terms of office are generally of sufficient duration to provide experienced directors and they are often made overlapping or staggered, so as to provide continuity.

Some statutes like those relating to the Maine Gurantee Authority, 10 M.S.R.A. § 751, for example, permit the board to elect its own chairman. Others, like those pertaining to the Maine State Housing Authority, 30 M.R.S.A. § 4602(2)(B), provide for the appointment of the Chairman by the Governor.

Financing

A. Sale of Capital Stock

Sales of capital stock are rarely relied upon as a source of capital for a public corporation since such entities are rarely organized for the purpose of earning the kind of profit that would make stock purchases attractive to private investors. Rather, public authorities are usually set up to operate so that their charges do not exceed the costs of operation.

B. Non-Repayable Contributions and Temporary Advances

In some cases public authorities have received initial funding or occasional financial assistance from the State. These contributions are usually justified on the basis of the public interest in the service performed by the entity. For example, the Maine Guarantee Authority may turn to public funds for financial support whenever its revenues are insufficient to meet its obligations (10 M.R.S.A. § 802).

In other instances, states have made temporary advances, particularly during the initial phases of operation of the authority, to be repaid from revenue obtained through user charges.

C. Revenue Bonds

Revenue bonds have provided the principal sources of capital funds for public authorities. These are bonds purchased by private investors; the principal and interest on such bonds are paid solely from the earnings of the entity.

Most public authorities obtain revenues for operation (and for debt retirement) from charges levied upon users of their facilities or services. This shifts the burden of support from all taxpayers in the State to a particular segment of the population.

Revenue bonds would not be a likely source of funding for a spray entity since there are no large capital expenditures involved and no services to be performed that would assure the production of a dependable source of revenue to repay bondholders.

Control

Most public authorities are independent corporations not attached to any department of state government. Accordingly, in the absence of provisions making the authority subservient to other state agencies or departments, the authority would act autonomously.

Special Districts

Special districts are similar in many respects to the public authorities discussed above both in terms of factors leading to their creation and their organizational characteristics. (See

generally, Bollens, Special District Governments in the United States, 1957, pp. 1-45.) However, unlike the kinds of public authorities discussed above, which rarely possess taxing powers, it is not at all uncommon for special districts to derive considerable portions of their revenue from tax sources. Perhaps the most familiar example of this is school districts, which depend heavily on local property taxes.

Non-tax revenues in the form of service charges, special assessments, rates and rents are also common with special districts.

Examples of special districts include sewage, garbage and refuse disposal; drainage; general and special hospitals; water pollution control; fire protection; forest pest control; weed control; mosquito abatement; pest extermination; food inspection; and various other sanitary and health measures and activities. Four of these--forest pest control, weed control, mosquito abatement and pest extermination--districts are discussed in more detail below. The forest pest control legislation discussed hereafter was selected because it possessed features which appeared particularly germaine to this study.

Control of Forest Insects

At least 23 states* have legislation authorizing state

*Alabama, California, Georgia, Idaho, Kentucky, Maine, Massachusetts, Minnesota, Mississippi, Montana, Nevada, New Hampshire, New York, North Carolina, Oregon, South Carolina, South Dakota, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

forest insect control program. Most of these provide for centralized administrative control of the program in a state agency which has the power to declare zones of infestation, to prescribe remedial measures and to allocate costs between public and private sources. Several of these programs statutorily place primary responsibility for the implementation of control measures upon the landowners themselves--under the statutory schemes the state is only required to step in when a landowner fails or refuses to carry out the state's control directives. In practice, however, these programs have operated as though the state had primary responsibility for implementation of control measures.

Minnesota

The Minnesota Commissioner of Natural Resources has authority to establish "zones of infestation" whenever he finds that a forest area is infested or threatened to be infested with a forest insect pest (Minn. Statutes, § 18.361). Notice of the proposed zone must be published and owners in the affected area may appear to object to the establishment of the zone (§ 18.361).

Once the zone is established, the Commissioner has authority to apply pest control measures on all lands within the zone, public and private. He may also enter into agreements with affected landowners with respect to the control work and fixing the basis upon which the cost of such work will be shared between the state and the landowners (§ 18.381).

At the end of each fiscal year, or at the end of the program, the Commissioner is required to prepare a certified statement of expenses incurred in carrying out the control measures, including the expenses of owners covered by agreements. This statement must

show the amount the Commissioner determines to be the state's share, which may include funds and the value of contributions made available by the federal government and other public or private sources [§ 18.391(1)].

The balance of such costs constitute a charge on an acreage basis on the owners of lands in the zone "containing trees valuable for commercial timber purposes and affected or likely to be affected by forest pests for which control measures were conducted" [§ 18.391(1)]. In fixing the rate at which the charges shall be made against each owner, the Commission is required to consider the following criteria:

1) the present commercial value of the trees on the owners' land;

2) the present and potential benefits to such owner from the application of control measures;

3) the cost of applying such measures to the land and

4) such other factors as will, in the discretion of the Commissioner, enable him to determine an equitable distribution of the cost to all such owners [§ 18.391(1)].

No charge may be made against owners to the extent that they have individually, or as members of a cooperative association, contributed funds, supplies or services pursuant to an agreement with the Commissioner.

Notice of the charge to the landowner is given and the landowner has an opportunity to protest within 60 days [§ 18.391(2)]. Unpaid charges are reported to the tax levying

authority for the county in which the affected lands are situated. These charges become a special assessment upon the land and are payable in the same manner and with the same interest and penalty charges as ad valorem property taxes [§ 18.391(3)].

The Commissioner may dissolve the zone of infestation when he finds that control measures are no longer feasible.

Of Minnesota's 16 million acres of forest land, approximately 9.4 million are owned by federal, state and county government. Of the remaining 6.6 million, 6 million acres are held in small private ownership (less than 1,000 acres) and 600,000 by large industrial landowners.

Due to the predominance of public ownership and the substantial federal holdings, projects that have been undertaken in the past (to combat White Pine Blister Rust) were conducted by the State, notwithstanding the statutory structure which places the burden on private landowners. (Telephone interview with James L. Brooks, Minnesota Supervisor of Forest Management)

Washington

In Washington, the statutes dealing with forest insect and disease control are administered by the Division of Forestry under the guidance and approval of the State Forest Board (Washington Revised Code, Ch. 76.06, §.030).

Owners of timberland are expressly made responsible for forest pest control as follows:

> "Every owner of timberlands, or his agent, shall make every reasonable effort to control, destroy and eradicate such forest insect pests and forest tree disease which threaten the existence of any stand of timber or provide for the same to be done on timber lands owned by him or under his control. In the event he fails, neglects or is unable to accomplish such control, the action may be performed as provided in this chapter." (§ .040)

When the Supervisor of Forestry finds timberlands threatened with destruction, he is required, with the approval of the Forestry Board, to certify an "infestation control district" and fix the boundaries of the district. He must then immediately notify the landowners within the district to proceed without delay to control the pests and must also describe the method or methods of action that will be acceptable to the Board if the owner elects to control insects on his own property (§ .050).

If the owner does not comply with the notice within 30 days, it becomes the duty of the Supervisor to proceed with control measures (§ .060).

Upon the completion of the work, the Supervisor must prepare a verified statement of expenses. The balance, after deducting any amounts that may have been contributed by the state, the federal government or others, becomes a lien upon the land "provided, that the amount of said lien shall not exceed twenty-five percent of the total costs incurred on such owners' lands including necessary buffer strips." (§ .070). The lien is levied and collected by the county assessor, in the same manner and with the same interest, penalty and cost charges as apply to ad valorem taxes (§ .070).

There is an exemption from the provisions of the act for:

> "Every owner, and all owners or representatives, who upon receiving notice...shall proceed and continue in good faith to control, eradicate and destroy said forest insects and forest tree diseases in accordance with standards established by the supervisor [of forestry] ...as to the lands upon which he or they are so proceeding." (§ .080)

When the Forestry Board determines that control work is no longer feasible, the district is dissolved.

This statutory structure has been used twice in recent years--to combat the Douglas Fir Tussock Moth in 1974 and 1975 and to combat the Western Spruce Budworm in 1976, 1977 and 1978. In both instances the programs involved aerial spraying. The State and Federal governments provided most of the funding and the balance was billed to the affected landowners on a per acre basis. Private ownership accounts for approximately 35% of the forested land. The Federal Government owns more than 50% and the State holds the rest.

Again, because of the predominance of public ownership, the State, in cooperation with the U. S. Forest Service, carried out the spray programs, notwithstanding the statutory structure. Only a handful of landowners sprayed their own lands; some were large landowners who wanted more spraying than the program called for, and others had a special reason for spraying (where the program did not call for it) such as to protect lands of high recreational value. (Telephone interview with Leslie Morton, Supervisor, Washington Division of Forest Land Management)

Oregon

The setup in Oregon is quite similar to that in Washington. Owners of timberland have the duty and responsibility to "control and destroy" forest insect pests (Oregon Revised Statutes, § 527.350). If the owner does not comply with state directives, the State Forester is authorized to apply control measures approved by the State Board of Forestry (§ 527.350).

The authority of the State Forester does not extend to the timberlands or timber of a landowner:

> "who is a member of a cooperative association of timberland owners which actually engages in the destruction and control of the forest insect pests and forest tree diseases, using methods approved by the State Board of Forestry. (§ 527.350)

Upon the completion of the work the State Forester is required to prepare a certified statement of expenses. The state may assist in the payment of control costs in amounts determined by the State Board of Forestry. The balance, after deducting state, federal and other contributions, constitute a charge against the timberlands and are collected in the same manner as forest patrol (i.e., fire protection) assessments.

The infestation control district may be dissolved when the State Board of Forestry determines that control measures are no longer necessary or feasible.

Oregon imposes a specific financial responsibility requirement upon aerial spray applicators who participate in the control of forest insect pests, as follows:

> "Any contract for the aerial spraying of forest lands with insecticides entered into under the provisions of ORS 527.400 [authorizing the state forester to employ assistants, purchase equipment and award contracts for control of forest insect pests] shall not be executed unless and until the contractor files with the State Forester proof of financial responsibility which may consist of a deposit of money, certified check, liability insurance or surety bond, corporate or otherwise, in the sum of $10,000 to indemnify any landowner for damages to his lands or crops caused by the wilful or negligent operation of aircraft of the contractor while engaged in such spraying. Any person whose lands or crops are so damaged shall have a right of action against such contractor and the underwriter of liability insurance or the surety upon such bond or security. The action shall be commenced within two years of the date on which the wilful or negligent operation occurred, and if no action is filed within that time the contractor shall be relieved of liability and the policy of insurance cancelled or the surety bond or security withdrawn." (§ 527.510)

The statute has not been utilized to date. In 1974, a Tussock Moth spray program was conducted by the State with the cooperation of the U. S. Forest Service. The Federal Government owns 50% of the forested land in Oregon. (Telephone interview with A.T. Larsen, Director, Insect and Disease Management Division of the Oregon Forestry Department)

Nevada

The statutory procedures for control of forest insects in Nevada are similar to those already discussed. The State Forester may prescribe zones of infestation and may take such action as may be necessary to effect control measures upon the lands of those owners who do not take appropriate measures on their own. (Nevada Revised Statutes §§ 527.130-527.230)

Charges are assessed to those landowners who do not carry out the necessary control measures themselves, and are collected

in the same manner as taxes.

The Nevada legislature has declared that purpose of the chapter dealing with forest insect and pest control is:

> "...to protect and preserve the forests of the state, promote the stability of forest using industries, protect recreational wildlife, and to aid in pest and fire control." [§ 527.140(1)]

It is noteworthy that the format established to accomplish these broad public policy objectives, is to impose primary responsibility for insect control upon the affected landowners.

Two-thirds of Nevada is "forested" with Pinyon Pine and Utah Juniper, scrubby growth having little commercial value at present. On one occasion where Black Pine Scale was damaging 80 acres of Ponderosa Pine, the State advised affected landowners how to deal with the problem and the landowners took care of the problem on their own. In another instance, where the Mountain Pine Beetle was infesting approximately 40-50 acres, the landowners formed their own abatement district to deal with the problem. (Telephone interview with Pat Murphy, Assistant State Forester in charge of Resource Management)

Weed Control Districts

At least five states* have enabling legislation authorizing the establishment of weed control districts. These are usually

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*Arizona, Nevada, New Mexico, Washington, and Wyoming.

initiated by petition of affected landowners and require a referendum. There is usually a local governing committee of residents, sometimes appointed, sometimes elected.

Weed eradication districts have been extensively used in Nebraska. (Bollens, supra, p. 176) The function of the district is to eliminate weeds that are harmful or injurious to agricultural productivity. The following discussion of Nebraska weed control districts is based in large measure on Bollens, supra.

Membership in the district is based upon land ownership. Twenty-five landowners (or more than one-half of them if there are less than 25) may petition for the formation of such a district having a minimum area of one square mile in the case of unincorporated land and one city block in the case of incorporated territory. After the petition is filed the county clerk for the county wherein most of the proposed district lies notifies the State Agricultural and Inspection Director.

This official, with assistance from the Agricultural College of the State University, determines the extent of infestation by noxious weeds within the proposed district and provides the county board of supervisors with his recommendation whether the petition should be granted in whole or in part. When the district is to contain unincorporated land,the county board holds a hearing prior to acting on the petition.

The governing board is composed of from three to five supervisors, elected by the landowners within the district. The supervisors serve for staggered three-year terms.

At a regular annual session, the landowners determine the assessments to be made to defray the administrative costs anticipated by the supervisors for the forthcoming year. An additional meeting is held by the supervisors with the landowners whose property is to be assessed for weed control and eradication. At the end of this meeting, the supervisors enact their control plans and determine assessments.

All land within the district is subject to the administrative costs approved at the regular meeting. However, only the owners of those lands receiving eradication and control benefits, according to the individual farm plan developed and passed by the supervisors, pay service assessments.

A landowner is permitted to carry out control and eradication measures himself in accordance with the plan and with the approval of the supervisors. The assessment against his land is then credited with an amount equal to the cost of comparable work. Otherwise, the supervisors employ outside help to implement the plan.

The State Agricultural and Inspection Director has general supervision over all districts. He makes surveys and inspections and consults with district supervisors. While he recommends what he considers the best plan of control, the supervisors are not bound to accept his recommendations, and they exercise ultimate authority in formulating the plan to be followed.

Agricultural Pest Eradication Districts

At least nine states* have legislation authorizing the creation of Agricultural Pest Eradication Districts. They are generally organized in the same manner as weed control districts, and function on a similar basis.

Nebraska

In Nebraska, 25 "bona-fide farmers or landowners" may petition for the formation of a pest eradication district (a district that has been or is in danger of being invaded by injurious pests). Upon receiving the petition, the State Department of Agriculture causes an investigation to be made and if it determines that the existing conditions appear to justify the establishment of such a district, it may, after hearing do so. The Department of Agriculture may also establish a pest eradication district upon its own. (Revised Statutes of Nebraska, § 2-1054).

After the establishment of the district, the Department of Agriculture determines "the proper methods of procedure for pest eradication work" and publishes notice of them in one or more papers circulated in the county in which the district is located. (Rev. Stat. of Neb., § 2-1055)

It is the duty of the person occupying the farm to carry out the instructions issued by the Department of Agriculture for putting out poison or doing other work in the manner recommended. If such person fails to carry out the department's instruction,

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*Arizona, California, Colorado, Nebraska, Nevada, New Hampshire, New Mexico, Washington, and Wyoming.

the department may proceed to do so. In that event, expenses of the work are reported to the county board of supervisors and they are paid from the county general fund. The landowner is thereafter ordered to appear and show cause before the county board why such expenses should not be taxed against the land. The county board has authority to make "such final order as is equitable for the extension of such expenses upon the tax list against such lands" and such expenses "shall be collected and paid into the county general funds as are other taxes." (Rev. Stat. of Neb., § 2-1057)

Refusing or neglecting to comply with the notice of the Department of Agriculture constitutes a Class III misdemeanor. (Rev. Stat. of Neb., § 2-1059)

Although legislation authorizing the establishment of pest eradication districts in Nebraska has been in existence for many years, such districts have rarely been put into operation in recent years (Telephone interview with William Abell, Counsel, Nebraska Department of Agriculture).

Wyoming

The general statutory scheme for the creation and operation of pest control districts is similar in Wyoming, except that the establishment of a weed and pest control district within each county is mandatory. See 4 Wyoming Statutes, §§ 11-5-101 through 11-5-121. Primary responsibility for the control of insect pests pursuant to methods specified by the District rests with the affected landowner, and the District may proceed to carry out

control measures and bill the cost therefor to the affected landowner if the landowner does not carry out control measures himself (11-5-111).

In Wyoming, pest control districts have been operating in twenty-two of the twenty-three counties in the State. It is common for affected landowners within a district to hire aerial applicators and ground crews on a group basis and to share the costs for these services on an acreage treated basis. It is also common for district governing boards to enter into contracts for such services and to allocate the costs therefor among the affected landowners on a cooperative basis. In either case, a portion of the costs for chemicals used in the program is funded through a levy upon all the lands in the district of up to one mill, while the full cost of application is paid for by the affected landowners. (Telephone interview with George Hittle, Weed and Pest Coordinator, Wyoming Department of Agriculture, and see §11-5-111).

Colorado

Colorado has specific legislation pertaining to the creation of grasshopper and rangeland caterpillar control districts, 14 Colorado Revised Statutes, Title 35, Article 5, §§ 116-123. Such a district may be established on petition of twenty-five percent of the resident landowners and resident lessees within the area of infestation (35-5-119). In order for control measures to proceed under the statute, the county commissioners in the affected county must certify that sixty-six and two-thirds percent of the landowners have agreed to pay a proportionate share of the cost of control measures (35-5-120).

Where the State has entered into an agreement with APHIS (U.S. Department of Agriculture, Animal and Plant Health Inspection Service) under which APHIS agrees to pay one-third of the cost, the landowners' share is fixed at one-third, and the State funds the remaining one-third. The landowners' share is two-thirds, and the State's share is one-third, where APHIS has not agreed to contribute to the program.

A grasshopper control program under a cooperative and cost-sharing agreement with APHIS has been in operation in Colorado in recent years. The State rather than the private landowners has engaged the services of aerial spray contractors under the program [telephone interview with Lawrence Martinez, Chief, Seed, Pest District and Apiary Section, Colorado Department of Agriculture].

Mosquito Control Districts

Mosquito control districts are similar in most respects to the kinds of special districts already discussed. We shall consider two examples, one having a two-tier regulatory hierarchy, and one following a single tier set-up.

New Hampshire

Under New Hampshire law, mosquito control districts may be established along existing city or town lines upon petition by 10 qualified voters. (N.H. Rev. Stats., C. 437-A:4) The question whether or not to form such a district is then presented to the voters of the city or town,and a majority vote in favor establishes the district. (N.H. Rev. Stats., C. 437-A:5)

The mosquito control district is governed by a board or committee consisting of three qualified voters residing within the district, appointed by the municipal governing body. The statutes provide that at least one of these appointed board members "should be a local governing body member; however, this one membership may be assigned." (C. 437-A:6)

The district board possesses general authority with respect to recommended lines of procedure, contracts, abatement programs and related fiscal measures. (C. 437-A:8) It has specific responsibility, among other things, to:

> 1) present to the State Committee on Mosquito Control and to the municipal governing body a recommended plan of procedure and operation for the ensuing year; and
>
> 2) supervise the measures necessary and proper for the control of all species of mosquitoes and other arthropods within the district. (C-437-A:8)

All districts established throughout the state are governed by a State Committee on Mosquito Control composed of the State entomologist, the director of fish and game, the director of the division of resources development, the director of the division of parks, the executive director of the water supply and pollution control commission, the chairman of the water resources board, the director of the division of public health services and the pesticides inspector employed by the pesticides control board. (C. 437-A:2)

The State Committee has the responsibility to advise each local district as to the best and most effective measures to be used "in bringing about permanent elimination of breeding conditions." (C. 437-A:8) Committee approval is required in order

for a district to participate in contract or program agreements involving state or federal funds. (§ 8)

Funds for the operation of the district are generated from special taxes levied upon real estate within the district at a rate not to exceed five cents upon the adjusted $100 valuation for state, city or town taxes. The tax constitutes a lien against the property. (C. 437-A:10) The district recommends the levy of the ad valorem taxes necessary to carry out the program for the ensuing year. (§ 8, 10)

California

In California, mosquito abatement districts may be formed to embrace any territory having a population of not less than 100 inhabitants upon petition by the registered voters in each unit of the proposed district equal to at least 10% of the votes cast in each unit for the office of Governor in the last election prior to the time the petition is presented. (Cal. Health & Safety Code, §§ 2210, 2211)

The Board of Supervisors of the county in which the greater portion of the proposed district is located, after hearing, determines "whether or not the public necessity or welfare of the proposed territory and of its inhabitants requires the formation of the district." (§ 2221)

A Board of Supervisors may also organize a mosquito control district by adoption of a resolution of its intention to do so. (§ 2215-5)

The District is governed by a board of five trustees, some of whom are appointed by the Board of Supervisors of the county where the district is located and others of whom are appointed from the cities within the district in varying proportions depending upon the kind of territory (incorporated or unincorporated) embraced by the district. (§ 2240)

The Board of Trustees is empowered to take all necessary steps for the extermination of mosquitoes, flies, and other insects "subject to the paramount control of the county or city in which they exist." (§ 2270)

Mosquito breeding places are declared to constitute a public nuisance. (§ 2271) The Board may notify landowners of the existence of such a nuisance upon their property and direct the landowner to abate the nuisance by destroying the larvae or pupae that are present within a specified time (§§ 2274, 2275), and perform any further work that may be necessary to prevent a recurrence of breeding in such places (§ 2276).

If the nuisance is not abated within the time specified, the Board is required to take necessary action to abate the nuisance. (§ 2282) The cost of such abatement must be repaid to the district by the owner of the property, but only if the owner has been afforded an opportunity to be heard on the issue whether a nuisance actually exists or existed prior to abatement by the district. (§ 2284)

All sums expended by the district in abating a nuisance or preventing its occurrence become a lien upon the affected property,

except that the lien provisions do not apply to any county, city, district or other public corporation. However, such public entities are required to repay the district the amount expended by the district upon any public property. (§§ 2284-2289)

Public Utility Model

There are no clear-cut distinctions or identifying characteristics which separate public utilities from ordinary types of business enterprise. The term "public utility" refers to the nature of the business and not to its ownership characteristics or operational features.

Inherent in the concept of public utility is public use or service to the public in an area clothed with a public interest. Businesses which furnish the public with electricity, water, gas, transportation or telecommunication have traditionally been classified as public utilities. In each of these cases, the general public has a legal right to demand and receive the services or commodities offered by the enterprise.

Public utilities are generally subjected to a specialized program of regulation which governs such matters as rates or prices, restraints upon competition, capitalization, safety standards, power of eminent domain and duty of service to the public.

If the spray entity was provided with exclusive authority to conduct aerial spraying as a budworm control method in the State of Maine, with the obligation to furnish such services to all members of the public desiring them, and if the entity was

further limited to a fixed fate of return for providing such services, it would have many of the characteristics of a public utility.

There may well be a serious question whether the business of carrying out aerial spraying for budworm control or suppression is the kind of business charged with a public interest that may legitimately be subjected to public utility regulation. However, as our conclusion is that a public utility model does not, in any event, possess features which would recommend it for the proposed spray entity, further discussion of this potential problem is not considered essential at this time.

Certain public utility features are inapposite to a spray entity. Regulation of rates of return only would be meaningful if the spray entity enjoyed monopoly power and possessed the capability of imposing unreasonably high charges for its services. Such events are not likely to occur simply because few if any landowners are likely to utilize the services of a spray entity that charges the landowners more than it would cost for them to conduct aerial spraying operations themselves. Rather than hiring an independent spray entity in the business of spraying for a profit, landowners would more likely pool resources and undertake spraying on a shared cost basis, and avoid the extra cost necessarily associated with making the activity of spraying itself profitable.

PART IV

COOPERATIVE ACTIVITIES BY MAINE FOREST LANDOWNERS

There is a long history of cooperation among Maine landowners to meet common problems. Indeed, a unique system of forest land management has developed in Maine, principally as a result of the large amount of land that is owned on a common and undivided basis. Groups of owners have formed organizations, retained individuals and firms and have delegated amongst themselves management and ownership responsibilities.

One form of cooperative arrangement utilizes a manager who determines the time, place and volume of timber to be harvested on behalf of the owners represented. The proceeds from the sale, less operating costs, are then divided among the owners on the basis of each owner's share. In this way several common and undivided interests are managed as though they were under single ownership. [Ferguson & Kingsley, The Timber Resources of Maine (1972), p. 6.]

Another common occurrence is for one of the large industrial landowners to negotiate with other owners and jointly arrive at an agreement on management objectives and responsibilities. (See Ferguson & Kingsley, supra, p. 6.)

Another example of cooperative activity is the construction and maintenance of woods roads. The "Golden Road" was constructed by Great Northern Nekoosa Paper Company over 95 miles of its own lands, 5 miles of lands jointly owned with others and 8 miles of lands jointly owned entirely by others. Great Northern constructed

the road at its own expense and secured permission to cross the lands of its neighbors. The costs of maintaining the road are defrayed through user fees charged to users of the road. These are based on the number of "cord miles" or "board foot" miles travelled by the user.

The so-called "IP" road passes over lands wholly owned by Great Northern and wholly owned by International Paper Company. Maintenance costs for the entire length of the road are shared between the two companies pursuant to a written agreement under which International Paper does the actual maintenance and Great Northern pays part of the cost. The relative share of each is determined on the basis of whichever is most active in the area. When Great Northern has hauled more than International Paper over the road, it has paid most of the maintenance costs, and when IP has hauled more, it has paid most of the maintenance costs.

Yet another example of cooperative activity may be found in a cooperative program among several industrial landowners for obtaining aerial photographs of their forest lands. The group determines where photographs are to be taken and how costs are to be shared. Services are provided through an independent contractor.

One of the more striking examples of cooperation among Maine landowners in the past was the log driving association. Originally, each owner or operator drove his own logs down Maine's rivers independently. However, as the rivers became more crowded, as the cost of small drives increased and as difficulties were encountered in controlling the water to suit the needs of many drives, and in sorting logs of various owners and passing them

over dams and booms equitably, it became apparent that some form of cooperative effort was necessary. This led to the formation of mutual organizations to handle drives for all operators landing logs on a particular river. (Hempstead, Penobscot Boom, p. 46; Wood, Lumbering in Maine 1820-1861, p. 106.)

The log driving association was typically made up of persons either owning timberland or being engaged in lumber operations upon a particular river. The Association delivered the logs to their destination at a pro rata cost to its members. The company operated on a break-even basis.

Different companies were established by act of the Legislature for various rivers or portions of those rivers. For example, P.L. 1847, C. 91 created the Allagash and East Branch Log Driving Company. The company was established as a "body politic and corporate" to drive the logs of its members (and non-members when requested to do so) on those rivers. Private and Special Acts 1833, C. 331 established the Penobscot Log-Driving Company. Other acts established similar organizations for the Androscoggin, P.L. 1832, C. 8, the Kennebec, P. & S. 1835, C. 590; and various other rivers. See P. & S. 1827, C. 493, "AN ACT to incorporate the Cherryfield Log Driving Company;" P. & S. 1836, C. 159, "AN ACT to incorporate the Narraguagus Log Driving Company;" P.L. 1846, C. 400 "AN ACT to incorporate the Little River Log Driving Company;" P.L. 1849, C. 290 "AN ACT to incorporate the Kenduskeag Log Driving Company;" P.L. 1853, C. 91 "AN ACT to incorporate the Mattawamkeag Log Driving Co.;" and P.L. 1854, C. 316 "AN ACT to incorporate the Machias Log Driving Company."

These companies were usually non-stock corporations, having the following officers: a Moderator, a Clerk, a Treasurer, five Directors (three usually constituted a quorum) and a Master Driver appointed by the Directors.

Each member was usually entitled to one vote, although in some cases members were entitled to one vote for each six ox-team operating in that year. Membership was determined on an annual basis, as was the election of officers.

The drive was usually let or "bid off" each year to the lowest bidder. When bids were too high, the Master Driver conducted the drive.

Assessments were customarily based on the proportion of logs driven, taking into account the place of destination and the difficulty and distance of driving.

* * *

These few examples suggest that where economies of scale exist and where cooperative activity is otherwise efficient, necessary or viable, Maine landowners have demonstrated a willingness to work together. They have managed lands, built and maintained roads, driven logs and contracted for aerial photographic services, all on a group basis. There is, therefore, reason to be optimistic that landowners would be able to cooperate in carrying out spruce budworm spraying if that activity were to become their responsibility.

PART V

EXPOSURE OF A SPRAY ENTITY TO LIABILITY FOR DAMAGES AND SUITS FOR INJUNCTIVE RELIEF

The first section of this part of the report will examine the general principles of liability applied by American courts to claims of damage from the application of pesticides by aerial spraying. For the purpose of this part of the discussion we will ignore the role of the State in the present and any projected budworm spray program and discuss liability as if each landowner contracted to have his land sprayed. We will then apply the principles examined to the present spray program and to the alternative programs considered by this report. In the process we will discuss measures that might temper liability exposure and some of the relevant policy considerations.

A second section of this part of the report will briefly survey theories on which suits for injunctive relief limiting or banning a spray program could be based and attempt to reach some tentative conclusions about exposure to this kind of litigation. Finally, we will also discuss possible anti-trust exposure of participants in a private joint venture to control the budworm.

We conclude that on one theory or another a private entity conducting budworm spraying would be liable for personal injuries or property damage demonstrably caused by spray landing outside the area properly designated for spraying, whether it was carried there by wind drift or deposited because of faulty navigation or

mistakes in handling nozzle controls. Both the spray applicator and the private spray corporation would be equally liable. It would be immaterial whether that private entity was a cooperative, a public utility, or simply a non-profit corporation. The courts have typically imposed a very high standard of care, and sometimes an absolute liability, upon the conduct of aerial spraying. At the same time, high personal injury and property damage awards have not been characteristic of these cases.

The State and instrumentalities of the State, such as quasi-governmental corporations, are probably excused from liability in all but unusual circumstances by the Maine Tort Claims Act. The State, however, is not presently taking full advantage of its immunity. It requires applicators hired for the present program to carry substantial insurance. Thus there should be no significant increase in costs of the program on account of liability if it were conducted by a private corporation, only a shift in responsibility for payment of those costs.

We have also concluded that there is no significant difference in exposure to injunctive relief between a privately operated spray program and a program operated by the State, except to the extent the State itself might seek such relief as part of its environmental monitoring responsibility. Finally, we conclude that the risk of anti-trust exposure is not significant.

We have not discussed potential liability of the spray entity to its own shareholders or to non-shareholder landowners

whose land is sprayed at their request or with their consent. Although those questions have some theoretical interest, the liabilities involved are easily eliminated by agreement of the parties.

LIABILITY FOR DAMAGES: Legal Theories

American and Canadian courts have routinely imposed liability for personal injuries and property damage demonstrably caused by chemicals applied by aerial spraying. Most such cases have involved low-level spraying, and in a majority the agent being sprayed was a herbicide. The principals developed are, however, readily applicable to budworm spray operations.* We will discuss, first, the principles developed by the courts of other jurisdictions, and second, the probable response of Maine's Law Court, which has not yet decided an aerial spraying case.

The typical spray liability case involves the incursion of spray on land other than the land for which it was intended. Incursions have resulted in spray contacting crops, animals and insects susceptible to injury, and in a few cases, people. Although it is not always clear how the spray missed its target, presumably either the pilot made a navigational error or mistakenly had spray nozzles on at the wrong time, or wind or other atmospheric factors caused the spray to drift where it did not belong. In view of the standards of liability used in these cases, the precise reason why the spray hit an unintended target has rarely been significant.

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*Because population density is much lower in the budworm spray area than in areas where most crop spraying cases have arisen, and because there may be less likelihood of contact with activities susceptible to damage from misplaced spray, the chances of liability creating incidents may be less.

The courts have invoked a variety of legal theories in aerial spraying cases. Some courts hold that the incursion of spray on the plaintiff's land is a trespass; others hold that the spray escaping from land for which it was intended amounts to a private nuisance. Some courts have applied the doctrine of strict liability for abnormally hazardous activities to aerial spraying. Other courts ostensibly use negligence as a touchstone of liability but hold the sprayer to an exceedingly high standard of care, requiring anticipation of changes in wind direction and other pertinent atmospheric conditions. Sometimes it is not clear which theory the court has adopted. The net result of all theories applied to these cases has been the imposition of a very nearly absolute liability upon both the spray applicator and the landowner whose property is being sprayed.

Except for the State of Texas, every jurisdiction to consider the question has treated pesticide spraying as an unusually hazardous activity, for one purpose or another. Classification of an activity as unusually hazardous is pertinent to several issues that have arisen in spraying cases. First, unusually hazardous activity is a ground for imposing liability for damages caused by an unintentional and non-negligent entry onto land in the possession of another. It is also a factor in imposing liability without fault on a nuisance theory. Second, when an unusually hazardous activity is involved, a landowner may not avoid liability by hiring an independent contractor, as would be the case if the activity were not unusually hazardous. Third, engaging

in an unusually or abnormally hazardous activity may be an independent basis for the application of the doctrine of strict liability, which holds the actor responsible for all consequences of the activity without fault and regardless of the amount of care he uses.

The criteria by which an activity is determined to be unusually hazardous are not necessarily identical for all of the foregoing purposes. Hence, to decide that spraying is unusually hazardous for the purpose of holding a landowner liable for the results of work done by an independent contractor spray applicator will not necessarily mean that the court will apply the doctrine of strict liability. One court may hold a landowner liable for the acts of an independent contractor applicator, because spraying is an unusually hazardous activity, basing the ultimate liability of both these parties on the negligence of the applicator, while another court holds the landowner (and the applicator) liable, without regard to the negligence of either, by applying the doctrine of strict liability for injuries arising from an unusually hazardous activity.

In any of these situations the determination that an activity is abnormally hazardous is a complex calculus of social factors that in combination may represent no more than the court's judgment that justice requires the defendant, rather than an uninvolved outsider, to pay the costs of his activity. As catalogued by the Restatement of Torts 2d, § 520, for the purpose of determining whether to impose liability without fault, the factors

to be considered in determining whether an activity is abnormally hazardous include: 1) a high degree of risk; 2) the likelihood that any resulting harm will be great; 3) inability to eliminate the risk by using reasonable care; 4) unusual nature of the activity; 5) inappropriateness of the activity to the place where it is carried on; and 6) the balance between its value to the community and its dangerousness. The determination is for the court, not the jury. Bella v. Aurora Air, Inc., 566 P. 2d. 489 (Ore. 1977). There is little difficulty seeing that aerial pesticide spraying qualifies for strict liability under factors 1 and 3. Factor 2 is debatable but has been accepted with little question by the courts when harm has in fact occurred. Spraying has been found sufficiently unusual and inappropriate for factors 4 and 5 even in agricultural states where the activity is probably frequent. Factor 6 has never been considered to outweigh the balance struck against crop spraying on the basis of factors 1 through 5. It is doubtful that budworm spraying would be given a better score for purposes of this calculation than agricultural spraying. The remoteness of most areas where it occurs would probably matter only if the injury complained of had occurred in a remote area where damage was not to be anticipated.

The following cases exemplify the theories applied to crop spraying cases by the courts.

The Oregon courts, in Cross v. Harris, 370 P. 2d. 703 (Ore. 1962), and Loe v. Lenhardt, 362 P. 2d. 312 (Ore. 1961), appear to have used trespass as a ground of liability, although Loe v.

Lenhardt could as easily be read as a case imposing strict liability. Whatever the basis for recovery, the court held in each case that it was unnecessary for the plaintiff to show that defendants were negligent, only that the spray had entered his land. In both cases it was assumed that the impact on plaintiff's land was utterly unintentional.

As these cases indicate, a trespass may be any physical invasion of the plaintiff's land, including air-space normally used as part of use of the land. The invasion may be accomplished by the aircraft or any part of it, or by the spray itself. Generally speaking, there is no liability for an unintentional and non-negligent entry onto land in the possession of another unless the entry was the result of an abnormally hazardous activity. Hudson v. Pearly Oil Co., 566 P. 2d. 175 (Ore. 1977), 1 Restatement of Torts 2d. § 166. For this purpose unintentional connotes the lack of intent that the spray be applied to the land where, in fact, it landed, as, for example, in the case of spray carried by an utterly unanticipated and unpredictable wind. By contrast, if the sprayer mistakenly and innocently believes the plaintiff's land is the land he has been hired to spray, and acts on that belief, he would be liable for a trespass whether spraying is considered an abnormally hazardous activity or not. The act would have been intentional, although the result of a mistake. 1 Restatement of Torts, 2d. § 164.

In both cases cited above, the Oregon Court held that spraying was an abnormally hazardous activity and that negligence and

intent to enter the plaintiff's land were irrelevant. In Loe v. Lenhardt, in which both applicator and landowner were held liable, a herbicide, described as not as dangerous as 2-4-D, had damaged plaintiff's crops. The Court concluded that the effects of misdirected spray would be (and had been) sufficiently drastic to warrant treating the spraying as an abnormally hazardous activity that was capable of inflicting damage despite the exercise of the utmost care.

Miles v. A. Arena & Co., 73 P. 2d. 1260 (Cal. App. 1938) imposed liability for crop spraying damages on the basis of a nuisance theory. Defendant Arena had a field of melons dusted with calcium arsenate. The trial court found that a wind blowing in the direction of plaintiff's property had carried the dust there, where it killed 56 hives of bees. The applicator was held to be an independent contractor, but Arena could not avoid liability on this account. Carrying on an activity classed as a nuisance is alone sufficient to create liability for any resulting damage. Arena had contracted for just such an activity, and it was immaterial how skilfully the contractor did the work. The court noted that adoption of the most approved applicances and methods would not avoid liability if the insecticide had not in fact been contained within the defendant's property where it belonged. Thus, it appeared that liability would have been imposed even if defendant had been unaware of the wind, although the Court also found that the damage should have been anticipated.

Both contemporary nuisance doctrine and the more general doctrine of strict liability for the results of abnormally hazardous activity are frequently traced to the opinion in Rylands v. Fletcher, an influential nineteenth century English decision.* As usually quoted, the holding of that case was:

> "If a person brings or accumulates on his land anything which, if it should escape, may cause damage to his neighbor, he does so at his peril. If it does escape, and cause damage, he is responsible, however careful he may have been, and whatever precaution he may have taken to prevent the damages."

The substance in Rylands v. Fletcher was water. In current nuisance theory, the escaping thing may be liquid, spray, gas and fumes or even the blast effect of explosives. As more generally expressed, the principle applied by the courts is that a use of one's land is such way as to deprive neighboring landowners of the full use of their lands creates an actionable nuisance. Negligence is immaterial, and it is immaterial whether the spray applicator is an independent contractor, since the presence of the activity on defendant's land alone creates liability.

Closely related historically to nuisance, but more general, is the doctrine of strict liability for abnormally hazardous activities. As expressed in 3 Restatement of Torts, 2d. § 519 (The American Law Institute, 1977), the rationale for this species of liability is:

> "The liability . . . (of one who carries on abnormally dangerous activities) is not based upon any intent

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*Nuisance as the name for a cause of action is actually older.

> of the defendant to do harm to the plaintiff or to affect his interests, nor is it based upon any negligence, either in attempting to carry on the activity itself in the first instance, or in the manner in which it is carried on. The defendant is held liable although he has exercised the utmost care to prevent the harm to the plaintiff that has ensued. The liability arises out of the abnormal danger of the activity itself, and the risk that it creates, of harm to those in the vicinity. It is founded upon a policy of the law that imposes upon anyone who for his own purposes creates an abnormal risk of harm to his neighbors, the responsibility of relieving against that harm when it does in fact occur. The defendant's enterprise, in other words, is required to pay its way by compensating for the harm it causes, because of its special, abnormal and dangerous character.

A summary of the applicable legal principles may be found in 3 Restatement of Torts, 2d. §§ 519-524A.

Gotreaux v. Gary, 94 So. 2d. 293 (La. 1957), is an example of a case decided on the theory of strict liability or liability for abnormally dangerous activities, as outlined in the Restatement. Plaintiff's cotton and pea crops were damaged by 2-4-D. Defendant, whose land was three miles south of Plaintiff, had used the spray on his rice crop. The operation had been conducted in accordance with regulations issued by the Louisiana Department of Agriculture, defendant stopping when the wind began. Nonetheless, Plaintiff's crops showed the characteristic effects of 2-4-D and no other source for the herbicide could be identified. Defendant was held liable without regard to fault. The court likened crop spraying to blasting operations and held, quoting a previous opinion:

> "We are unwilling to follow any rule which rejects the doctrine of absolute liability in cases of this

> nature and prefer to base our holding on the doctrine that negligence or fault, in these instances, is not a requisite to liability, irrespective of the fact that the activities resulting in damages are conducted with assumed reasonable care and in accordance with modern and accepted methods."

Accord, Langan v. Valicopters, 567 P. 2d. 218 (Wash. 1977).

In some cases, although the court invokes strict liability, it is evident that the defendant was also negligent. For example, in Young v. Darter, 363 P. 2d. 829 (Okla. 1961), defendant's brother, who did the spraying, did not know 2-4-D spray would drift or that it would damage cotton. He applied the spray when a breeze, characterized as a little and also possibly quite a bit, was blowing toward plaintiff's land. The Court observed:

> "Any precaution defendant's agent may have taken to prevent the injuries to plaintiff's cotton, in view of the results do not serve to extinguish his liability. The question in general is not whether defendant acted with due care and caution, but whether his acts occasioned the damage."

A respectable number of cases, perhaps the majority, rationalize imposing liability on the spray applicator with a negligence theory, suggesting that some fault must be shown. On close analysis, however, the standard of care required of a crop sprayer is so great as to amount to virtually absolute liability.

Binder v. Perkins, 516 P. 2d. 1012 (Kan. 1973), is an example. Plaintiff was the lessee of land on which he grew alfalfa. His land was adjacent and west of a wheatfield owned by one Ruders, who had hired defendant to spray his wheat with 2-4-D. A heavy application was needed to kill weeds before harvest time.

Defendant sprayed the Ruders field on a day when the wind blew steadily out of the Southwest, thus sending any drifting spray over other land of Ruders and away from plaintiff's land. A heavy dose of low volatility ester 2-4-D was applied. Expert testimony indicated that it would evaporate and give off fumes for two to three days. One day after the spraying the wind shifted to the northeast, then to the east. Plaintiff's alfalfa was showing the effects of 2-4-D three days later. About two-thirds of his plants eventually died or were badly damaged.

The trial court held:

> "The evidence shows conditions under which this evaporation and escape of 2-4-D could reasonably be expected to continue for two days and more after application . . . . The evidence shows the wind changed within 24 hours to East of North and continued briskly from the East for another 24 hours and more. And in Kansas, that should reasonably have been expected."
>
> * * *
>
> "Defendant contends the trial court applied strict liability or liability without negligence to his activities . . . . We find no merit to that contention . . . . The duty of care imposed upon the crop sprayer, however, is a matter for the courts, and the trial court in this case has characterized 2-4-D as a dangerous activity, and has imposed upon the one handling it a duty to prevent its escape. This is the outline of a high degree of care, not liability without fault."

The Court seems to be making a distinction without a difference. An unqualified duty to prevent escape of the herbicide is surely a degree of care so high as to equal absolute liability for any discernible purpose.

Most of the cases discussed so far, and most of the cases decided have involved herbicide spraying. Insecticide spraying is, as might be expected, no different in principle; only the type of consequence and the damages differ. The following cases illustrate similar treatment applied to insecticide spraying. S. A. Gerrard Co. v. Fricker, 27 P. 2d. 678 (Ariz. 1933) (bees killed); Sanders v. Beckwith, 283 P. 235 (Ariz. 1955) (dairy herd, all sick, some killed); Hammond Ranch Corp. v. Dodson, 136 S.W. 2d. 484 (Ark. 1940) (miscellaneous farm animals ill; some died); Miles v. A. Arena & Co., 73 P. 2d. 1260 (Cal. App. 1937) (bees killed); Kentucky Aerospray, Inc. v. Mays, 251 S.W. 2d. 460 (Ky. 1952), commercially produced minnows killed); Lawler v. Skelton, 130 So. 2d. 565 (Miss. 1961), (human being); McPherson v. Billington, 399 S.W. 2d. 186 (Tex. Civ. App. 1965).

Additional discussion of the legal principles involved and cases arising out of spray damage claims can be found in the following article, "Liability in the Aerial Application of Pesticides," 22 South Dakota Law Review 75, 1977, and annotation "Crop-Dusting Liability for Injury," 37 ALR 3rd 833.

In view of the one-sided results reached on traditional grounds by the courts in spray-liability cases, additional theories of liability scarcely seem necessary. It is, however, worth noting that a few authorities have suggested that application contrary to instructions on a pesticide label may create aerial liability in and of itself. This view rests on the Federal Insecticide,

Fungicide and Rodenticide Act, which declares the use of pesticides contrary to label instructions to be unlawful. "Legal and Practical Aspects of Pesticide Spraying Cases," 37 Ins. Counsel Journal 585 (1970); Perry Creek Cranberry Corp. v. Hopkins Agricultural Chemical Co., 139 N.W. 2d. 96 (Wis. 1966).

LIABILITY FOR DAMAGES: The Maine Courts

Although the Law Court has yet to decide its first crop spraying case, we have little doubt that it would impose liability in such a case either without the necessity of proving fault or upon the basis of such a high standard of care as to amount to absolute liability for all damages demonstrably caused by the spray. The Maine Courts recognize doctrines of trespass and nuisance. [For the latter see Norcross v. Thoms, 51 Me. 503 (1863).] The Law Court has not yet recognized the doctrine of strict liability as an independent ground of recovery, but a series of cases involving damages from the use of explosives indicates that, as in Binder v. Perkins, supra, the Court would impose a standard of care so high as to amount to the same thing.

In 1950 Maine's Law Court was asked to hold that the use of explosives to excavate a sewer line was an abnormally hazardous activity giving rise to strict liability for any damage caused without regard to fault. The invitation was declined. Reynolds et al. v. Hinman Co., 145 Me. 343 (1950). The Law Court in that case rejected the doctrine of strict liability in favor of a rule that would require negligence as a predicate to liability but would impose a higher duty of care as the potential harm from

defendant's activity increases. The opinion noted that when, as a matter of common experience, an activity would not cause damage unless carried on negligently, the occurrence of damage alone could be accepted as sufficient proof of negligence. The latter rule, known as the doctrine of res ipsa loquitur, in effect dispenses with the need for independent evidence showing a particular negligent act or acts.

Two subsequent explosives cases made clear that the differences between the rule laid down in the Reynolds case and absolute liability were more of form than substance. In Albison et al. v. Robbins & White, 151 Me. 114 (1955), and Cratty v. Aceto & Co., 151 Me. 126 (1955), the Court held that a high standard of care applied to the use of explosives, and the very occurrence of damage to nearby houses apparently caused by blasting was sufficient evidence of negligence, since it was common knowledge that the damage could have been avoided by using a smaller charge. In the Albison case it appeared the defendant knew the blasts were damaging plaintiffs' homes but failed to use smaller charges. In the Cratty case, the defendant may not have known damage was occurring. The Court noted that defendant was bound to know of a slate formation extending under plaintiff's home that transmitted the shock from blasting with special efficiency. These results are very close to absolute liability, whatever label is put on the theory of recovery.

The Reynolds case notwithstanding, we think the Law Court would impose the equivalent of an absolute liability for damage

from aerial spraying of pesticides if the question were now presented to it. The unanimity of other American jurisdictions, in result if not in rationale, and the otherwise formidable difficulties of plaintiffs who may have incurred real damage would, in our opinion, prove irresistible.

LIABILITY FOR DAMAGES: Causation

Essential to establishing liability for damage is a demonstration that the defendant's acts caused those damages. In American crop spraying cases this has not been a serious problem. The effects of a herbicide spray are ordinarily easy to recognize. Analysis of residual amounts of chemical can also establish that the substance sprayed has landed on plaintiff's property. Insecticide damages may be somewhat more speculative in some cases, but the evidence of observable harm close in time to the spraying has often been sufficient. When damage to domestic bees has been claimed, the sprayed insecticide has ordinarily been the only agent in the vicinity capable of producing the observed result. E.g. Miles v. A. Arena & Co., 73 P. 2d. 1260 (Cal. App. 1938). Liability has also been imposed for illness and death of animals in the absence of an explanation other than a recent insecticide spraying. Thus, when the damage is readily observable and is of a type to be expected from the sprayed pesticide, the courts will infer that the pesticide was the cause unless the defendant can show that some other agent equally effective to produce the observed results was present at the relevant time.

Plaintiffs have not had such an easy time of it when claiming personal injury as a result of insecticide spray. In these cases, the problem has not been establishing the cause of observable damage, but demonstrating that damage has occurred or will occur in the future. In most of the recorded cases, the plaintiffs could only claim mild discomfort, and future pathologic effects were entirely speculative. In one case, far more serious injury appears to have been done, but the amount of spray received by the plaintiff was considerable and the time interval between spraying and symptoms was quite short. Lawler v. Skelton, 130 So. 2d. 565 (Miss. 1961).

LIABILITY FOR DAMAGES: The Parties

As the preceding discussion pointed out, in the typical crop-spraying case, the landowner who has his land sprayed is ordinarily liable to his neighbor who suffers damage as a result. These cases have involved two potential defendants, an applicator and a landowner who hires him. Ordinarily the applicator is an independent contractor, and ordinarily one who engages an independent contractor is not liable for injuries caused by his conduct. Leavitt v. Bangor & Aroostook Railroad Co., 89 Me. 509 (1897).

The rule is, however, riddled with exceptions (see 41 Am. Jur. 2d., "Independent Contractors," §§ 25-47), two of which were noted and discussed in the Leavitt opinion. When the work of an independent contractor creates a nuisance, and when it is intrinsically dangerous, the employer will be liable. (89 Me. 509, at

519). Some courts have held that crop-spraying creates a nuisance. All courts to decide the question, apart from Texas, have held that crop-spraying is intrinsically dangerous for purposes of this exception to the general rule of employer non-liability for the work of an independent contractor. (See 37 ALR 3rd 833, at 843.)

This is not the same as holding the activity to be abnormally hazardous for purposes of imposing strict liability. Thus, Maine's rejection of the latter doctrine does not suggest that it would excuse the employer of an independent contractor crop sprayer from liability from misplaced spray. The Leavitt opinion suggests the contrary by citing the example of an employer liable for damage from the blasting operations of an independent contractor, the very situation in which the Law Court rejected the doctrine of strict liability. The liability of an employer for intrinsically dangerous activities of an independent contractor was recognized by a Law Court composed of the same justices who decided two of the explosives cases, in which the doctrine of strict liability was avoided (discussed at page 119 supra), in Hersum v. Kennebec Water District, 151 Me. 256, 268 (1955). Hence, we conclude that the employer of a spray applicator in Maine would be liable, as well as the applicator, for damage arising out of the spraying.

DAMAGES

Exposure to very substantial damages has not yet been characteristic of most American aerial spraying cases. For example, in Kentucky Aerospray v. Mays, 251 S.W. 2d. 460 (Ky.1952),

plaintiff recovered $1,000 for the death of 150,000 minnows. In another case, the loss of 56 hives of bees produced a verdict of $336.00. Crop damages on the order of a few hundred to ten thousand dollars have been awarded. In 1973, loss of two-thirds of a rented five and one-half acre alfalfa field was worth $639.30. Insecticide damage to a canteloupe crop was worth $10,000 in 1954, Crouse v. Wilbur-Ellis Company, 272 P. 2d. 352 (Ariz. 1954), and one year later the same figure covered injuries to a dairy herd caused by DDT and benzene hexachloride, Sanders v. Beckwith, 283 P. 2d. 235 (Ariz. 1955). At least one Canadian plaintiff succeeded in proving significantly higher damages from reduced blueberry yields owing to reduction in the bee population and an increase in the bird population and recovered over $56,000. [Bridges Brothers Ltd. v. Forest Protection Ltd. 72 D.L.R. (3d) 335 (1976).] Plaintiffs in the personal injury cases have simply not been able to demonstrate any tangible injury. This is not to say that damages will always remain low. Chemicals can produce unexpected and long term damage that may not be demonstrable or even suspected for years.

MITIGATION OF LIABILITY

Statutory devices for mitigation of liability have been tried in several of the midwestern and plains states where large scale agriculture and crop-spraying are commonplace. Generally, these statutes require notice to the spray applicator and the landowner of any claims within a short period, such as thirty to

sixty days. We have found no data to suggest how effective or ineffective these statutes may be at reducing liability. There is reason to suspect they may not make much difference. For one thing, the courts have tended to ease the effects of such a statute upon plaintiffs by ruling that substantial compliance is sufficient and that failure to comply in every respect with the statutes will not defeat a damage claim unless the defendant can demonstrate prejudice. See, e.g., Olmstead v. Reedy, 387 P. 2d 631 (Okla. 1963); Loe v. Lenhardt, 362 P. 2d. 312 (Ore. 1961), dismissing various defects in compliance with a notice statute.

Another possible statutory device to mitigate liability similar to a notice requirement is a very short statute of limitations. Like the notice statutes, it could be argued that the defendant will rarely be aware of an accident that may create damage claims from spray operations until a claim is made and thus will not, until then, be able to investigate the facts and preserve evidence. The plaintiff, on the other hand, should know very soon whether he has a property damage or personal injury claim and thus may file suit promptly. It would be argued that claims of property damage from spraying that are not discovered for one year, for example, are likely to be ficticious and personal injuries dormant for such a length of time likely to be speculative. It is not at all clear, however, that short periods of limitation actually reduce liability costs. Moreover, against the defendant's fairness argument must be balanced the possibility of cutting off some meritorious claims. Illness from exposure to insecticide may be present but misidentified.

If a causal connection to budworm spraying can be demonstrated persuasively, should the claim be foreclosed simply in the interest of reducing the cost of operation? The sprayers should be able to maintain records that will protect any defenses they may have.

Still another theoretical possibility is an assumption of risk statute, such as has been enacted with respect to ski injuries. This would appear to have very limited utility. It is scarcely fair to require a resident of a sprayed area to assume the risk of an activity he does not undertake himself, cannot control, and may not want. Persons who enter land that will be sprayed as invitees or licensees may justifiably be asked to assume the risks involved, but legislation is not necessary for this purpose.

LIABILITY FOR DAMAGES UNDER THE PRESENT SPRAY PROGRAM

Under the present spray program three participants have a potential for liability exposure that, at first blush, is at least worth considering: The State, the spray applicator, and the cooperating landowners,i.e., those whose lands are designated for spraying and who have not requested withdrawal. We will consider their liability in that order.

Although the Maine Tort Claims Act is not as clear as it might be, as matters now stand we believe the State is probably not liable for damage from the budworm spraying it conducts. It appears that the Tort Claims Act immunizes the State from liability for "discharge, dispersal, release or escape of . . . chemicals . . .

into or upon land," (14 M.R.S.A. §8103.2.G.) unless the discharge, dispersal, release or escape is "sudden and accidental". (14 M.R.S.A. §8104.3.) It is doubtful this language was designed for budworm spraying or that pesticide spraying even occurred to the Legislature. Certainly there are difficulties fitting this langugage into the events of a spray operation so as to produce a rational separation of liability from non-liability situations.

For example if a spraying aircraft crosses over land it should not be spraying, the discharge would not seem to be "sudden", even if the incursion into forbidden territory can be called "accidental". Similarly, spray carried by wind drift produces an "accidental" "escape" in one sense, but not an accidental "discharge", and probably does not qualify as "sudden". Turning the spray on at the wrong time through inadvertent movement of the pilot or mechanical failure, may produce both a "sudden" and "accidental" discharge, but there seems to be no good reason, in the spraying context, to treat that release of spray differently from a mistake in flying over excluded land while the spray nozzles remain on. Nonetheless, the statute seems to preclude recovery in most situations in which damage claims could be expected. The question is not likely to be resolved by the pending Ramage suit, since the pertinent events occurred before enactment of the Tort Claims Act. The suit will be defended and is probably defensible primarily on that narrow ground.

Applicators who spray pursuant to contracts with the State, on the other hand, probably are liable, at least on the negligence and

trespass theories discussed above and possibly on a theory of nuisance and strict liability as well.* Existing case law does not, however, permit a firm conclusion on the latter question. Contractors engaged in government construction have been held strictly liable for blasting damage. Lobozzo v. Adam Erdemitler, 268 A. 2d. 432 (Pa. 1970). On the other hand, when a contractor's use of explosives and the method of use were approved by the government and incorporated in the contract, he was exonerated. Pumphrey v. J. A. Jones Construction Co., 94 N.W. 2d. 737 (Iowa 1959). And when the damage necessarily followed from the result for which the government contracted, a change in the banks of a river that caused erosion of plaintiff's land, the contractor was not liable. Yearsley v. W.A. Ross Construction Co., 309 U.S. 18 (1940). Restatement of Torts 2d, Vol. 3 § 521, suggests that the doctrine of strict liability for abnormally dangerous activities would not apply to activities in pursuance of a public duty imposed on the actor as a public officer or employee, but expresses no opinion whether the doctrine would apply to activities not carried on as part of a duty but sanctioned by legislation. Thus it may be that spray applicators, as the equivalent of public employees for this purpose, would be immune from doctrines of strict liability to the extent any damages claimed resulted solely from carrying out the contract

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*Legislative authorization for the present program may exclude nuisance as a theory of liability. 58 Am. Jur. 2d. "Nuisance," § 228, 230.

with no intervening fault on the part of the applicator.

The applicators may, however, not enjoy that immunity as the present program is administered. Their contract with the State requires that they carry insurance against liability from misplaced spray, precludes the applicator or his insurer from defending an action for damages on the ground of the State's immunity, and requires the applicator to indemnify the State. Actually, in this and previous years the State may not have contracted with the applicator until the spraying was accomplished. An interim contract has been executed between the applicators and Great Northern Paper Company, which has been assigned to the State when public funds become available.*

Landowners whose land is sprayed by the State as part of the present program are probably not liable for damage (except to the extent a duty to warn licensees or invitees is involved). They do not do the spraying and have no control over whether their land is sprayed, except to the extent the State allows them to withdraw lands. We doubt that the negative option to withdraw would be sufficient to subject a landowner to liability as if he had procured the spraying on his own initiative.

The landowner's liability to licensees and invitees is a somewhat different matter. Members of the public travel across

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*The liability of Great Northern Paper Company would seem to involve the same principles and uncertainties as the liability of the applicators.

and use much of the probable spray area. They do so for recreational and other purposes frequently with the knowledge and consent of the landowners, who monitor their comings and goings with gates and other checkpoints. Whether their status is technically that of invitees or licensees is immaterial, since the Law Court recently held that a landowner has the same duty toward each. That duty probably includes a duty to warn of known hazards on the land.

It is not clear it includes a duty to warn of transient hazards, such as spraying, but it arguably may extend that far. Presumably the landowners have no such duty toward persons not entering their land in such a way as to give notice of their presence.

LIABILITY FOR DAMAGES UNDER ALTERNATIVE PROGRAMS

The following alternative spray entities have been considered by this report: a quasi-public corporation, a public utility, and a cooperative or other corporation organized as a non-profit joint enterprise of the landowners.

Quasi-public corporations are within the scope of the Tort Claims Act. Hence the quasi-public corporation itself would, with one exception, share the immunity of the State as discussed in the preceding section. There is, however, one limitation on the immunity of a quasi-public corporation that may apply to a few rare cases. In Foss v. Maine Turnpike Authority, 309 A. 2d. 339 (Me. 1973), the Law Court held that

the doctrine of sovereign immunity did not bar suits against the Authority for physical invasion of property, in that case by salt run-off. If the invasion seriously impairs use of the property, it may be treated as a taking for which compensation must be paid. Such a condemnation, or "inverse condemnation" as it is called, is not within the Tort Claims Act and thus continues to be a liability to which the State, and any governmental unit such as a public authority, is subject. Some kind of spray damage might fall into this category, for example, the case of spray landing on an organic farm. Presumably, given the quasi-governmental corporation model, individual landowners would not decide whether to spray their lands, although they might be given a negative option to withdraw. As when the State sprays, the negative option alone should not expose them to liability.

Analytically the position of a spray entity having the characteristics of a public utility, that is, an obligation to spray for all requesting landowners at controlled rates, would seem to be similar to the position of applicators under the present program. Although it would have no state immunity, it could claim some relief from liability based upon doctrines of nuisance and strict liability for abnormally hazardous activities. (See the discussion at pp.128-129 above.) The rationale for modifying the rules of nuisance and strict liability would be the legal obligation to carry on the very activity that in and of itself creates liability. Liability for negligence and trespass

would remain unaffected.* The Courts have not, however, always responded in this fashion. In McLane v. Northwest Natural Gas Co., 467 P. 2d. 635 (Ore. 1970), a public utility was held liable without fault for injuries inflicted (on its premises) by the escape of natural gas, against its argument that the state authorized and even required it to transmit and store the gas. The Restatement of Torts 2d, Vol. 3 § 521, on the other hand, in a comment, gives the example of a common carrier required to carry explosives and concludes that it would only be liable for harm done by an explosion if it failed to take the care required by the dangerous character of the cargo. Thus, it may be that a public utility spray entity could avoid liability necessarily arising from the activity with no intervening fault whatever.

In evaluating the liability of the public utility model it should be borne in mind that the explosives cases decided by Maine's Law Court suggest that it would decide a spray damage case, not on the basis of strict liability for abnormally hazardous activity, but on the basis of negligence, while imposing a very high duty of care. Liability on that basis would seem to be unaffected by the factor of a legal obligation to carry on a

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*To the extent liability for trespass may rest upon an abnormally hazardous activity causing the trespass, it could be argued that the utility should be relieved from this liability for the same reasons that argue for modification of the rules creating liability for nuisance and strict liability for abnormally harmless activities.

spray program. Moreover, the courts that have been faced with cases involving wind drift, the most frequent cause of spray damage, have usually managed to find some fault in the conduct of the spraying, regardless of the theory involved to impose liability. We therefore conclude that as a practical matter the liability exposure of the public utility model would be nearly as great as that of a non-public utility spray applicator spraying the lands of one who has voluntarily chosen to have that activity carried out for his own private purposes.

A private corporation organized to conduct spray operations, owned by the landowners and contracting with them to spray,* absent other factors, would be liable for damages on any of the theories discussed in the first part of this section of the report. The corporation, would, after all, be just another kind of spray applicator. The landowners hiring it would also be liable.

There is, however, another factor, and that is the role of the State in requiring that designated areas be sprayed and otherwise controlling the spray program. As later discussed, the model for the conduct of future spray operations that this report favors would give the State the task of designating areas to be sprayed. Non-consenting landowners could withdraw under certain circumstances, including with the consent of other

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*It is immaterial whether such a corporation is cooperative or adopts some other formal organization.

participating landowners, but otherwise would have to accept the spraying of their land. Thus it can be argued that a private corporation organized to spray areas the State requires to be sprayed would not be liable for consequences that are a necessary result of the very activity itself, without intervening fault on the part of the spray corporation. Analytically its position would be much the same as that of the public utility. In both the public utility case and the case of a private corporation spraying lands, assuming the State requires spraying in the latter case, it is thus possible that recovery on the basis of strict liability and nuisance would not be allowed. Negligence and trespass theories of recovery would still be available to any potential plaintiff.

LIABILITY OF THE LANDOWNERS UNDER THE PUBLIC UTILITY AND PRIVATE CORPORATION MODELS

As explained in the first section of this part of the report, the landowner has ordinarily been liable for spray mishaps along with the spray applicator. This liability flows naturally from doctrines of strict liability and nuisance, the gist of which is choosing to bring an abnormally hazardous activity or a nuisance on one's land. Courts that have based liability upon negligence and trespass have imposed that liability upon the landowner on the ground that if an activity is abnormally hazardous, one does not avoid liability for negligence or trespass by hiring an independent contractor.

The participation of the State in requiring areas to be sprayed, however, raises the same questions with respect to landowner liability based on nuisance and conducting an abnormally hazardous activity as it does with respect to the liability of the spray corporation, public utility or private.

Thus it can be argued that, just as when the State or a quasi-public corporation is doing the spraying (through contracting applicators, the landowners should incur no liability for consequences that necessarily follow from an activity the State has required, without intervening fault on the part of the spray contractor. Available authority does not, however, permit even a moderately firm conclusion to that effect. Doctrines of strict liability and nuisance are based as much on a judgment as to the allocation of social cost as on a judgment as to where fault lies. Thus, it may be, as in McLane v. Northwest Natural Gas Co., supra, that the courts would place the burden of the cost of damage on the landowners directly benefitted by spraying regardless of fault and regardless of the State's judgment that the general public interest requires spraying.

Landowner liability in any case would seem to require, however, that spray damage be linked to the treatment of lands of a particular owner. This could be nearly impossible in some areas. Clearly, if a landowner does not use the services of the spray corporation, and his applicator is identified as the source of the offending spray, there would then be no

difficulty identifying the landowner for whom the applicator is spraying and establishing liability. The spray corporation, however, will probably be spraying for all its client landowners at one time, and in some cases it may not be possible to identify damage as having been caused while spraying the land of any particular owner or group of common owners.

SUITS FOR INJUNCTIVE RELIEF

The prospect that one or more of the annual spray programs will be halted by a suit for injunctive relief is a little difficult to evaluate, because that may occur, even though the suit ultimately fails, if the plaintiff succeeeds in obaining a temporary restraining order or temporary injunction at a strategic moment and delays the program until the time for spraying has passed. Nonetheless we will attempt to survey the legal theories for injunctive relief that seem to be available at present.

NEPA VIOLATIONS

If federal support of the spray program were to continue, attempts to block the program on the basis of claimed inadequacies in the environmental impact statement, as occurred in 1979, may be anticipated. Plaintiffs in the Fitzgerald case sought a temporary injunction halting the entire program, not just the payment of federal funds, pending judicial review of the environmental impact statement. The attempt was founded on decisions awarding similar relief when the program was found to have been federalized, that is, when federal participation amounted to a

partnership with the state or local government concerned.*

The Federal District Court for the District of Maine denied the temporary relief sought, rejecting the argument that the spray program had been "federalized". The State had presented evidence that the program would proceed with or without federal assistance and that the matter pending before the federal funding agency was merely an application for assistance, not any kind of request for approval of the program, which was unnecessary in any event. The Court also faulted the plaintiffs for delay in commencing their suit. It should be evident from the experience in Fitzgerald that the outcome of future suits based on NEPA violations will be so dependent upon the particular facts then existing as to defy prediction. It may also be reasonably concluded that exposure to this kind of litigation will be no greater and no less than it is now if the spray program is carried on, not by the State, but by a more or less independent entity, whether that is a quasi-public corporation or a private corporation.

FIFRA Violations

Unlike the National Environmental Protection Act, the Federal Insecticide, Fungicide and Rodenticide Act does not expressly authorize citizen enforcement. It contains a requirement that instructions on the label of a pesticide be followed in applying it, which might provide

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*For a discussion of this theory by a court that reached the opposite conclusion, see City of Boston v. Volpe, 464 F. 2d. 254 (1st Cir. 1972).

an excellent handle for injunctive relief if otherwise available. The only court to pass squarely on the question has ruled that FIFRA does not authorize citizen suits seeking enforcement of the Act by injunction. People for Environmental Progress v. Leize, 373 F. Supp. 589 (C.D. Cal. 1974). A somewhat contrary suggestion comes from a Michigan Court, which has held that a state attorney general has standing to seek enforcement by injunction, even if a citizen group has not. Kelley v. Butz, 404 F. Supp. 925 (W.D. Mich. 1975).*

Absent a statutory cause of action, such as NEPA or FIFRA, there is no basis upon which a citizen group could obtain an injunction halting a budworm spray program. Every actual attempt to halt a pest control program we have investigated has relied upon some such statutory support. Thus, attempts to halt gypsy moth control programs in New Jersey have relied upon state statutory requirements that adequate notice be given to owners of land to be treated and that "recognized" methods of suppression be used. None of these attempts have been successful. [See Hall v. Alampi, 219 A. 2d. 330 (N.J. 1966); suit dismissed upon Attorney General's promise to provide better notice and upon finding that spraying was a recognized control method.] There has been some litigation over moth control programs in Virginia and Michigan based on claimed FIFRA violations. But the Virginia suit was dismissed,

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*We do not explore in this section the prospect that the State itself, or the federal government, might seek injunctive relief as part of its enforcement and regulatory role.

and the Michigan suit ended with the entry of an essentially uncontested injunction prescribing buffer zones acceptable to the sprayers. A South Dakota grasshopper spraying program was halted following a citizen appeal from a questionable EPA decision to grant a section 18 special exemption from label instructions prohibting use of the pesticide upon rangeland. The State seems to concede, however, that the program was in trouble from the outset and probably would have been halted by EPA in any event.

In short, NEPA aside, no clear statute-based action for injunctive relief, usable by concerned citizens with no other legal interest in the spray program, has emerged as yet. Moreover, there is really no critical difference in exposure to citizen suits for injunctive relief on a statutory theory between a state operated spray program and a program operated by a privately owned corporation.*

NUISANCE

Since some American Courts have relied upon the concept of nuisance in imposing liability for damages from spraying, and since injunctive relief is available under certain circumstances against both private and public nuisances, the availability of nuisance as a basis for an injunction to halt the spray program is at least worth considering.

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*The Eleventh amendment bars the federal courts to citizen suits against the State, but when injunctive relief is sought, that restriction is avoided by suing the state officials responsible for the action sought to be enjoined.

For present purposes a nuisance may be considered any unlawful interference with one's use of his own land. A so-called private nuisance exists if only a small number of persons would be affected by the condition supposed to constitute a nuisance. If the conditions created by the defendant affect the public generally, the nuisance is a public nuisance. Injunctive relief is theoretically available against either category of nuisance. A suit to enjoin or restrict budworm spraying based on a private nuisance theory, however, would necessarily presuppose that the spraying would have a distinctive impact on the plaintiff. That could happen if misdirected pesticide injured him or his land or if it could be demonstrated in advance that any spraying in the area will have a discernible impact on the plaintiff. The former could not be determined until after the spraying has been accomplished. The latter, at present, is pure speculation. Hence the possibility of an injunction to halt a private nuisance seems remote.

Public nuisance does not offer any better theoretical base. Ordinarily public nuisances are the business of public authorities. To gain standing to sue to enjoin a public nuisance, a citizen plaintiff must be able to show that he has or will suffer special damage different in kind from the general public, Prosser, "Public Nuisances," 52 Virginia Law Review, 997. Thus the representative plaintiff will have the same problem making a threshold case for injunctive relief as a private nuisance plaintiff. That problem aside, a major roadblock would be the statutory authority of the Forest Service to order the spray program, and very likely a legislative declaration of public policy to control the budworm.

In general, legislatively authorized acts cannot be public nuisances. 58 Am. Jur. 2d, "Nuisances," § 228. This does not mean the recipient of misdirected spray has no claim, but that the spraying would be considered unobjectionable until pesticide had been deposited where it did not belong.

ANTI-TRUST EXPOSURE

Since this report discusses the implications of an alternative mechanism for budworm spraying that would be a joint enterprise of the landowners, either through a quasi-governmental district, a public utility or a private incorporated cooperative venture, it must be anticipated that at some stage a question will be raised whether or not the participation of competing paper manufacturers in such a joint enterprise violates the anti-trust laws. Section 1 of the Sherman Act is most likely to be implicated, and indeed, furnishes the only plausible base for an anti-trust violation argument. Although a detailed anti-trust analysis is not within the scope of this report, we have concluded that a sound case for anti-trust liability arising solely from joint activities to suppress budworm infestation could not be made. Since Maine's anti-trust laws are, so far as pertinent here, merely copies of their federal counterparts (e.g., 10 M.R.S.A. § 1101 tracks the pertinent language of Section 1 of the Sherman Act), we shall not distinguish between state and federal law in this discussion.

Section 1 of the Sherman Act (and its Maine counterpart 10 M.R.S.A. § 1101) prohibits every contract, combination in the

form of trust or otherwise, or conspiracy, in restraint of trade or commerce. It has long been black letter law that certain combinations are considered unlawful in and of themselves without proof of specific effects in the marketplace. For example, any agreement among competitors

> "for the purpose and with the effect of raising, depressing, fixing, pegging or stabilizing the price of a commodity in interstate or foreign commerce is illegal per se." U.S. v. Socony Vacuum Oil Co., 310 U.S. 150 (1940).

Similarly, agreements dividing the market (or customers) among competitors are illegal per se. Other combinations and arrangements, however, may violate the Sherman Act if the restraint imposed by the combination can be said to be unreasonable, lacking any legitimate business purpose, but not otherwise.

The Sherman Act does not, however, apply to the acts of governments of the States. Parker v. Brown, 317 U.S. 341 (1943). A practice or combination required by state law or by the administrative action of a duly authorized state official necessarily does not violate the anti-trust laws of the United States.* Neither do agencies or instrumentalities of state government, such as insect control districts, violate the anti-trust laws, being part of the state's legal monopoly on government (or at least its licensee). Thus, it is only worth examining, even perfunctorily,

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*For purposes of this study a detailed and precise analysis of the doctrine of Parker v. Brown is not necessary, and the text does not purport to be any such.

the anti-trust exposure of a private corporation spray entity, including in that category a corporation having the characteristics of a public utility and regulated as such.

A non-public spray entity owned and managed by the forest landowners would necessarily be a combination of, among others, paper companies that compete with one another in the sale of their products. Would the combination be open to attack on that ground? Clearly it would not. The combination would have no effect on competition of its members as sellers of paper. It would be no more a violation of the anti-trust laws than cooperation to build a road, to cut one another's lands or to do aerial photography surveys. Like a trade association, a combination of paper companies to spray forest lands would not be unlawful unless it were to be used as a cover for other plainly unlawful activities, such as price-fixing.

Viewing the combination from the opposite direction, would it be unlawful because it would join potential purchasers of spray services, that is, would it be a spray service buyers' cartel? Price fixing is, after all, unlawful whether the price is fixed by sellers or purchasers.* Although this aspect of anti-trust liability

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*Legislation directing such a combination would presumably accord it the protection of Parker v. Brown, supra, but would also probably drain it of the relative autonomy and independent responsibility that would be its most important characteristic. After enforcement mechanisms had been added, that kind of legislation would either create essentially a quasi-governmental entity or put the spraying again under state control.

is analytically more difficult, we believe the answer is still that no anti-trust liability would arise.

Without undertaking a full dress rule of reason inquiry, we are satisfied that the legitimate objectives to be attained by a spray corporation, the necessity of combination to obtain those objectives, and the minimal effect on the market for spray services, would justify the combination.

> "Not all contracts among potential competitors are prohibited nor even all contracts that might in some insignificant degree or attentuated sense restrain trade or competition; rather, with respect to most business combinations or contracts, there is applied, in determining whether there exists a violation of sections 1-7 of [title 15, U.S.C.], a rule of reason analysis which includes consideration of the facts peculiar to the business in which the restraint is applied, the nature of the restraint and its effects, and the history of the restraint and the reasons for its adoption." U.S. v. Topco Associates, Inc., 405 U.S. 596 (1972).

The pattern of land ownership in Northern Maine is such that large scale spraying cannot be accomplished without cooperation among landowners. Moreover, the environmental and economic benefits from a coordinated effort to spray Maine forest land dwarf the negligible impact on what is, in reality, a very small part of the nationwide market for crop spraying services. Hence, the combination of Maine landowners could not have any significant market consequences.

CONCLUSION

We have concluded that, of the model spray entities discussed in this report, a quasi-public corporation would enjoy the State's present immunity from liability in all but unusual circumstances, and both a public utility and a private incorporated joint venture of the landowners would be exposed to liability for damages from spray mishaps on grounds of trespass and negligence. To the extent any damages arose out of the spraying of land designated for spraying by the State and required to be sprayed, it could be argued that the State's role bars application of the rules of strict liability for abnormally hazardous activity and liability for nuisance to both the public utility and the private corporation models. It should be noted, in this connection, that Maine law would probably base any liability imposed on negligence, judged by a very high standard of care, and that the State's role in the spray program may not be relevant to this theory of liability.

Landowners whose property is sprayed by a public utility or a private corporation could be liable to the same extent as the spraying utility or corporation. It might be necessary, however, to identify the landowner or owners whose land was being sprayed when the damaging mishap occurred, unless circumstances were such that all could be found liable as joint tort feasors.

As the Department of Conservation and the landowners are aware, liability from aerial spraying is an insurable risk. Chemical risk insurance is available both with respect to liability from spraying outside the designated area and liability from wind drift. We understand that applicators employed in the budworm spray program have been required to obtain substantial chemical risk insurance. Thus the added cost of insurance should be a known factor and presumably has not been considered prohibitive.

In our view there is no good reason why the landowners or the spray corporation should be relieved of liability for damage from the spray operation. It is scarcely fair or reasonable to make the injured party alone bear losses resulting from depositing pesticide where it can do damage. No mechanisms presently exist to shift that loss to the general public except to the extent the cost of insurance is born by the State's general revenue fund and the federal contribution. Nor is it clear the general public should bear this cost. It is, after all, part of the cost of growing, harvesting and using timber and its end products, and a sound argument can be made for imposing such costs on users of the resource, purchasers of the products, as inevitably will happen if the spray corporation is liable.

PART VI

A PROPOSED PRIVATE SPRAY ENTITY

Based upon our examination of foregoing models, and based further upon the particulars of the current Maine spray regime, we have concluded that responsibility for the operational aspects of the spray program could be transferred to a private entity without reducing the effectiveness of state regulatory control and without imposing undue liability exposure upon the entity. In some respects, establishment of a private spray entity may even improve certain regulatory aspects of the program.

None of the models studied, standing alone, offer a ready-made alternative administrative approach to spruce budworm management by the state. Rather, each of the models possesses certain features which have been tailored to meet the specific needs of the Maine program.

A form of private spray entity was selected from among the available models because a private entity appears to hold the most promise for accomplishing the objectives established by the Legislature for the Maine program (see pp. 156 to 168 infra). A public or quasi-public alternative to the present system of complete state management would tend to perpetuate many of the problems with the present system. An alternative public or quasi-public entity is not likely to be any more efficient than the existing public agency in terms of the operational aspects of the program. The disadvantageous system of pre-funding would most

likely continue under such an approach. Shifting operational responsibility for the program from one state agency to another would result in a proliferation of State involvement just as the duration of the Spruce Budworm Suppression Act approaches its terminal date. It would appear to make more sense to shift such responsibility to an entity more closely aligned with the private sector, particularly if the role of private sector in terms of budworm suppression and control is to become more extensive subsequent to 1981.

Public involvement with the operational aspects of the existing program has been justified on the basis that an emergency situation exists. As the infestation continues over a longer period of time, however, the emergency nature of the outbreak seems to disappear. Just as this justification for the public involvement tends to diminish under these circumstances, the appropriateness of private involvement tends to emerge more clearly. Ultimately, the spruce budworm program protects timber. And since most of the timber is privately owned, the private sector should bear the responsibility for carrying out measures to protect the resource.

Among the objectives established by the legislature is the reduction of dependence upon pesticide use. As is discussed more fully hereafter (see page 160 infra), this study concludes that the most promising incentive for reaching this goal is placing the full cost of spraying upon those whose lands are being sprayed. The establishment of a private entity rather than a public or quasi-public entity to carry out aerial spraying would be consistent with this objective.

In terms of liability exposure, this study concludes that a public or quasi-public entity would generally share the immunity of the state (see p. 145 supra), whereas a private entity and landowners would be liable for damages caused by aerial spray activities. Whether a spray entity should be insulated from liability presents an important policy question which must be addressed. In our view it is not appropriate to create a spray entity in the form of a public or quasi-public entity simply to immunize the entity from liability. Such liability is an insurable risk which we conclude should be borne by those who benefit most directly from the spray program.

While the proposed private entity possesses some of the characteristics of a public utility, a pure public utility model appears inapposite. The services to be provided by a spray entity will only be used if the costs to the users are competitive. As we observed earlier (p. 100 supra) few landowners would be likely to utilize the services of a spray entity that charges the landowners more than it would cost them to conduct aerial spraying operations themselves. Rather than hiring an independent regulated public utility spray entity charging fixed rates with a built-in profit, landowners would be more likely to pool resources and undertake spraying on a shared cost basis. For these reasons, the proposed entity has not been given all the characteristics of a regulated public utility.

In broad outline, we propose the following prototype.

1. The entity would be a private enterprise. It could be organized as a general business corporation, under the Maine Business Corporation Act, Title 13A M.R.S.A.; a nonprofit

corporation, under the Maine Non-Profit Corporation Act, Title 13B M.R.S.A., as joint venture, as a cooperative, 13 M.R.S.A. §§1771-1731, or as a special charter corporation. It is not particularly helpful at this juncture to specify the particular form of organization that might be adopted by the participants. A format should be followed that is best adapted to meet the internal needs of the landowners involved, and this can be best addressed by the landowners themselves.

2. The entity would function primarily as a distribution and delivery system; it would not be responsible for population surveys or hazard assessment and would not possess responsibility or authority to designate areas to be sprayed. These matters would remain the responsibility of designated state officials.

3. The entity would be governed by a board comprised entirely of representatives of those private landowners who elect to participate in the spray program. The precise number and makeup would be left up to those organizing the entity. There would be no public appointees to the board and no public officers serving as ex-officio members.

4. Funding would be provided primarily from the private sector. The state would provide funding to defray the cost of any spraying upon public lands. In addition, the state would advance whatever funds would be necessary to defray the cost of spraying the lands of non-cooperating private landowners; these charges would become a special assessment against the non-cooperating landowner and would be collected by the state.

5. The entity would be required to post a bond or evidence of insurance with the state in sufficient amounts with respect to comprehensive aircraft liability, airport liability, passenger liability, motor vehicle liability, chemical coverage and public liability.

* * *

The state would continue to conduct population surveys, make hazard assessments and finally determine areas to be sprayed. The State Entomologist would continue to determine the biological need for control measures based upon data obtained from population and damage assessment surveys and report his recommendations to the Director of the Bureau of Forestry. These recommendations would be further refined by information provided by the landowners. The final designation of areas that the state authorizes to be sprayed would be the responsibility of the Director of the Bureau of Forestry.

The Director would then notify all affected landowners of the spray area or areas. The landowners would have primary responsibility for carrying out the aerial spraying upon their own lands, and at their own expense.

All landowners whose lands had been designated to be sprayed would have the opportunity to utilize the services of the entity. To the extent any economies of scale exist, these economies would be passed on to all voluntary participants. All voluntary participants would presumably be required by the entity to provide their fair share of the costs attributable to having their lands sprayed on a basis determined by the participants themselves. In the absence of some other method agreeable to all participants,

costs would be shared solely on an acreage sprayed basis, taking into account the kind of spray and aircraft used, the location of the lands sprayed and other relevant factors.

Upon receiving notice of the areas designated to be sprayed, any landowner who objected to the designation of his lands would be provided an opportunity to be heard on those objections before the Forestry Director. If none of the participating members objected to the deletion of the objecting owners' lands, those lands would be deleted from the program. If, however, any participating member objected to the deletion of such lands, the Director of the Bureau of Forestry would determine whether or not such lands should be sprayed pursuant to criteria established by the Director. The current statutes provide the Director with authority to make rules regarding the mandatory inclusion of parcels within the designated spray area when in his judgment such may be necessary because of the intensity of infestation and because of other factors, 12 M.R.S.A. § 1023(4). Where the Director determined that the non-cooperating owner's lands should be sprayed based on the criteria developed by him, the entity would be authorized by the state to spray such lands.

All costs attributable to spraying the non-cooperating owner's land, would be advanced by the state. The state would in turn impose a special assessment upon such lands which would include the costs billed by the spray entity and, in addition, the attributable portion of the added administrative costs occasioned by the lack of cooperation by the landowner.

Private landowners would not be permitted to require that any public lands be sprayed. The sovereignty of the state would be preserved and the state would itself determine whether any of its lands were to be sprayed. However, the costs associated with spraying any state or municipal lands included in the spray program would be borne by the appropriate governmental unit.

Under the proposal, the Director of the Bureau of Forestry would specify what chemicals may not be used and recommend which chemicals should be used and in what areas. As an alternative, this function could be performed by the Pesticides Control Board. The Director would also specify appropriate buffer zones based upon recommendations furnished to him by the Pesticides Control Board. These specifications would be binding upon the entity and the landowners.

The aerial applicators hired by the entity would be required to secure whatever permits and certifications are required under current state law to engage in aerial spraying of forest lands.

Environmental monitoring would be the responsibility of the state, but not the Bureau of Forestry. In order to maintain credibility it is important that this function be performed by some other state agency which has no connection with the decisional or operational aspects of the program. For example, the Department of Environmental Protection could be responsible for performing this function, or perhaps it could contract it out to independent contractors, such as to university faculty and to other experts. The cost of such monitoring would be borne by all owners, public

and private, of more than 500 acres of spruce-fir and mixed woodland within the spruce-fir protection district as delineated by the Legislature, in proportion to their ownership. It may be appropriate that a ceiling on such costs be fixed by the Bureau of Forestry. Efficacy checking (the extent of budworm mortality and foliage protection) would be the responsibility of the landowners themselves.

Silvicultural and new market withdrawals could be permitted on essentially the same basis provided under existing law. However, it should be noted that there has not been any new market withdrawal to date, and only 200,000-300,000 acres have been excepted as silvicultural withdrawals. Automatic withdrawals have accounted for approximately 1.4 million acres.

As Part V explains, a private corporation such as is here proposed would in many instances be liable for damage to persons and property caused by insecticide that lands on property not properly designated for spraying. (Designation may occur by act of the owner or by direction of the State.) Liability could be imposed without regard to fault, but if imposed on the basis of negligence, the corporation would be held to a very high standard of care. The corporation could not avoid liability by hiring an independent contractor to actually apply the spray. The landowners whose lands were being sprayed when the misapplication of spray occurred might also be liable, depending upon various factors discussed in Part V.

The State, on the other hand, is presently immune from aerial spraying liability in most circumstances by virtue of the Tort Claims Act. A quasi-governmental corporation would enjoy similar immunity. Notwithstanding the state's immunity, the contractors who actually do the spraying are precluded by their contract from defending suits on this ground and are required to carry insurance against liability arising out of misplaced spray. Consequently, it is doubtful that the cost of spraying done by a private corporation would differ significantly from costs of the present program by reason of differences in the liabilities involved.

Any assessment of the exposure of a private corporation to litigation seeking to enjoin further spraying is necessarily somewhat speculative. As Part V explains, we conclude that its exposure to suits seeking injunctive relief brought by private individuals would not differ significantly from the exposure of the present program. The corporation would, however, be subject to regulatory enforcement at state and federal levels. It may be that the likelihood of interruption by actions to enforce environmental laws and regulations is somewhat diminished at present by State sponsorship of the spray program. Presumably the program is conducted with due regard for applicable limits on the materials used and the manner in which they are used, and presumably a state regulatory presence in planning and maintaining the program could insure continuation on that basis.

The prototype would be consistent with several of the objectives declared by policymakers for the suppression program. Before discussing the particular relationship between the prototype and these objectives, however, it is helpful to consider the objectives themselves. It should also be noted in this connection that cabinet-level consideration is currently being given to the entire spruce budworm program, and it is not clear what conclusions will emerge from that effort. Accordingly, we recognize that we are working in a somewhat unsettled area.

In enacting the Maine Spruce Budworm Suppression Act, the Legislature declared it to be the policy of the State "to undertake reasonable measures to control and suppress infestation of spruce budworm insects. . . during the years 1976-1981," and the objectives of the program were stated as follows:

> 1) minimize and equitably distribute the burden of losses attributable to budworm infestation;
>
> 2) permit the forest products industries of the state to operate as near to full production capacity as would be possible but for the existence of budworm infestation;
>
> 3) promote maximum sustained yield harvest of the most valuable timber possible; and
>
> 4) utilize the most cost-effective methods of budworm suppression and control.

This past session, the Legislature augmented and modified these objectives somewhat by requiring the Commissioner of Conservation to present a comprehensive report, by January 1, 1980, containing his recommendation for future budworm policy (P.L. 1979, c. 69). That policy is to be directed toward accomplishing not later than fiscal year 1981-82, "a significant

reduction from the current level of dependence on pesticides and a more equitable method of determining the division of budworm program costs among landowners." The proposed method should allow "maximum landowner freedom to choose to participate or not to participate and should reduce the tax burden on landowners not being sprayed in any given year."

Considering these expressions of policy together, we understand the objectives of the suppression program, as determined by the Legislature, to be as follows:

1) minimize and equitably distribute the burden of losses attributable to budworm infestation;

2) significantly reduce the current level of dependence on pesticides as a control or suppression method;

3) maintain lumber resources to sustain industrial capacity;

4) promote maximum sustained yield harvest of the most valuable timber possible;

5) utilize the most cost-effective methods of budworm suppression and control;

6) maximize landowner freedom to choose to participate or not in the suppression program;

7) reduce the tax burden on landowners not being sprayed in any given year.

There may well be other objectives that should be stated. Among these might be (a) that the public health and welfare be protected; (b) that the environment be protected; and (c) that the program managers be directly accountable to public authority. For present purposes, however, it is sufficient to concentrate upon those criteria adopted by the Legislature to date.

It is doubtful that all these objectives can be realized either by continuing the current spray regime, by modifying the current procedures or by the establishment of an independent spray entity. For one thing, several of the objectives are inconsistent with each other. For example, it simply may not be possible to significantly reduce the current level of dependence on pesticides and at the same time continue to maintain timber resources to sustain industrial capacity. Today, Maine mills in existence and under construction possess the capacity to utilize virtually all of the net growth that can be expected in the next few decades with likely management practices. (Irland, "Notes on the Economics of Spruce Budworm Control," Technical Notes No. 67, May, 1977, p. 3.) In this situation it is not possible to allow the growth potential represented by 40% of the inventory (the amount of the wood killed during the 1912-1920 outbreak) to be lost and still maintain a sufficient source of supply of raw material. (Irland, supra, p. 3.)

Alternatives to spraying do not promise an immediate solution to this dilemma.

> Silvicultural practices, which are frequently advanced as an alternative, require long periods of time to cover a significant portion of the affected forest. And while silvicultural practices would play an important role in any long-term integrated control program, it does not hold any promise as an alternative to spraying over the short-term. (Irland, supra, pp. 5-6.)

It may not be possible to minimize and equitably distribute the burden of losses attributable to budworm infestation and at the same time maximize landowner freedom to choose to participate

or not in the suppression program. The budworm does not recognize landowner boundary lines. When an epidemic occurs, vast territories become infested. Forest pest control specialists evidently feel that in order for spraying to be considered effective, a treatment must provide minimum 90% larval kill and 35% foliage protection. (Irland, supra, p. 9.) If these rules of thumb have any validity, it is clear that landowners may not be given complete freedom of choice whether to participate or not, for lack of participation by a significant number could jeopardize and perhaps render totally ineffectual, the spray efforts of others. Furthermore, over the long term, failure to spray or to manage silviculturally may result in the propagation of a forest type which is susceptible to future attacks and which poses threats of severe infestation of surrounding lands.

Since the stated objectives, then, are not entirely harmonious, the spray entity should not be expected to satisfy all such criteria. Nevertheless, the prototype does further several of these objectives, and these positive features will be considered below.

The principal difference between the current program and the proposal is that it shifts the primary responsibility for carrying out the spraying--the operational aspects of the program--to the landowners themselves. By doing this, the cost of operating the program may be reduced somewhat, since the cumbersome state purchasing procedures would be simplified, and the double accounting necessitated by the pre-funding arrangement would be eliminated.

Under the present regime, each landowner in the spray district pays a portion of the cost of spraying itself, whether his

lands are sprayed or not. Since the prototype calls for distribution of the costs of spraying solely among those landowners whose lands are sprayed, the tax burden on landowners not being sprayed in any given year will be reduced (objective 7). The only cost to such landowner will be the landowner's pro rata share of the cost of monitoring.

Under the current set-up, there is little incentive for landowners to reduce dependence upon pesticide use. The full cost of spraying a given tract of land is not borne by the landowner of that tract since the state subsidizes the cost of the entire program as do landowners who pay the excise tax but do not have their lands sprayed in a given year. Spray costs have risen dramatically in recent years, from $0.78 to $3.64 per acre. Under the prototype, the entire cost of spraying will be the responsibility of only those being sprayed. The increased cost burden may provide an economic incentive on the part of the landowners to cut down on the use of pesticides (objective 2).

Other methods of distributing the costs associated with the program could be utilized, but these would tend to dilute the incentive towards reduced reliance upon pesticide use. Partial public funding, from either federal or state sources or both, would reduce outlays on the part of the private landowners and spread the cost of the program over a larger segment of the public. A ceiling could be imposed on the costs to the private sector. Rather than assessing costs among participating landowners solely on the basis of acreage sprayed, mill consumption could be utilized as a factor in determining contribution levels.

Placing the full cost of spraying upon those whose lands are being sprayed and sharing those costs on an acreage sprayed basis creates, in our view, the most promising incentive towards reduced reliance upon pesticides and is a goal worthwhile pursuing. Other intermediate funding schemes that do not reach this goal may nevertheless constitute an improvement over the existing funding mechanism which tends to dissipate costs too broadly.

We recognize that if federal funding were no longer relied upon to help defray the costs of the program, a collateral consequence would be that the process of preparing and disseminating an environmental impact statement in connection with such funding would no longer be required. The environmental impact statement serves as an important vehicle by which information regarding the spray program is disseminated to the public. It also is one of the only written explanations of the decisions by the state with respect to such matters as areas to be sprayed,chemicals to be used and buffers to be employed. Because of the important functions served by the environmental impact statement, we would recommend that the Bureau of Forestry be required to prepare a similar document for public distribution and comment, even if federal funds are not being sought.

At present, the only methods by which a landowner may be excused from participation in the program on a discretionary basis is through silvicultural or new market withdrawal. Automatic withdrawals of not less than 500 nor more than 1000 acres per owner are also permitted. The proposal would enable landowners who do not

wish to have their lands sprayed irrespective of the acreage involved to be excused if they can secure the agreement of the remaining owners whose lands have been designated to be sprayed. In the event any landowner objects to the non-participating landowner being excused, the Director of the Bureau of Forestry could resolve the matter. These features would provide landowners somewhat greater freedom than they currently possess to choose to participate, and in that limited sense the proposal would be consistent with objective 6.

The Director of the Bureau of Forestry would continue to annually designate areas to be sprayed. Maintaining this responsibility in the Director may tend to promote equitable distribution of losses attributable to budworm infestation (objective 1) since the final decision with respect to which areas are sprayed will be in a "neutral" third person. It will be compulsory to spray only those areas which the Director determines, based upon the biological recommendations he receives from the State Entomoligist and the input from affected landowners, require pesticide treatment. Landowners will be required only to spray and pay to that extent.

While leaving these matters up to a state official by no means assures equitable distribution of losses, it appears to us that such a "neutral" person is to be preferred to leaving these kinds of decisions entirely up to the landowners themselves. The Director would be sufficiently removed from the interests of any specific landowner to enable him to objectively assess the merits of differing positions between landowners, should they arise.

The governing body of the prototype would be comprised entirely of members of the private sector. This should enable state and federal regulators and law enforcement officials to proceed against possible violations with greater ease than may currently be the case. Under the present arrangement, the Department of Conservation is responsible for operations. At the same time, the Commissioner of the Department of Conservation is a member of the Pesticides Control Board, which has regulatory authority over the application of chemical pesticides throughout the state. This creates an awkward situation, since the party being regulated is a member of the governing body of the regulatory authority itself.

During the 1979 spray program, a number of complaints were received by the Pesticides Control Board that the pesticides were not being applied in accordance with label instructions. The Board held several special meetings to consider the complaints; at these meetings, the Commissioner of the Department of Conservation and his representatives were placed in the awkward position of both participating in the dialogue as a board member and as the object of the inquiry. The Commissioner's representative was disqualified from voting on the action to be taken because of this conflict of interest. The proposal would eliminate this conflict.*

Separating the policy making and the operational functions may have further advantage of making visible certain problems with the program which are not now perceptible. Where the policy

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*So long as certain program decisions such as choice of chemicals, areas to be sprayed and buffer zones continue to be made by the State, a certain amount of inter-agency review and potential conflict may continue to arise.

and operational function rest in one agency, it may be more difficult to pinpoint the precise cause of the problems, than where these functions are distributed into discrete components.

Much concern has been expressed about the harmful effects of spraying upon crops, wildlife and people. However, under current law, the state is immune from suit arising out of spray operations except in the case of "sudden and accidental" discharges, 14 M.R.S.A. § 8104. In order for a suit to be maintained against the state for injury resulting from the purposeful application of chemicals, the immunity of the state would have to be waived. If immunity were waived in an appropriate case, the state would have sufficient resources to respond in damages in the event damages were found against the state. The proposal calls for the maintenance of adequate insurance by the spray entity to insure that it too would be in a position to respond in damages in the event of an adverse decision against it. In our view it would be irresponsible to permit an entity engaged in a hazardous occupation, exposing the public to potentially serious hazards, to be permitted to insulate itself from liability for its wrongful acts.

The proposed entity may encourage closer coordination between management objectives and pesticide use than currently exists. For example, a landowner may be less inclined to have an area that he proposes to cut in the near future sprayed if he has to pay for the entire cost of spraying the area. And, since the landowner will have to foot the bill, there is likely to be a more careful dialogue between landowners and state officials regarding areas to be sprayed. The emphasis may shift from land-

owners requesting that more of their timberland be designated to receive spray (at a cost to others) to landowners requesting that only the minimum amount necessary for an effective treatment be sprayed. (Objectives 2, 5)

Transferring the business and operational responsibilities associated with spraying to a private entity would free state personnel to devote greater attention to other aspects of the suppression program. The Bureau of Forestry could concentrate more on hazard assessment and designation of spray blocks. Dissociating the state from the delivery and distribution system and making some agency other than the Bureau of Forestry responsible for environmental monitoring, will also place the state in a more credible position for environmental monitoring purposes. It is important not to confuse environmental monitoring (conducting field studies of effects upon the environment) with supervision for safety and compliance with applicable laws and regulations. One of the chief criticisms of Forest Protection Limited has stemmed from the public perception that FPL has been monitoring itself. By putting the state at a distance from actual operations, greater public confidence in the monitoring and regulatory effort may be achieved.

In this latter connection it is important to note that the Pesticides Control Board has general regulatory oversight of pesticide use in the state. But because of the involvement of the Department of Conservation in all aspects of the budworm program, including operations, it is possible that the Board has not exercised the same degree of control as it otherwise might.

The Director of the Pesticides Control Board has informed the authors that the Department of Conservation was exercising sufficient control over the applicators to insure compliance with label instructions and pesticides laws. The Department of Conservation, on the other hand, may have assumed that the Pesticides Control Board was primarily responsible for such matters. In this kind of situation, the possibility exists that no one performs requisite regulatory functions.

By separating the spray function from other program responsibilities, there would be a clearer division of responsibility between the Department of Conservation, the spray entity and the Pesticides Control Board. This may result in more effective discharge of the obligations and responsibilities of each.

The Department of Conservation has enormous responsibilities under the current system and insufficient manpower to carry its duties out properly. The Department is responsible for recommending levels of funding, securing federal participation, conducting biological assessment, determining spray areas, ordering chemicals, contracting with applicators, stimulating and conducting and coordinating research, conducting environmental monitoring and generally overseeing every aspect of the spray program. With such pervasive responsibilities, and without legislative guidance as to priorities, it cannot be expected that the Department would be in a position to excel in any.

Spinning off the spray function would, as we suggested earlier, allow the Department to concentrate in the other areas of responsibility. Looking at it from the perspective of the

spray entity, the entity would be able to concentrate on matters of particular concern to it. More time could be spent on improving spray techniques, keeping abreast of advances in spray equipment, etc. This may lead to more effective treatments and more efficient operations. To the extent that landowners desire a greater voice in the manner in which spray operations are conducted, and wish to exercise more control over the quality of the work being done, a private spray entity, managed entirely by industry, would further these desires.

In the past, the state has contracted with aerial applicator services to do the spraying--it does not own any of the aircraft used to apply the pesticides. The private spray entity could function in the same manner. Accordingly, the formation of a private entity would not involve the kind of large capital outlays that may tend to discourage participation.

While the proposal does introduce some innovations, it essentially follows the framework provided by existing statutes. The Maine Spruce Budworm Suppression Act already provides explicit statutory authority for the state to designate areas to be sprayed [§ 1016], and to mandate inclusion of areas to be sprayed[§ 1023(4)]. the entity could be organized under existing statutes, as noted earlier. The Forest Insect Manager has express authority to enter into cooperative arrangements with public and private landowners "in developing joint research and operations projects to control and suppress spruce budworm infestation and on related matters."

12 M.R.S.A. § 1024(5). The Pesticides Control Board already possesses the statutory authority to insure that the pesticide laws and regulations are adhered to. Thus, while the spinning off of the spray function would require some statutory changes, it would not call for the introduction of totally novel legislative concepts.

We recognize that the proposal does not provide specific solutions to all potential problems. One matter of concern is how to treat the small landowner. Under current practice, the small landowner may have his lands sprayed, but he is not required to pay anything toward the cost of such spraying. If the state is no longer doing the actual spraying, there is no assurance that the small landowner's timber will be sprayed unless he or the state is prepared to pay the cost of such spraying. A wait-and-see approach may be appropriate here, until the parameters of the potential problem emerge. It is worth noting in this connection that current law allows for landowners outside the spruce-fir protection district to have their lands included in the spray program upon payment of the non-federal cost. This option has not been used, however, for the past two years.

Another potential problem arises out of the diffusion of information essential to an effective spray program. Landowners are likely to possess the most information regarding the state of their timber stands. And, obviously, the landowner will know more about his management objectives than the state. The state, on the other hand, possesses greater facilities and greater expertise with respect to entomological matters and hazard assessment.

Interaction between these two groups so as to integrate this information into the optimal spray program has been a problem to date and will likely continue to be a problem in the future. It may be somewhat less of a problem under the proposal, however, since the landowners will play a far more significant role in most aspects of the program.

Under the existing structure, a spray program is virtually assured. Under the proposal the potential at least exists for all landowners to decide that they do not wish to have their lands sprayed any longer (perhaps because costs are too high and perhaps for some other reason). The consequence of no spray and no change of silvicultural practices may be to perpetuate a forest type that will, over the long term, result in severe budworm infestation that will threaten future generations. Absent forest practices and forest management legislation, there would be little that the state could do to retard such potential long term consequences of no spray. It is legitimate to inquire whether given this possibility, the state should relinquish authority to mandate spraying even where all landowners immediately affected desire no spray.

The proposal preserves the Spruce-Fir Forest Protection District established by the legislature for purposes of determining who shall bear the cost of environmental monitoring. It will be recalled that under the proposal, only those landowners whose lands are sprayed pay for the spraying, but all owners of spruce-fir and mixed wood lands within the Spruce-Fir Forest Protection District contribute to the cost of monitoring. Perhaps this line

of demarcation is artificial, and the costs of monitoring should be spread upon a broader base. If the landowners are to pay all costs of spraying, and the state is to determine what lands, at the minimum, are to be sprayed, the concept of the Protection District becomes somewhat superfluous. It also poses a potential problem about what to do with respect to landowners outside the District who wish to have their lands sprayed. Should the entity be burdened with the responsibility of spraying such lands? The continuing need for the Protection District, if the proposal is adopted, is a question worthy of further consideration.

Under current practice, since the state is engaged in the actual spray operations, information with respect to possible violations of law presumably would be voluntarily disclosed to the Pesticides Control Board. If a purely private entity were carrying out the actual spraying, it is possible that information regarding possible violations would not be disclosed as freely.

Finally, the proposal does represent a somewhat fresh approach and has not been tested. For this reason there necessarily is a fair amount of uncertainty about how workable and effective the proposal will be in actual practice. If the alternative is no spray, the landowners may well conclude that the experiment is worth trying. However, so long as a state operated program remains a viable alternative, there may be some hesitancy on the part of those whose cooperation will be essential for the program to work to give it their all.

PART VII

THE STATE REGULATORY FRAMEWORK

The Maine Pesticides Control Act of 1975, 7 M.R.S.A. § 601-624 regulates the labeling, distribution, storage, transportation, use and disposal of pesticides in Maine. The Act requires that all pesticides sold, offered for sale, held for sale or distributed in Maine must be registered with the State Department of Agriculture. This registration requirement is in addition to the requirements of the Federal Pesticides Control Act of 1972 which provides that all pesticides must be registered with the Environmental Protection Agency, 7 U.S.C. § 136a.

Pursuant to the Pesticides Control Act, pesticides have been classified into three groups, according to the kind of use permitted:

(1) Restricted use--The pesticides in this group are of the more toxic variety; they are placed in this classification because of the hazard of their active ingredients to the unskilled user and to the environment.

Restricted use pesticides may be sold only through licensed dealers and sales may only be made to certified applicators.

(2) Limited use--The pesticides in this group are those which have been classified for restricted use by EPA, to which the Board of Pesticides Control has imposed additional use limitations because of their potential for creating severe problems to the environment due to high toxicity and longevity.

As in the case of restricted use pesticides, limited use pesticides may be sold only through licensed dealers and sales may only be made to certified applicators. In addition, a permit must be obtained from the Board of Pesticides Control before an applicator may use a limited use pesticide.

(3) General use--This group consists of all pesticides that do not fall into either the restricted use or limited use categories.

Dealers are not required to be licensed to sell these pesticides and anyone may purchase and apply them without being certified.

General use pesticides must meet both federal and state registration requirements, and must be applied in accordance with label requirements.

The products that have been used in the spray program for the past several years, i.e., Sevin, Dylox, Orthene, and Thuricide 16N(Bt), are general use pesticides. Matacil was registered for experimental use.

Among other things, the Maine Pesticides Control Act makes it unlawful for any person to use or cause to be used any pesticide in a manner inconsistent with its labeling or the regulations of the Commissioner of Agriculture, if those regulations further restrict the uses provided on the labeling, 7 M.R.S.A. § 606(2)(B).

When the Commissioner has reasonable cause to believe a pesticide or device is being used in violation of the State Act or in

violation of the regulations prescribed under the Act he may issue a "stop sale, use or removal order" upon the owner or custodian of any such pesticide or device, 7 M.R.S.A. § 612.

The Commissioner also has the power to seek an injunction for the violation or threatened violation of any provision of the Act, 7 M.R.S.A. § 616(2).

Any person violating any provisions of the State Pesticides Control Act or the regulations adopted thereunder commits a civil violation which may result in a forfeiture not to exceed $500 for the first violation and up to $1,000 for each subsequent violation, 7 M.R.S.A. § 616(1). However, these penalty provisions do not apply to "public officials of this State and the Federal Government while engaged in the performance of their official duties in administering state or federal pesticide laws or regulations". 7 M.R.S.A. § 617.

Except with respect to the registration of pesticides, the State Pesticides Control Act supplants the Federal Pesticide laws. Primary enforcement responsibility for pesticide use violations rests with the State where the State has adopted adequate pesticide use laws and regulations (as Maine has) and has adopted and is implementing adequate procedures for the enforcement of such state laws and regulations, including record keeping and reporting or where the State and the EPA enter into a cooperative enforcement agreement, 7 U.S.C. § 136W-1.

* * *

The sale, distribution and use of pesticides is further regulated by a State Board of Pesticides Control which consists of

the Commissioner of Agriculture, the Commissioner of Health and Welfare, the Commissioner of Conservation, the Commissioner of Inland Fisheries and Wildlife, the Commissioner of Marine Resources, the Chairman of the Public Utilities Commission, the Commissioner of Transportation and the Commissioner of Environment Protection, 22 M.R.S.A. § 1471-B.

Commercial applicators of pesticides (this includes all aerial applicators for hire) are prohibited from applying or supervising the application of pesticides within the State prior to certification by the Board, 22 M.R.S.A. § 1471-D. All applicants must comply with competency standards established by the Board, and commercial applicators must demonstrate competency by passing a written exam, § 1471-D(4). Certification of commercial applicators is valid for one year, § 1471-D(6).

Commercial applicators who wish to be licensed to engage in aerial pest control must demonstrate practical knowledge of problems which are of special significance in aerial application of pesticides, including weather and drift; nozzle selection and location; ultra low volume systems; aircraft calibration; field flight patterns; droplet size considerations; flagging methods; and loading procedures. In addition, the applicant must demonstrate competency in the specific subcategory in which he proposes to work. Regulations, Board of Pesticides Control, § 2.26(1).

In order to be certified in the General Forest Pest Control Category (3a), the applicant must demonstrate practical knowledge of forest tree biology and associated pests, including, but not

limited to:

1. population dynamics of pest species, especially as related to programming of pesticide applications,
2. pesticide-organism interactions,
3. integration of pesticide use with other pest control methods,
4. environmental contamination,
5. pesticide effects on non-target organisms and
6. use of any specialized equipment involved.

To be certified in the Timber Stand Improvement (TSI)--Forest Pest Control Category(3b), the applicant must demonstrate practical knowledge of forest types and of the rationale behind timber stand improvement (TSI), including, but not limited to, knowledge of TSI

1. methodologies,
2. rationale for selecting chemical over mechanical TSI methods,
3. awareness of effects of TSI upon wildlife species and general aesthetics of wooded areas.

All commercial applicators must also demonstrate financial responsibility in amounts set by the Board, Regulations § 2.23.

The Board also has authority to designate "critical areas" where pesticides use may be prohibited entirely or limited, § 1471-F, 1471-M(2). Critical areas may include areas where pesticide use would

a) jeopardize endangered species or critical wildlife habitat,

b) present unreasonable threat to the quality of water supply,

c) be contrary to a master plan for the area where such area is held or managed by an agency of the State or the Federal Government,

d) otherwise result in unreasonable adverse effects on the environment of the area.

At present there is no requirement that the Department of Conservation obtain the approval of the Pesticides Control Board or any other state agency to carry out the spray program. The Maine Spruce Budworm Suppression Act expressly provides the determination of the Legislature of the amount which shall be expended for the program:

> "shall authorize the budworm suppression program. . . for such calendar year and shall supercede any requirements which may exist for the approval of this program by any other state agency." (M.R.S.A. § 1014)

However, the licensing requirements pertaining to commercial applicators must be complied with. P.L. 1976, Ch. 764, Sec. 7.

As noted earlier, there is no general requirement that a person obtain a permit from the Board before applying pesticides to the forest. A permit is required if limited use pesticides are being used. Until recently a permit was also required from the Pesticides Control Board if pesticides were to be purposely applied "to or in any river or stream or tributary thereof, or any great pond," 22 M.R.S.A. § 1471-E. However, this past session the Legislature amended this provision so that in the future permission to make a purposeful aquatic application will require

approval of the Board of Environmental Protection (see P.L.1979, c.281).

* * *

We would not recommend altering this general regulatory format. Since the State Bureau of Forestry would be determining what areas are to be sprayed, what chemicals are to be used and what kinds of buffers would be required, and since the Pesticides Control Board would be providing recommendations to the Bureau of Forestry with respect to these matters, it would not appear to be necessary to have the entity secure a permit for its operations.

Shifting the responsibility for pesticide application to a private entity may result in more diligent enforcement of the various laws regulating the use of pesticides, for the reasons discussed earlier. Presently the State acts both as regulator and as applicator. Placing the responsibility for operations in a private entity would split these functions.

The State Department of Conservation would still be responsible for determining areas to be sprayed and for establishing appropriate buffers. But, since the State would not be responsible for operations, closer cooperation between the DOC and the Pesticides Control Board and its staff may be possible. The DOC would not appear before the Board as an advocate or defender of its conduct, but rather as part of a coordinated state monitoring and enforcement effort to insure proper adherence to all applicable laws and regulations.

Under current laws, the state both designates areas to be sprayed and carries out the spraying upon such lands. Accordingly,

the State knows where spray is being applied throughout the State. Under the proposal the State would have knowledge of the areas designated to be sprayed but it would not necessarily be aware of all areas to be sprayed by the private entity, or when particular areas are scheduled to receive applications. Individual landowners may take it upon themselves to spray areas which are not designated upon the state spray plan. If the State were not aware of such additional areas, in advance, it may be difficult to arrange for appropriate surveillance of the operations and environmental monitoring.

Accordingly, we would recommend that the spray entity be required to notify the state, in advance, and to keep the state continually informed, of the schedule for spraying those lands designated by the state and a designation of any additional lands together with a schedule pertaining to them.

There is insufficient staff of the Pesticides Control Board to do an effective job of monitoring a massive aerial spray program. The Board itself is comprised entirely of the heads of other state agencies and departments. These officials have their own program responsibilities to administer and must depend heavily on staff for guidance with respect to complex pesticide laws.

For the past few years, the Board has dispatched one person to serve as an on-site observer of the spray program during operations. One person cannot possibly be expected to monitor a program which entails millions of acres. Most of the areas to be sprayed are unpopulated, so citizen surveillance that accompanies smaller scale agricultural spray operations is not present

as an aid to enforcement. In our judgment, increased funding to the Pesticides Control Board to hire additional personnel to perform this function would improve enforcement efforts and is essential.

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Robert Armstrong, Westfield, Massachusetts; Richard Pendleton, Cornell University; Ray F. Smith, University of California at Davis; Bruce J. Zobel, North Carolina State Universiry School of Forestry.

I. Index to Appendix of Exhibits - Forest Protection Limited

A. Exhibits Referred to in the Study

1. Bridges Bros. Ltd. v. Forest Protection Limited

2. Flieger, B.W.; "Forest Protection Limited, Company Organization and Background"

2(a). New Brunswick Companies Act, R.S.N.B. 1952, c. 33

3. Letters Patent, Forest Protection Limited, September 6, 1952

4. Supplementary Letters Patent, Forest Protection Limited, March 30, 1953

5. Corporate Bylaws

6. The Queen v. Forest Protection Limited

7. Topographical Map of New Brunswick

8. Affidavit of Harold E. O'Brien sworn to April 7, 1977

9(a) and (b). Organizational Charts for Forest Protection Limited

10. "Aerial Control of Forest Insects in Canada," M.L. Prebble, Editor, Department of Environment, Canada

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11(b). Ker, J.W.; "Forest Protection Limited - Supplementary Report on Industrial Cost-Sharing"

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12(b). Watson, Robert S. "1979 Cost-Sharing for the Spruce Budworm Spray Program

13. Affidavit of K.B. Brown sworn to April 7, 1977

14. Orders in Council 76-335 and 77-162

15. Agreements between Minister of Natural Resources and Forest Protection Limited, May 17, 1976 and May 9, 1977

16(a). Trade Memorandum T-104, April 11, 1974

16(b). Supplement to T-104, April 7, 1975

17(a). Application for Permit to Spray, March 12, 1979

17(b). Application to Apply a Pesticide to a Body of Water, March 12, 1979

18. Costs of Monitoring and Surveillance - Spray Programs in New Brunswick - 1978; Memorandum from M.M. Neilson, Director, Maritimes Forest Research Centre to D.R. Macdonald, Director - Protection Branch, Canadian Forestry Service, April 16, 1979

19. Miscellaneous documents relating to EMOFICO

20. Map showing FPL airfields

21. Affidavit of R.E. Hanusiak sworn to on April 7, 1977

22. Touche Ross & Co. Auditor's Report, October 31, 1978

23. Letter of Agreement dated April 22, 1977 between Forest Protection Limited and J.D. Irving Limited

24(a). Spray Map, March 2, 1979

24(b). Public Notice for 1979 Spray Program

25. Letter from R.E. Hanusiak to M.L. Wilk dated June 3, 1979

26. R.S. of Canada, 1970, c. P-10 and Regulations

27. R.S. of New Brunswick, c. P-8

28. Regulation 77-20 under the Pesticides Control Act

29. R.S. of New Brunswick, c. F-93, with amendments

30. Letter from F. E. Webb to M.L. Wilk dated May 30, 1979

31. Friesen v. Forest Protection Limited

32. Letter from M.M. Neilson to M.L. Wilk dated May 31, 1979

33. Forest Protection Limited and Guerin, decision dated May 25, 1979, New Brunswick Supreme Court

B. Additional Documents pertaining to Forest Protection Limited

34. Defendant's Memorandum of Authorities filed in Friesen v. Forest Protection Limited

35. Third Party's Brief filed in Lewis and Town of St. Stephen and Forest Protection Limited and Conair Aviation Limited

36. Appellant's Factum filed in Forest Protection Limited and Guerin

37. Affidavit of R.L. Bishop sworn to on April 7, 1977

38. Affidavit of H.J. Irving sworn to on April 7, 1977

39. Letter from H.J. Irving to M.L. Wilk dated May 31, 1977

40. Crown Lands Act, R.S.N.B., c.53 as amended

41. R.S. of Canada, c. F.-30 "An Act Respecting Forestry Development and Research"

II. Index to Appendix of Exhibits - Pest Management Cooperatives

A. Exhibits Referred to in the Study

1. Local Cooperatives in Ingegrated Pest Management by Donald L. Vogelsang, FCS Report 37

2. Establishing and Operating Grower-Owned Organizations for Integrated Pest Management by J.M. Good, Ralph E. Hepp, Paul O. Mohn, and Donald L. Vogelsang, U.S.D.A. PA-1180

3. Alternative Delivery Systems for Farmers to Obtain Integrated Management Services by Ralph E. Hepp, Agricultural Economics Report No. 298, June, 1976

4. It's Time to Consider Integrated Pest Management by Donald L. Vogelsang, Farmer Cooperatives, March, 1976

5. A Progressive Community Cotton Insect Management Program, Edgecombe County, 1974, North Carolina University

B. Additional Documents pertaining to Pest Management Cooperatives

6. Integrated Pest Management - A Look to the Future by J.M. Good U.S.D.A. ESC 583

7. RVR Consultants, Evaluation of Pest Management Programs for Cotton, Peanuts and Tobacco in the United States, Final Report, October 1975, for Council on Environmental Quality and U. S. Environmental Protection Agency (Excerpts from Report)