

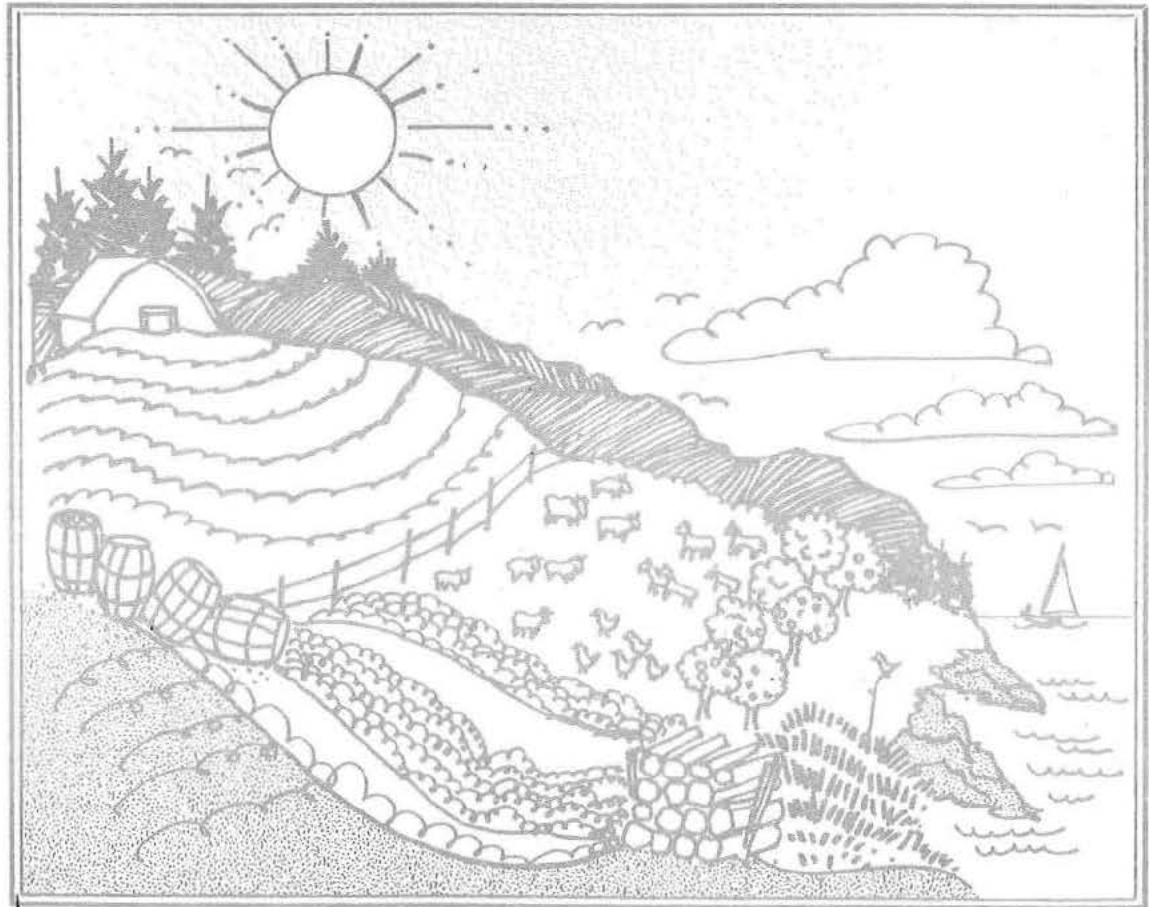
# MAINE STATE LEGISLATURE

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# STATE OF MAINE



## Soil and Water Conservation

### LONG RANGE PLAN

December 1981

Friends of Conservation:

The document you are about to read is the end result of the efforts of literally hundreds of Maine citizens. Information has been incorporated from area and statewide meetings held to obtain public input. The updated long range plans of Maine's 16 Soil and Water Conservation Districts have been reviewed and statewide concerns gleaned from them.

The document before you is a plan to solve Maine's soil and water conservation problem. We want it to be an active plan and not just a monument to the effort that went into its preparation. We think it is a plan of which Maine can be proud.

Acknowledgements

First, we would like to thank the 80 District Supervisors that run Maine's 16 Soil and Water Conservation Districts for their efforts in making this document possible. These dedicated individuals serve the state, their counties, and the district without any pay except satisfaction in a job well done. Maine has them to thank for the soil and water conservation efforts that have gone on to date. I'd also like to thank David Studer, who assisted the Districts in updating their long range plans, collected all the data on which this publication is based, and prepared the first draft of this final document.

I would like to thank Esther Lacognata and Alexander Hardie, Jr. for their assistance in the early editing process and Sandra Curtis and Paul Beers for their suggestions and assistance along the way. Special thanks to Robert Deis for the final editing and layout of this document, as his efforts have considerably improved the attractiveness and readability of this plan. I would like to give special thanks to SCS State and District staff for the many hours they have spent assisting us in the preparation of this document.

Finally, I would like to thank all of you that will read this document, become concerned with the problems facing us, and lend us the needed assistance to accomplish our purpose.

Sincerely,



Frank W. Ricker  
Executive Director  
Maine Soil & Water Conservation Commission  
Station #28  
Augusta, Maine 04333



State of Maine  
Soil & Water Conservation  
Long Range Plan

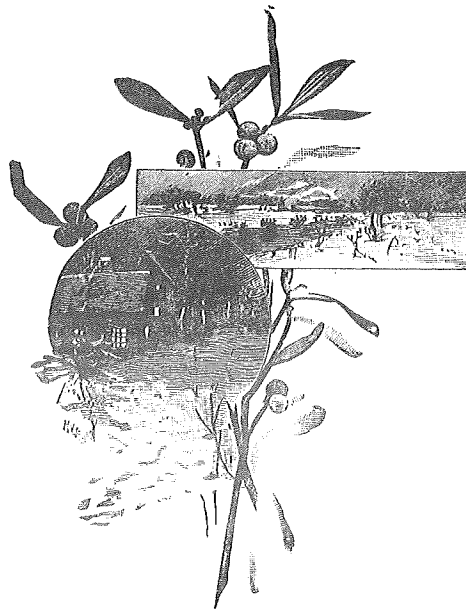


*Prepared by:*  
The Maine Soil and Water  
Conservation Commission  
December 1981



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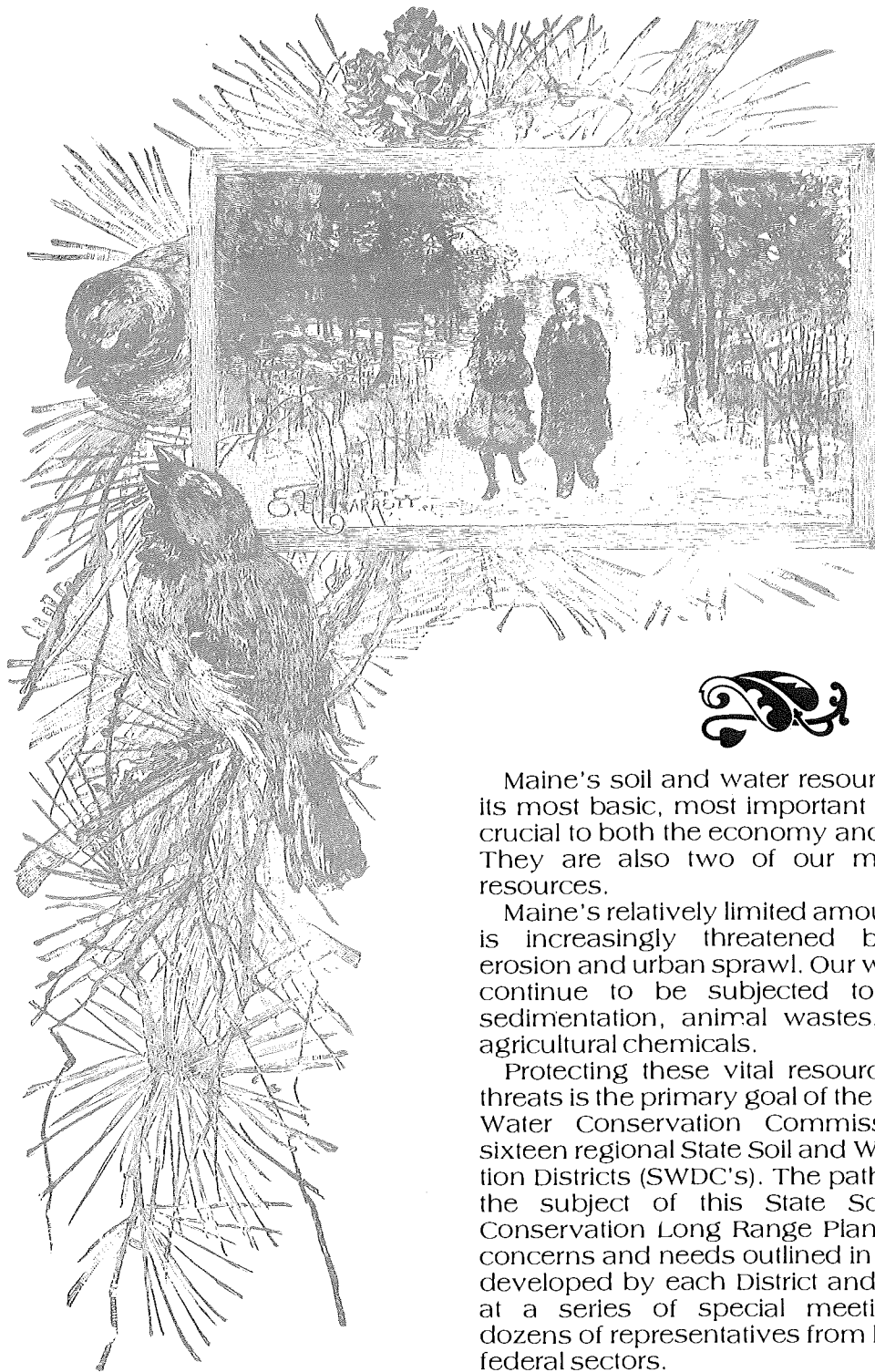




# INTRODUCTION







Maine's soil and water resources are two of its most basic, most important natural assets, crucial to both the economy and quality of life. They are also two of our most pressured resources.

Maine's relatively limited amount of cropland is increasingly threatened by agricultural erosion and urban sprawl. Our water resources continue to be subjected to pollution by sedimentation, animal wastes, sewage and agricultural chemicals.

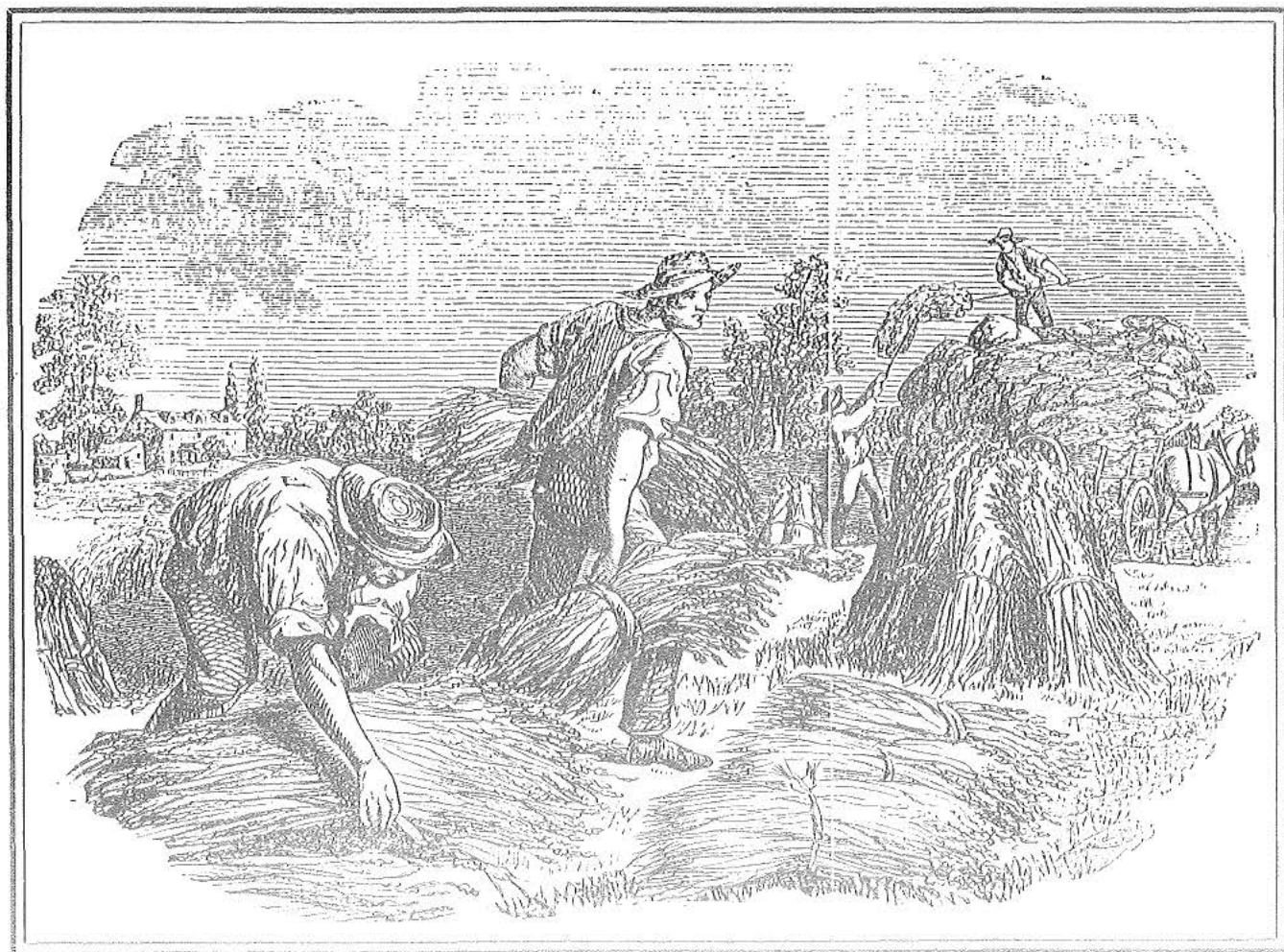
Protecting these vital resources from such threats is the primary goal of the Maine Soil and Water Conservation Commission and the sixteen regional State Soil and Water Conservation Districts (SWDC's). The path to that goal is the subject of this State Soil and Water Conservation Long Range Plan. It reflects the concerns and needs outlined in the local plans developed by each District and those defined at a series of special meetings involving dozens of representatives from local, state and federal sectors.

The result is a broadbased consensus which, in itself, may be viewed as a major step forward. If Maine wishes to conserve and protect its soil and water, it must, by necessity, have support and commitments from both the public and all levels of government. This plan suggests a foundation for focusing that support and carrying out those commitments.

In particular, it calls for a continuing commitment from the Soil and Water Conservation Commission and Districts to take a leading role in implementing the many recommendations discussed in the following pages.

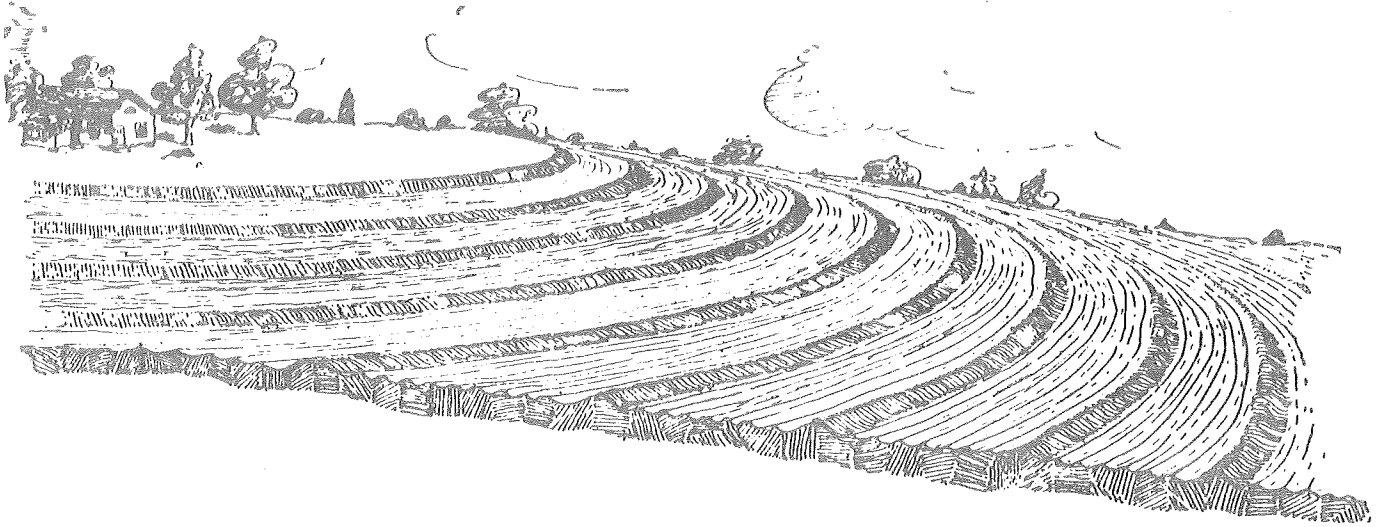
Section I

# AGRICULTURE





# Cropland Erosion



Guide-row terraces. There is no slope from one end of a terrace to the other, but there is a slight slope from the back of a terrace to the front. (Pearce, R. B.)

For Maine, as for the nation, cropland erosion is a major conservation issue. The loss of fertile soil to erosion steadily reduces crop yields and farm profits. Fields on which severe erosion continues unchecked eventually become useless for growing cultivated crops. As explained below under "Water Quality," cropland erosion frequently leads to water pollution problems. Ultimately, it threatens our ability to meet the future food and fiber needs of the state and country.

The most detailed source of information about agricultural erosion in Maine is the 1980 SNAP ("Study of Non-Point Agricultural Pollution") Report, prepared by the U.S. Soil Conservation Service. According to that report, erosion losses on nearly 60% of Maine's 302,742 inventoried acres of cropland exceed the tolerable level of 3 tons per acre per year. Some agricultural erosion problems can be found in every part of the state where farming is practiced. However, the majority are in Aroostook County, where 82% of Maine's cropland is located. Erosion losses are particularly high in eastern, central and northern Aroostook, where potatoes are the principal crop. In the Central Aroostook Soil and Water Conservation District alone, nearly 100,000 acres - or roughly one-third of Maine's total cropland acreage - is in need of soil conservation treatment.

Gully erosion, an indication of particularly severe rates of loss, is concentrated in the St. John Valley and Central Aroostook districts. In these two districts, 16.5 miles of active gullies have been identified. Only a minor occurrence of gully erosion has been noted in the state's 14 other districts.

On more than half of the cropland acreage with erosion rates above 3 tons per acre per year, proper crop rotation, plowing and tillage practices would effectively treat existing erosion problems. The remaining have extremely high erosion rates or special conditions requiring drainage systems and other more complex and costly solutions.

In both cases, economic considerations strongly influence the ability of farmers to implement conservation practices. Although crucial to long-term productivity, soil conservation often does not provide a farmer with any immediate financial gains. In fact, in the short run, the costs of some practices are greater than the benefits with respect to crop productivity and profits. Waterways and diversions, for example, are not only very expensive in themselves, they can also take land out of production. Even simple procedures, such as crop rotation, can temporarily reduce a farmer's profit ratio.

For soil conservation practices to be implemented on Maine's severely eroding cropland, farmers must have financial, as well as technical, assistance. Even if all necessary practices were implemented today, more money and personnel would be required to allow farmers to maintain acceptable rates of erosion.

Unfortunately, the annual amount of federal and state funds available for cost-sharing and technical assistance has not been great enough to allow implementation of soil conservation procedures on all of the farms in need. Recently, such assistance has become even

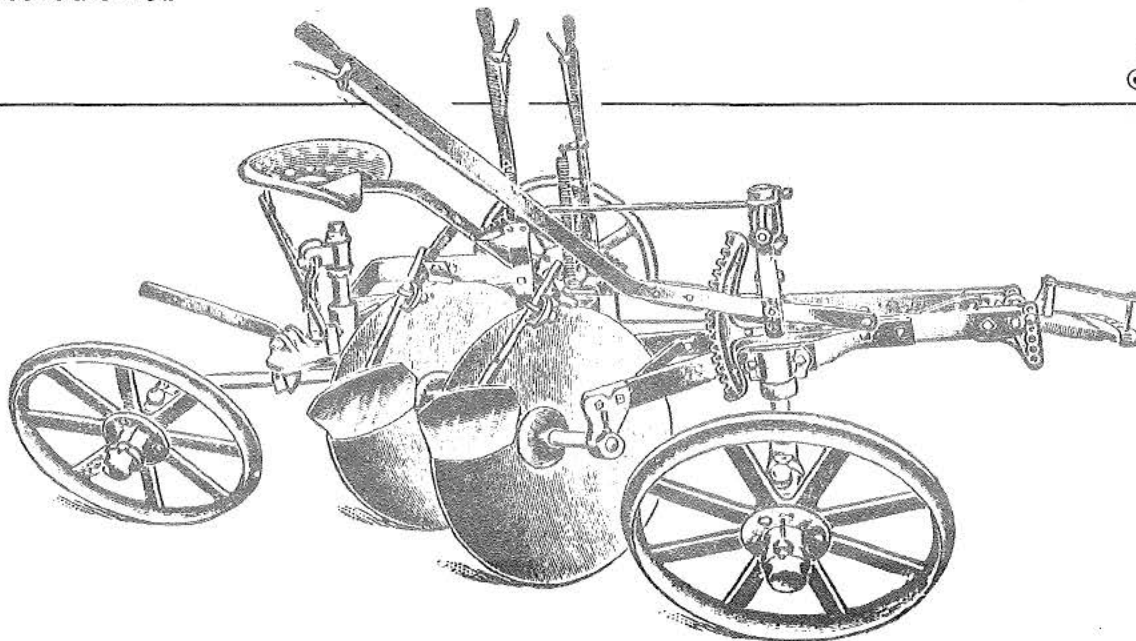
less available due to government budget restraints. For example, funding and personnel for the Soil Conservation Service has decreased by at least 10% during the past several years.

In the meantime, recent trends may be increasing the potential for erosion problems. Modern farm technology and farm economics encourage more intensive use of cropland. Average farm size is steadily growing. Dairy

farmers are planting more corn for silage and grain. Potato farmers are growing more acres of potatoes without using crop rotation or other soil conservation methods. The mechanization of farming is continuing to lead to the use of larger and larger pieces of equipment and changes in field arrangement and cropping systems. The combined effect of these and other recent farming trends has been to increase soil erosion on many Maine farms.

## Cropland Erosion: Objectives

- A. *The Commission and Districts will locate and provide greater assistance to areas of critical erosion and sedimentation through increased financial and technical assistance by:*
  1. *working to provide special funding programs in districts where erosion is greatest.*
  2. *developing a policy of correcting worst problems first while providing maintenance service on lower priorities.*
  3. *encouraging the federal government to improve funding for the implementation of conservation practices. If a grant program is developed, the Commission will develop a program for administering funds.*
  4. *supporting new or increased incentives for those who implement conservation plans and practices.*
  5. *promoting Long Term Agreements (LTA's) to further the long-term practice of conservation.*
  6. *reviewing program development with cooperating agencies to insure conservation needs are met.*
- B. *The Commission and Districts will take steps to further reduce erosion on agricultural land to tolerable limits (usually 3T./ac./yr.) within ten years by:*
  1. *supporting the implementation of SNAP report recommendations.*
  2. *supporting the continued update of the SNAP report.*
- C. *The Commission and Districts will encourage the development of diverse farming operations that promote soil and water conservation (such as economically acceptable rotations or grassland-livestock programs).*
- D. *The Commission and Districts will work for increased state, local, and private responsibility for urban erosion and sedimentation control, allowing cooperating agencies (such as SCS, MFS, etc.) to concentrate efforts on agricultural and forest lands by working with DEP and other cooperating agencies to improve compliance with erosion and sedimentation standards.*





## SNAP Recommendations of Soil and Water Conservation Districts

*To improve water quality and insure the continued productivity of the land:*

- 1. Give preferential State and Federal income tax rates to farmers when they are operating under an applied soil and water conservation plan which meets SCS Field Office Technical Guide criteria and is approved by a Soil and Water Conservation District.**
- 2. Encourage adjustment in property tax policies to recognize nonproductive land and reduce taxes accordingly. (Land used for conservation practices, such as diversions, waterways, and streambank filter strips, does not produce crops, thus should not be taxed as productive cropland.)**
- 3. Encourage crop diversification in areas of intensive row cropping. Convert marginal row cropland to soil-conserving crops, such as hay, grain, and pasture. Develop suitable markets within Maine for these alternative crops.**
- 4. Pay farmers who rotate crops according to a conservation plan to offset income lost from reduced acres in cash crops.**
- 5. Purchase options from row crop farmers to insure that land too steep for row crops is converted to more suitable uses. Base program on present row cropland use and limit options to land presently in production.**
- 6. Increase technical assistance to farmers with erosion problems. Allocate additional technical aid to Districts with the worst erosion problems.**
- 7. Increase financial assistance to farmers for carrying out conservation practices. Remove annual cost-share limits.**
- 8. Provide cost-sharing for maintenance of conservation practices.**
- 9. Encourage farm lending agencies to consider on-farm conservation needs in the loan process.**
- 10. Provide Soil and Water Conservation Districts with authority to share the cost of resource management systems with farmers. (Resource management systems are combinations of conservation practices required to protect land and water and insure a good level of production.)**
- 11. Increase educational and informational efforts to encourage land-owner participation in conservation programs.**
- 12. Coordinate efforts of all State and Federal agencies to develop comprehensive erosion and sediment control programs.**
- 13. Provide financial and technical assistance based on a conservation plan prepared by the farmer and approved by his Soil and Water Conservation District. Limit cost-sharing to farmers willing to enter into long-term agreements. Maintenance of conservation practices must be a condition of any agreement.**



# Water Quality



During the past decade, great strides have been made in cleaning up industrial and municipal sources of pollution that once made many of Maine's waterways little more than open sewers. Although costly, the clean-up of single point pollution sources is relatively simple. Dealing with so-called "non-point" sources, particularly agricultural pollution, is in many ways a more complex problem. The three general types of water pollution issues associated with agriculture are: sedimentation caused by erosion; pollution by animal wastes; and, contamination by agriculture chemicals.



# Sedimentation

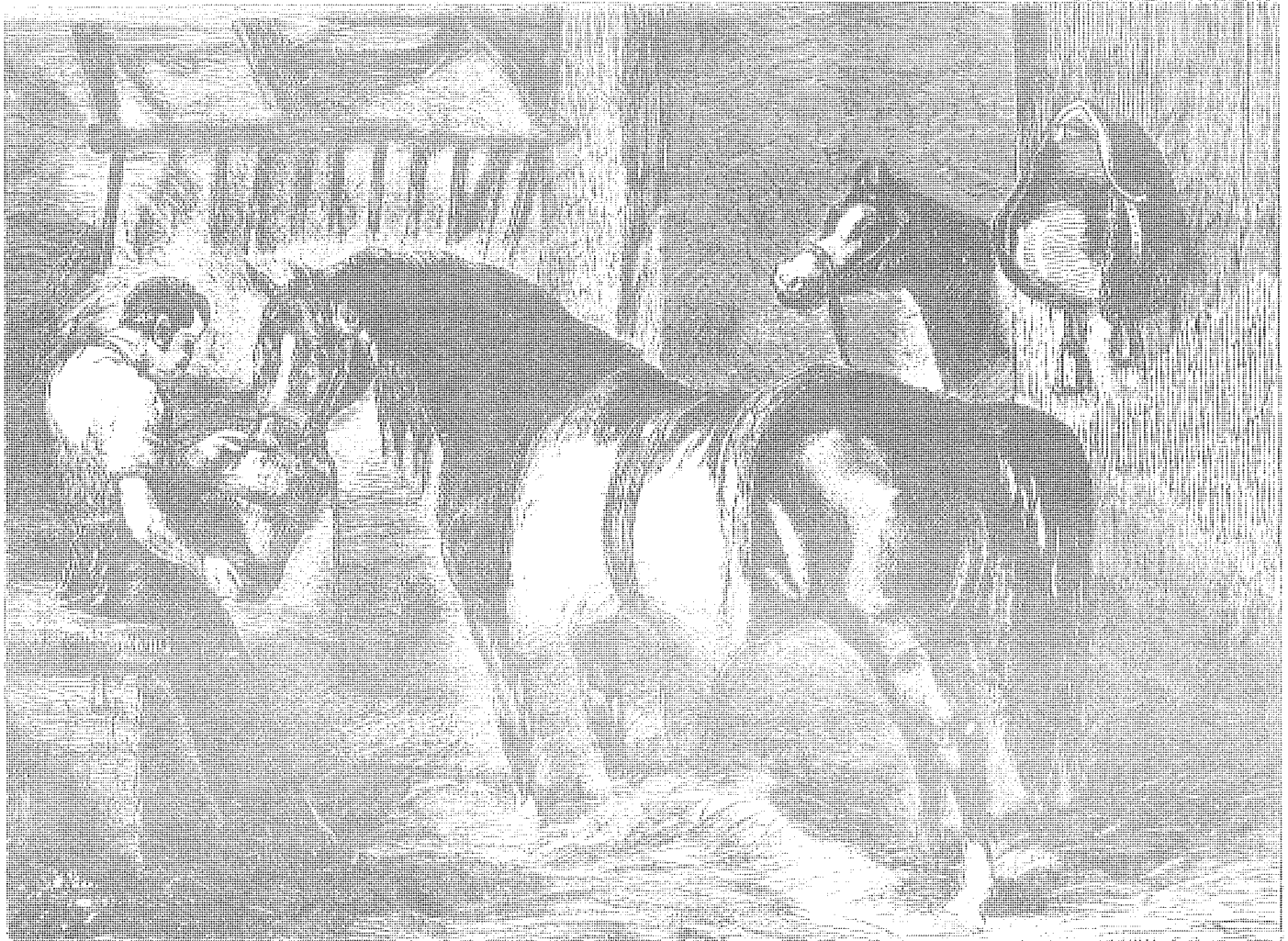
Erosion creates more than the problem of keeping good soil in place. Of the 1.8 million tons of soil eroded from Maine cropland annually, about 15% finds its way to surface waters as sediment. Sedimentation increases the cloudiness, or turbidity, of water. This can adversely affect fish and their habitats, reducing the variety and populations of resident species. It can contribute to the unnatural eutrophication (the rapid growth of algae and other water plants) of water bodies. It can also reduce recreational opportunities and degrade local sources of drinking water. Often, sediments from cropland carry fertilizer or pesticides that further enhance pollution problems.

Reducing sedimentary pollution, currently the biggest pollutant by volume affecting Maine's ponds and lakes, is essentially a matter of reducing erosion. Thus, with respect to agriculture and the goals of Maine Soil and Water Conservation Districts, the recommendations given above in the first part of this section are essential to both cropland and water conservation goals.





# Animal Wastes



A second major water quality issue associated with agriculture is pollution by animal wastes. Manure sometimes enters water bodies directly when animals are allowed access to streams and ponds. More often, it enters by means of runoff contaminated by manure that is improperly stored or improperly spread on fields.

One of the most common effects of pollution by animal wastes is nutrient overload resulting in eutrophication. Manure fertilizes aquatic plants just as effectively as it does crops, often causing dense algal blooms and other undesirable symptoms of eutrophication. Excessive growth of algae causes taste, odor and aesthetic problems and decreases the value of water for recreation or drinking. As the algae blooms and decays, it can deplete dissolved oxygen levels in the water, thus suffocating fish. In a number of Maine's most grossly polluted lakes, agricultural pollutants

account for up to 25% of the nutrient loads causing eutrophication problems, and a substantial portion of that total is made up of manure runoff.

In addition to eutrophication, contamination of water by animal wastes can create health problems for people, livestock and aquatic life. Various types of bacteria, viruses, protozoans and fungi which cause disease may reach dangerous levels when large amounts of fresh manure get into water. Nitrates leached from manure piles can enter groundwater and make it unsafe to drink.

According to the SNAP Report, farm animals in Maine produce over 2 million tons of manure annually. Ideally, all of these wastes should be recycled as fertilizer to improve cropland productivity. This would not get rid of the need for chemical supplements, since it would meet only a part of the state's fertilizer needs. However, proper application as fertilizer is both



beneficial to cropland and a logical step toward reducing manure-related water quality problems. (Manure can also be composted or recycled as a source material for the generation of methane gas.)

The SNAP study found that, while direct entry of animals and improper spreading (e.g. spreading on frozen ground) accounts for some of the water pollution caused by manure, the most widespread factor is improper storage. This usually involves the siting of manure storage piles too close to water or natural drainageways, or storage of manure in inadequate facilities not designed to prevent runoff contamination.

Implementation of proper animal waste management procedures on Maine farms requires providing farmers with both technical and financial assistance. Technical assistance is necessary due to the many complex factors involved in siting and designing storage facilities. Financial help is required because of the frequently high costs (up to \$40,000 per farm) of building those facilities.

As in the case of soil conservation, recent farm trends and funding limitations complicate the problem of implementing proper

waste management statewide. During the past few decades, average herd size of cows and other stock has become larger. As the concentration of animals increases, the difficulty of finding available cropland for proper and timely application increases. So, too, does the cost for adequate storage facilities.

Like erosion control practices, long term savings can be realized through proper waste management, but many farmers find the costs of manure storage facilities far greater than the short-term benefits they may derive. This creates the dilemma of weighing farmers' economic considerations against the public benefit of clean, pure water.

The public and government environmental agencies are increasingly insistent on non-polluting discharges from farms. Yet, although some cost-sharing for manure storage facilities has been available through the U.S.D.A., EPA, funds have generally been limited to special lake restoration projects.

The need, however, is widespread. In 1980, only 98 of over 2,800 Maine farms inventoried by the SNAP study had manure recycling plans and storage facilities meeting SCS technical criteria.

## Animal Wastes: Objectives

**A. The Commission and Districts will encourage every farm with over ten animal units to have a waste management plan within five years by providing greater planning, technical, and financial assistance. They will:**

- 1. sponsor lake and watershed restoration projects which target the worst problems first.**
- 2. support increased cost-sharing for waste management programs.**
- 3. support the SNAP recommendations for waste control.**



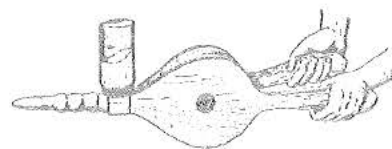
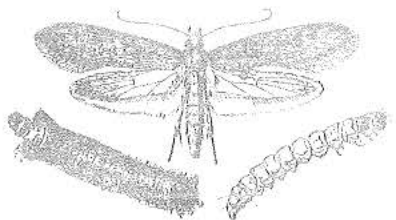
# SNAP Recommendations of Soil and Water Conservation Districts

1. The public should share the cost of solving agricultural water pollution problems. The farmer generally incurs high costs in building manure storage facilities that cannot be recovered. The public realizes the benefits in terms of cleaner water.
2. Any cost-sharing and technical program to assist farmers solve water pollution problems should be carried out according to a conservation plan approved by a Soil and Water Conservation District.
3. Manure storage facilities should meet the criteria for the SCS Field Office Technical Guide.
4. Stacking and spreading of poultry and livestock manures should be in accordance with the "Maine Guidelines for Manure and Manure Sludge Disposal on Land."
5. All livestock farms should develop manure recycling plans and establish, as needed, manure handling and storage facilities.
6. Watering facilities should be provided for cattle to prevent direct manure pollution. Where large numbers of animals are concentrated, they should be fenced away from drainageways and bodies of water.
7. Manure should be incorporated into the soil as soon as possible after spreading on cropland.
8. Install and maintain an effective and complete program of soil erosion control.
9. Avoid overgrazing pastures. The number of animals grazing a given field should be tailored to soil type, vegetation, and site conditions.
10. Develop livestock loafing areas remote from streams and other major drainage channels.
11. Keep animals out of areas with critical erosion problems.
12. Use water control and disposal systems to modify drainage patterns and reduce uncontrolled runoff of manure.
13. Develop multi-agency educational efforts through Soil and Water Conservation Districts under the leadership of the Maine Cooperative Extension Service to motivate farmers to use the best animal manure recycling practices.

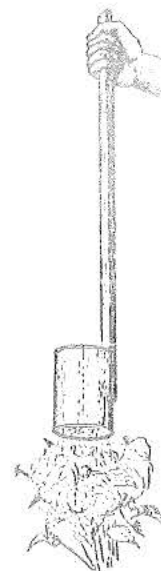
## Agricultural Chemicals

Another farm-related conservation issue is the use of agricultural chemicals. The majority of Maine's commercial farmers use chemical fertilizers to maintain crop yields. Most use pesticides to control destructive insects, crop diseases, blights and other pests. Many also use herbicides to control weed plants or as part of a "no-till planting" erosion control strategy. These practices keep up yields and allow intensive cropping of the land. And, despite the growing availability and use of alternatives, the use of agricultural chemicals will remain a common and necessary practice on Maine farms for the foreseeable future.

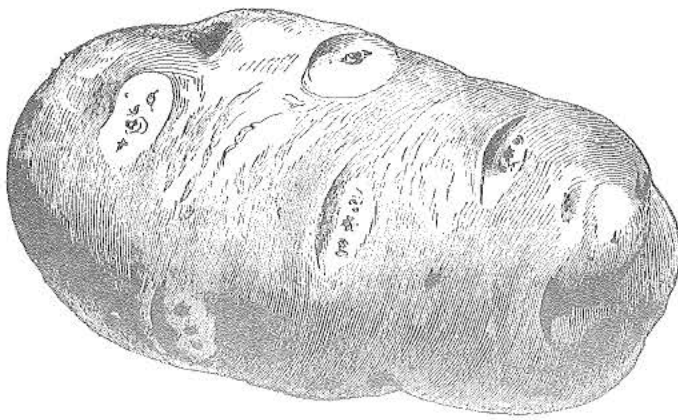
In recent years, development of new faster-degrading pesticides has reduced potential long-term ecological threats from agricultural chemicals. Even so, the short term toxicity of many new pesticides may be even greater than earlier compounds, and modern farming techniques are leading to increased chemical applications to the land. Improper use, handling mixing or application of these chemicals can



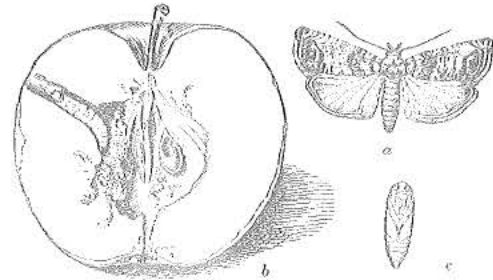
Bellows type duster.



A simple, home-made dust shaker.



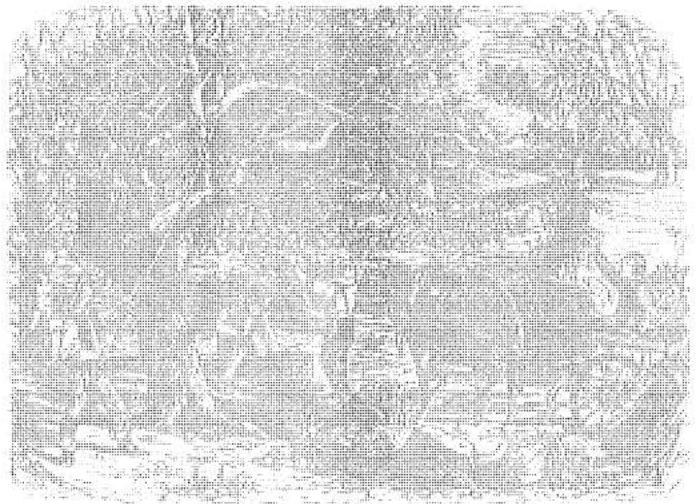
There is a significant need for more research to clear up such questions, not only to protect public health and the ecosystem, but also to ensure that farmers are not necessarily kept from applying important agricultural chemicals that may have little or no adverse effects when properly used.



lead to pollution of streams, ponds, lakes or groundwater supplies.

Fertilizers carried in runoff can contribute to the eutrophication of lakes. Pesticides and other biocides can poison fish and wildlife. Pesticides, nitrates from fertilizer, and other chemicals pose a threat to human health when they contaminate surface or underground waters used as drinking supplies.

Maine's Soil and Water Conservation Districts encourage proper utilization of all agricultural chemicals and support research into their environmental effects. The potential short- and long-term effects of many individual chemicals on human health and wildlife are still unknown. Very little is known about possible combined effects two or more agricultural chemicals may have.

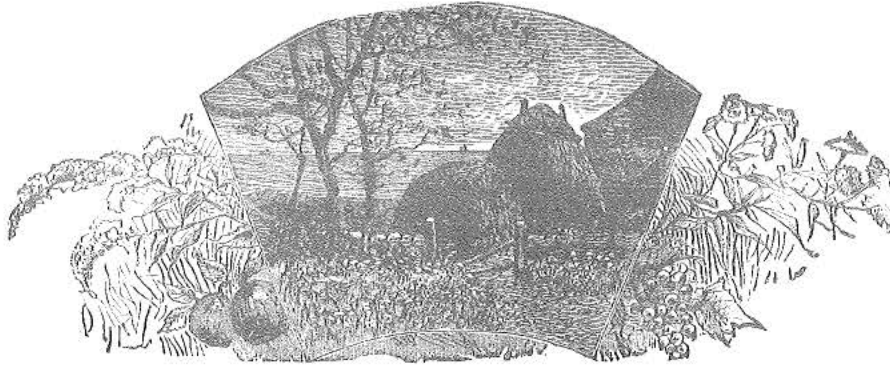


## SNAP Recommendations of Soil and Water Conservation Districts

1. *Research to find practical and safe means of disposing of pesticide containers.*
2. *Encourage recycling of pesticide containers (make them returnable and, where possible, reusable.)*
3. *Discourage purchasing of pesticides in excess of annual needs and long-term storage on farms.*
4. *Encourage development of safe spray water ponds.*
5. *Discourage the mixing of pesticides next to natural bodies of water.*
6. *Encourage hauling water to crop field and mixing pesticides.*
7. *Encourage development of spray water facilities permitting the rinsing of pesticide containers.*
8. *Encourage integrated pest management type programs to minimize use of pesticides.*
9. *Encourage pesticide application and timing in accordance with Cooperative Extension Service recommendations.*
10. *Encourage improved use of fertilizers to reduce chance of ground water and surface water pollution.*
11. *All crop farmers should develop soil and water conservation plans. Erosion control practices are effective in reducing pollution of water by pesticides and fertilizers.*
12. *Better methods of monitoring pesticides and chemical fertilizers need to be developed before any more funds are expended for this purpose. Results of past and present monitoring activities have been inconclusive.*



# Farmland Preservation



Since 1950, there has been a general decline in agriculture in Maine largely due to changing economic conditions. The Maine Food and Farmland Study completed in 1979 revealed that the number of acres in farmland decreased by 63% statewide, from just over 4 million acres to about 1.5 million acres, during the past thirty years. Most of this land was taken out of production due to abandonment, a reflection of the steadily declining incomes of small family farms. Other losses, particularly in Aroostook County, are the result of severe erosion or "terminal farming" practices that lead to the removal of all fertile topsoil. In some urban and rural suburban communities, especially in York, Cumberland and Androscoggin counties and many fast-growing coastal towns, areas of prime farmland have increasingly been turned into residential and commercial developments.

In recent years, the rate of farmland loss due to abandonment appears to have slowed down substantially. And, on the whole, farmland preservation may not be as great a concern in Maine as in some other, more industrialized, more densely populated states. It is, however, an important issue; one that is

inseparably linked to both local farming prospects and quality of life and to the long term future of agriculture in Maine.

Again, economic factors - including market conditions and taxes - play a key role. For farms to remain in production, the marketing prospects for Maine's farmers must be maintained and improved. This general need is recognized by and is a top priority of the State government.

At the regional and local level, one of the first necessary steps is to determine where prime farmlands are. To date, the Soil Conservation Service has completed farmland mapping efforts in Androscoggin, Sagadahoc, Aroostook, Cumberland and Kennebec counties. Mapping is currently underway throughout the rest of Maine. This information can be used in farmland preservation strategies involving the development of local comprehensive land use plans and protective ordinances.

Farmland preservation can also be encouraged by taxing farmland based on the value of its current use, rather than its potential market value if developed. Maine's "Tree Growth" tax law provides similar tax incentives for the preservation of woodlands.

## Farmland Protection: Objectives

**A. The Commission and Districts will encourage and assist government units to consider the implementation of land use changes in planning to preserve prime farmland.**

**B. The Commission and Districts will develop**

**guidelines and information to assist in understanding farm and farmland values and encourage cooperation among districts and farm organizations in a common effort to retain prime farmland for agriculture.**



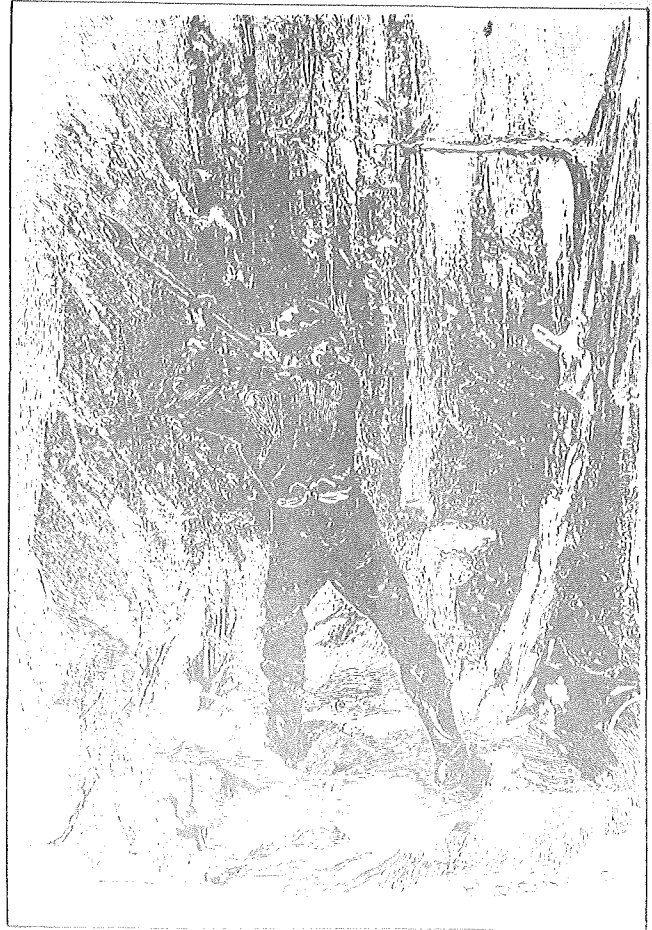
# Forest Management

Forest management has long been a major conservation concern in Maine. With 90% of its land area classified as forest land, Maine has the highest percentage of forested acreage of any state in the nation. And, according to the most recent timber resource review, 95% of this acreage is considered to be commercial forest land. About 49% of Maine's forest land is owned by the forest products industry. Another 49% is classified as "non-industrial private forest land," which includes farm owned and non-farm individual and corporate lands. Approximately 7% of Maine's commercial forest acreage is located on farm land, reflecting the fact that many farms typically have small woodlots.

Representatives of most Maine Soil and Water Conservation Districts report a general lack of adequate forest management on a substantial portion of the woodlands in their regions. Harvesting is often based on short-term economic considerations. Thus, woodlots are frequently "high graded" or clearcut for the greatest financial return over the shortest period of time. All too often, there is little or no regard for adequate regeneration of new trees following cutting, nor any other management considerations designed to ensure long-term productivity. Harvested areas are generally left in poor condition, not only in terms of regeneration prospects but also site conditions and aesthetics. Most are left to regenerate naturally to whatever species take hold first, regardless of commercial desirability.

Recent forestry studies show that forest resources on industry-owned land can not meet the future demand for Maine's pulp and timber. This makes the long-term health and productivity of non-industrial woodlots vital to the state's economy.

Forest management also affects land and water quality. Unwise cutting practices and improper location and construction of skid trails and logging roads often lead to erosion problems. This, in turn, can cause sedimentation of nearby streams, rivers, ponds or lakes. Sedimentation from logging-related erosion can seriously degrade water quality and have adverse effects on fish and other aquatic species. Statewide, erosion/sedimentation problems on forest lands are generally not as common or severe as those occurring as a result of agriculture or residential and commercial development. However, they are mentioned as an important issue in the long range plans of the SWCD's, particularly in the Piscataquis, Franklin, Oxford, Cumberland,



Hancock, Somerset and Washington County districts.

Much of the erosion caused by logging activities occur in the skidding phases of wood operations as logs are dragged through the harvesting site and over temporary skid trails to loading "yards". To a lesser extent, erosion problems are caused by poorly located or constructed trucking roads and yards.

Most loggers fail to use appropriate erosion control strategies simply through lack of knowledge. Some ignore erosion control techniques due to the mistaken notion that they are unnecessary or too expensive. Actually, properly located and maintained skid trails, access roads and haul roads are an asset. They provide significant time and cost savings compared to poorly sited and constructed transportation networks that constantly need repairs and caused delays.

Maine's SWCD's encourage sound forest management practices in all woodlands. In most districts, it is generally felt that pre-commercial timberstand improvements are as

important to service as sustained yield commercial operations.

Statewide implementation of proper forest land management techniques would not only benefit individual landowners, the forest products industry (Maine's biggest) and the state economy, but virtually eliminate logging-related erosion and sedimentation problems. A recent "208" Federal Clean Water Act study of logging operations concluded that sedimentation could be minimized to acceptable levels if all existing guidelines for skid trails and road construction were followed (e.g. careful siting and supervision with follow-up inspections during and after logging to ensure control measures and structures are functioning properly). The study further suggested that effective regulation of harvesting and haul road construction within 250 feet of water bodies (which is generally covered by Maine's Shoreland Zoning Act or LURC regulations) can also provide substantial protection against degradation of water quality by sedimentation.

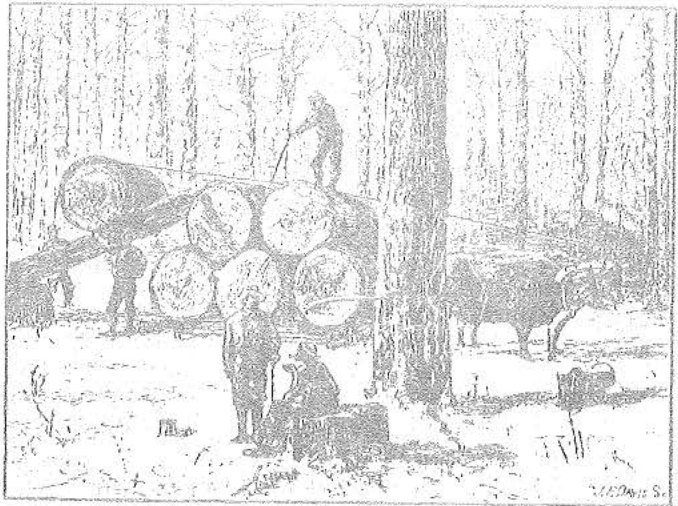
Experience indicated that most woodland owners and loggers are willing to use sound forest management practices. However, in order to implement these practices, they often require general information and specific technical assistance in the field. This need is widely recognized, as evidenced by the varied sources of information and technical assistance currently available. They include: State District Foresters, the Maine Forest Service, UMO's County Extension Services, Extension Foresters, the Small Woodlot Owners Association, the Department of Environmental Protection, regional Resource Conservation and Development projects, the forest industry's landowner assistance foresters, private consulting foresters, and a cooperative called the Forest Management and Marketing Association.

Yet, while information and technical field assistance has been available from one or another of these sources for many years, many woodland owners and loggers have

apparently remained unaware of it. And, ironically, despite the various programs and sources, the current availability of technical assistance would probably not be adequate to meet increased demands.

Many small woodlands owners can not afford the forest management services of private consultants and do not trust forest industry foresters or advice provided by industrial landowner assistance programs. But, because government funds have become increasingly tight, assistance from public programs is limited. In fact, in some areas of the state, servicing of landowners is already prone to long delays due to the heavy backlog of requests. On top of this, field assistance from State foresters - long a major and trusted source - may soon decline drastically with the growing budget restraints in State government.

In addition to increased technical assistance, cost-sharing assistance may be needed to fully address Maine's forest management problems. Currently, only a minimal amount of funds are available to landowners for the installation of access roads and erosion control structures (primarily from the Agricultural Stabilization and Conservation Service [A.S.C.S.]).

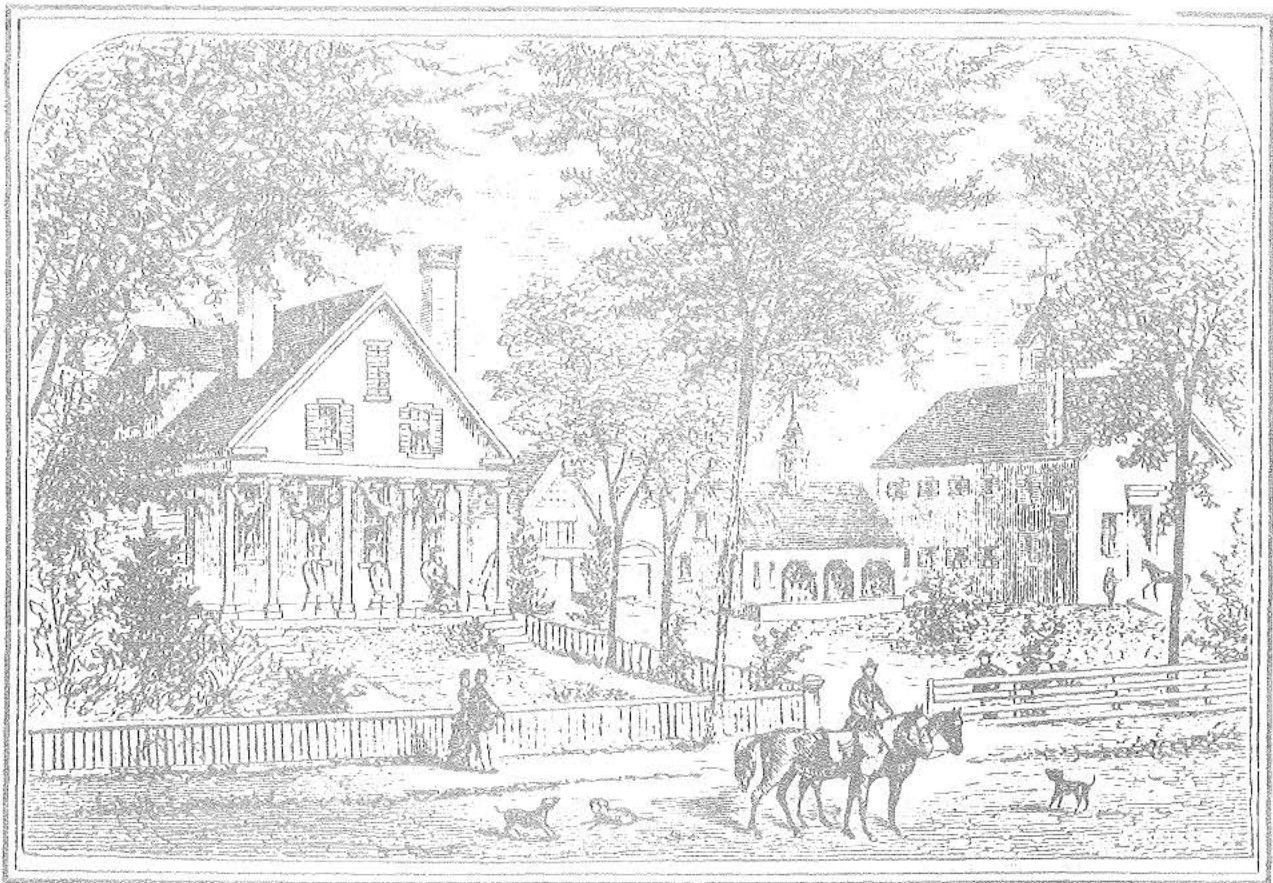


## Forestry: Objectives

- A. The Commission and District will provide assistance to woodland owners and operators to upgrade Maine's forest resources and assure its future through proper woodland management by:**
- 1. providing management advice and service in cooperation with the Maine Forest Service and other forestry programs.**
  - 2. supporting greater financial incentives for forestry programs.**
  - 3. developing, in cooperation with MFS and cooperating agencies, information and education activities in erosion and sediment control on forestland.**

Section II

# RESIDENTIAL, COMMERCIAL AND INDUSTRIAL DEVELOPMENT



THE  
CITY OF  
NEW YORK  
PLANNING  
COMMISSION  
1929



Soil and water quality problems associated with residential, commercial and industrial development are of major concern in Maine, particularly in the fast-growing southern and mid-coast counties. During the decade from 1970 to 1980, Maine experienced its greatest population increase in history. During that same period, there were also significant population shifts. In contrast to past trends, the population of most of the state's largest communities decreased or remained stable, while many small communities (especially those within easy commuting distance of urban centers along the I-95 corridor) experienced substantial growth. Thus, development pressures once common only to larger cities are now increasingly common in formerly rural

areas.

Proper siting and construction of residential, commercial and industrial developments involves numerous considerations, including local land use priorities, soil types, and slope and drainage patterns. Wherever one or more of these factors is ignored, as frequently occurs, land and water quality problems and unforeseen economic burdens may result.

One development-related concern is the loss of prime farmland, which is permanently taken out of production when developed. This issue and the relevant recommendations are discussed above in the section on Agriculture. Other major conservation concerns relating to development include erosion and sedimentation and municipal waste disposal.



## Erosion and Sedimentation

Construction activities generally strip the plant cover from soil, making it very vulnerable to erosion. And, while erosion control techniques can be used to substantially reduce or avoid erosion problems, these precautions are often ignored. Where erosion occurs, sedimentation of nearby water bodies is also likely as sediments are carried downslope in runoff. Occasionally, erosion on a single site can create a significant erosion/sedimentation problem. Commonly, local sedimentation problems are the cumulative, or combined, results of piece-meal development, with each new construction site for a house or store contributing small sediment loads that add up to a major water pollution dilemma.

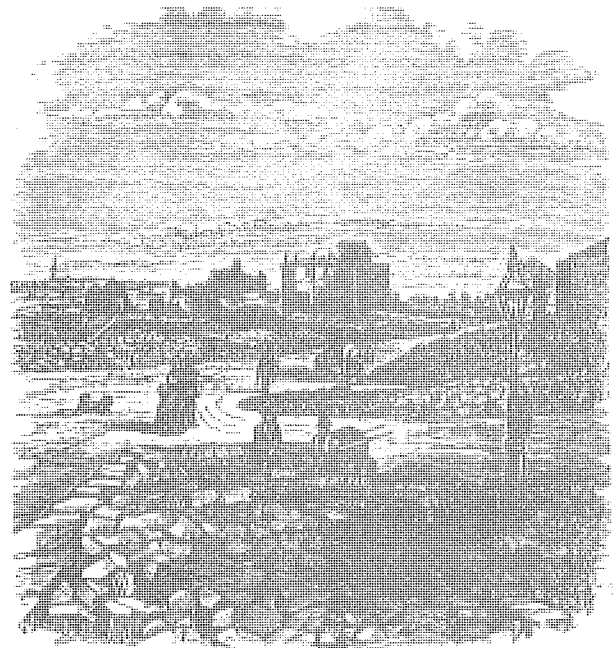
Sediments from construction site erosion like those from cropland or logging sites adversely affect water quality, fish and other aquatic wildlife, and recreational opportunities. Sedimentation can also increase municipal water treatment costs or create expensive maintenance problems and flood hazards by plugging storm drains and streams.

Development may also entail other water management dilemmas. For example, large paved areas increase runoff rates. The designs of many developments do not take this, or other potential changes to local drainage patterns, into consideration. As a result, during storms, increased runoff may overload sewers and treatment facilities and cause flooding, especially in communities where storm water drains are not separate from sewer drains.

Some, though not all, development projects need approval from local government or state agencies. This provides a review process for

control of erosion and sedimentation which has been formalized by the Department of Environmental Protection.

At the request of local officials, Soil and Water Conservation districts and the Commission review subdivision and development plans for many Maine towns to check for potential erosion and drainage problems. However, personnel and funds for providing this service are limited. Also, the responsibility for planning and using proper construction techniques lies with the developer, who may derive little or no direct benefit from conservation efforts.





# Solid Waste

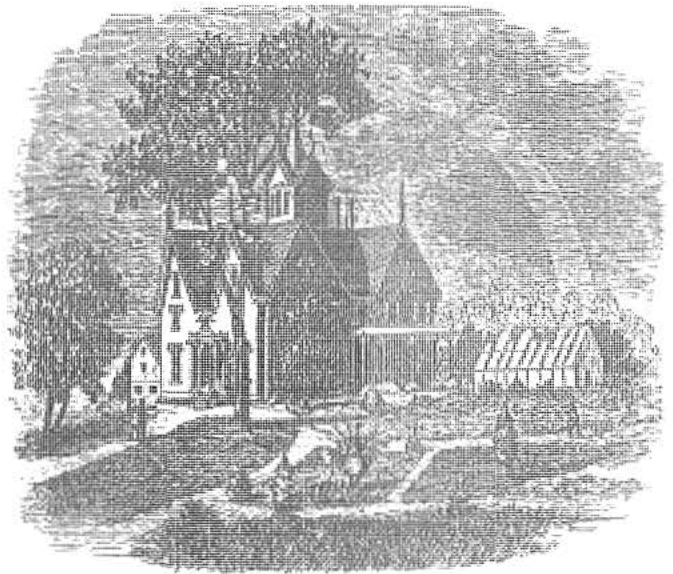
Solid Waste disposal is another common issue in many Maine communities. Improperly sited or operated dumps and landfills have created numerous water and air pollution problems throughout the state, ranging, from smoke caused by open burning to pollution of surface or groundwater by chemicals and heavy metals that leach out of waste disposal sites.

In recent years, the EPA and DEP have put increasing pressure on both large and small communities to comply with current waste disposal guidelines. However, in contrast to the massive government subsidies provided for wastewater facilities, very little financial assistance has been available to help towns solve their solid waste disposal problems. This accounts, in part, for the fact that over three-fourths of Maine's 334 municipal solid waste facilities are in substantial noncompliance with existing regulations.

Most of the non-complying facilities have uncorrectable siting problems relating to soils or drainage patterns, requiring establishment of entirely new facilities. Unfortunately, sites having all the proper characteristics are scarce in many localities, and those that exist are likely to be expensive to develop.

To be appropriate, a site must be located where pollutants cannot easily runoff or leach into local surface or groundwater supplies. It must also have the right type of soil, composed of materials that prevent percolation of pollutants into the water table.

Recycling of paper, glass, metal and other materials offers an opportunity to reduce municipal waste problems. Recycling may also be a solution to the widespread problem of disposing of sludge from wastewater treatment facilities and septic sewage. (In some communities, composting methods are being used to turn these organic wastes into a fertilizer supplement that can be spread on fields.) However, recycling efforts are currently limited, both by the local availability of opportunities for reuse of materials and by economic and technological obstacles.



## Residential, Commercial and Industrial Development: Objectives

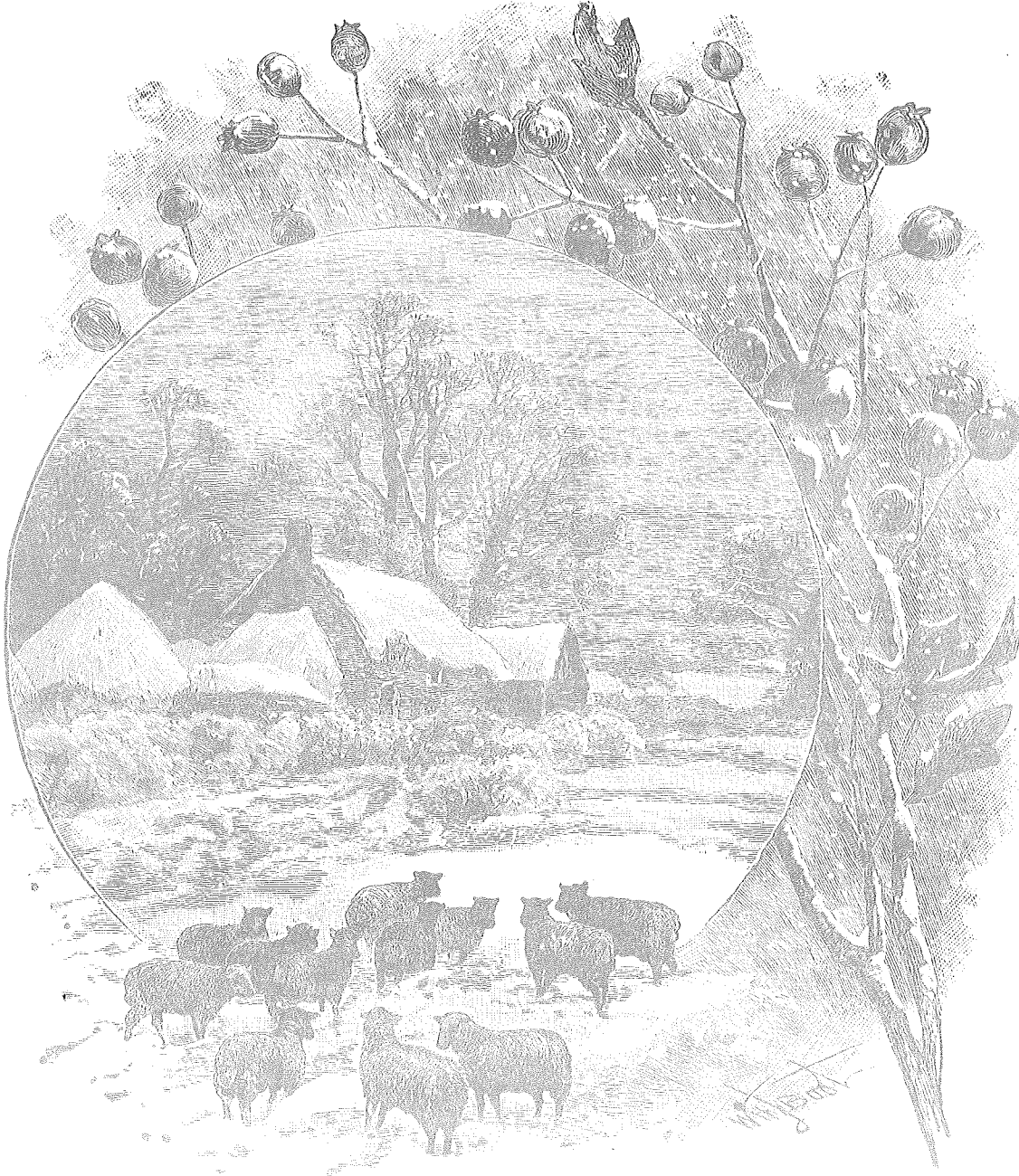
**A. The Commission and Districts will work for increased state, local, and private responsibility for urban and suburban erosion and sedimentation control, allowing cooperating agencies (such as SCS, MFS, etc.) to concentrate efforts on agricultural and forest lands by working with DEP and other cooperating agencies to improve compliance with erosion and sedimentation standards.**

**B. The Commission and Districts will work for state, local, and private solutions to municipal waste disposal problems allow-**

**ing cooperating agencies (such as SCS, ASCS, etc.) to concentrate efforts on agricultural waste by:**

- 1. assisting towns and state agencies in the location and development of waste handling facilities and sites.**
  - 2. developing policies and guidelines for safe disposal or recycling of wastes.**
- C. The Commission and Districts will work to improve urban and suburban water management by encouraging and assisting in implementation of water management plans (such as the '208' plans).**

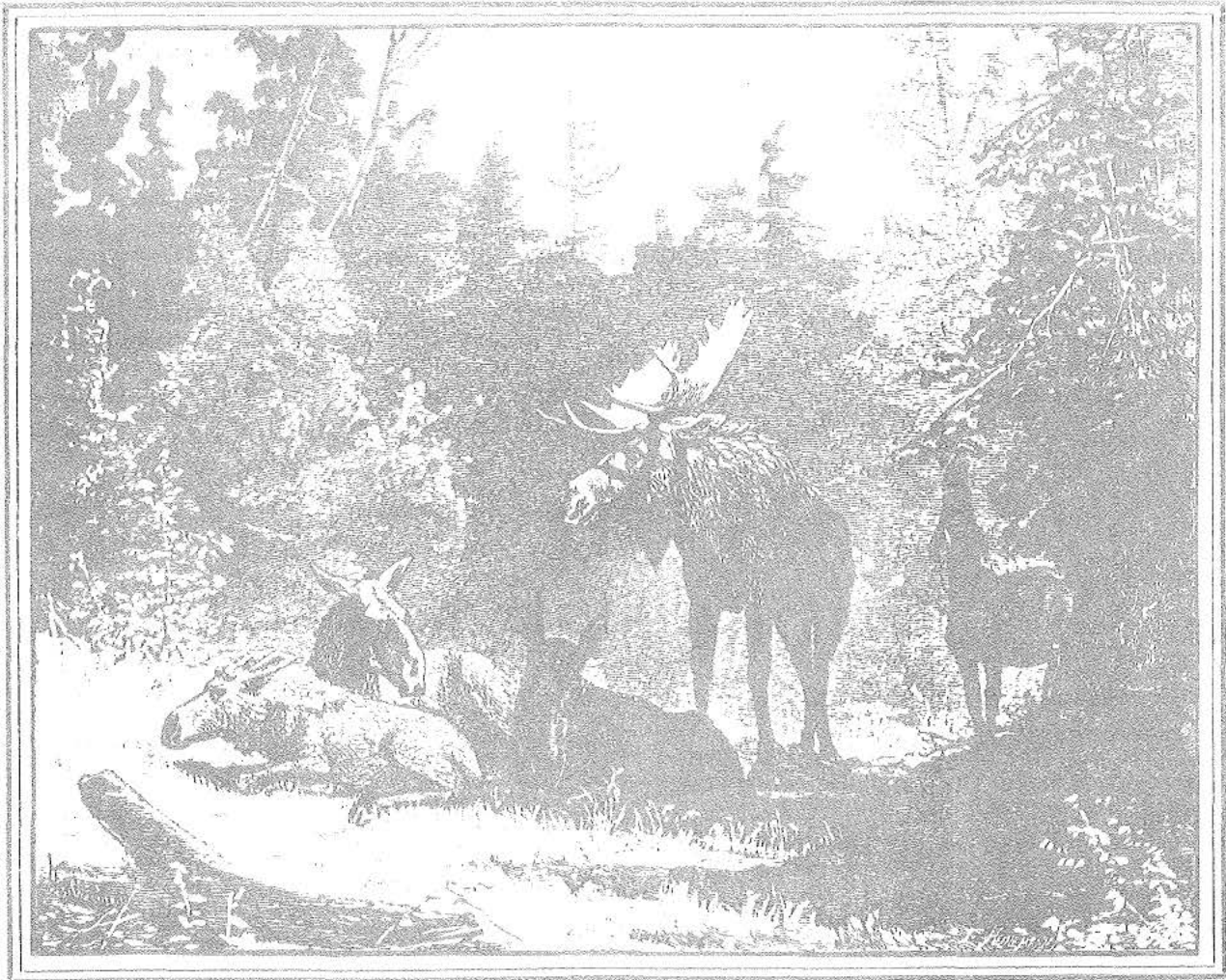




Section III



# CONSERVATION EDUCATION





At all of the Soil and Water Conservation Commission meetings held for the development of a statewide plan, and in all of the individual district plans, education was identified as a primary tool for implementing soil and water conservation goals in Maine. Current education efforts of districts are limited. And, at present, there is no coordinated statewide policy or program aimed at conservation education. Thus, one general need is an inventory of current educa-

tion efforts and resources. This task could be undertaken by the Commission or a special committee, which would then coordinate and provide assistance to district conservation education activities.

The educational "targets" identified include: 1) landowners and operators; 2) public schools; 3) general public; and 4) legislators and other policymakers.



## Landowners and Operators

The major goal of educational efforts directed toward farmers, loggers, woodland owners and other landowners and operators is to get them to practice soil and water conservation methods voluntarily. Tools for increasing their awareness include direct contact by district and Commission representatives, distribution of printed materials, workshops, demonstration projects and so forth.

The "education agency" of the USDA is the Cooperative Extension Service. Extension

agents advise farmers on farm management, though the emphasis of their efforts is generally on production rather than conservation.

The Soil Conservation Service often adopts a dual role of providing both technical assistance and conservation education to farmers, encouraging those with the worst problems (usually erosion) to undertake corrective measures. The SCS may also encourage those with problems to seek the assistance of other USDA agencies or local Soil and Water Conservation Districts.



## Public Schools

An important educational goal of the Commission and districts is to encourage conservation education programs in Kindergarten through high school. Currently, many districts are working with local schools, providing, in some cases, talks or presentations and also encouraging teachers to include conservation information in their curriculum. At the summary meeting for preparation of this plan, it was generally agreed that districts should be more active in assisting local schools.

Organizations such as the National Association of Conservation Districts (NACD), Maine Association of Conservation Districts (MACD) and the Pine Tree Chapter of the Soil Conservation Society of America also engage in educational efforts. Several produce books and pamphlets which districts buy and distribute to schools. The purpose of the MACD Education Committee is to provide leadership to local districts in encouraging a more active educational role within the public school system.



One of the state's most effective conservation education tools is the Maine Conservation School at Bryant Pond, which offers courses for both students and teachers. This is a cooperative effort of the Conservation Education Foundation, the State Department of Educational and Cultural Services and various natural resource agencies. In a typical year, between 800 and 1,000 children and adults attend the 20-year-old Conservation School. Courses focus on natural resource conservation and range from one day to one week in length. Over the years, a number of districts have sponsored teachers attending the school.

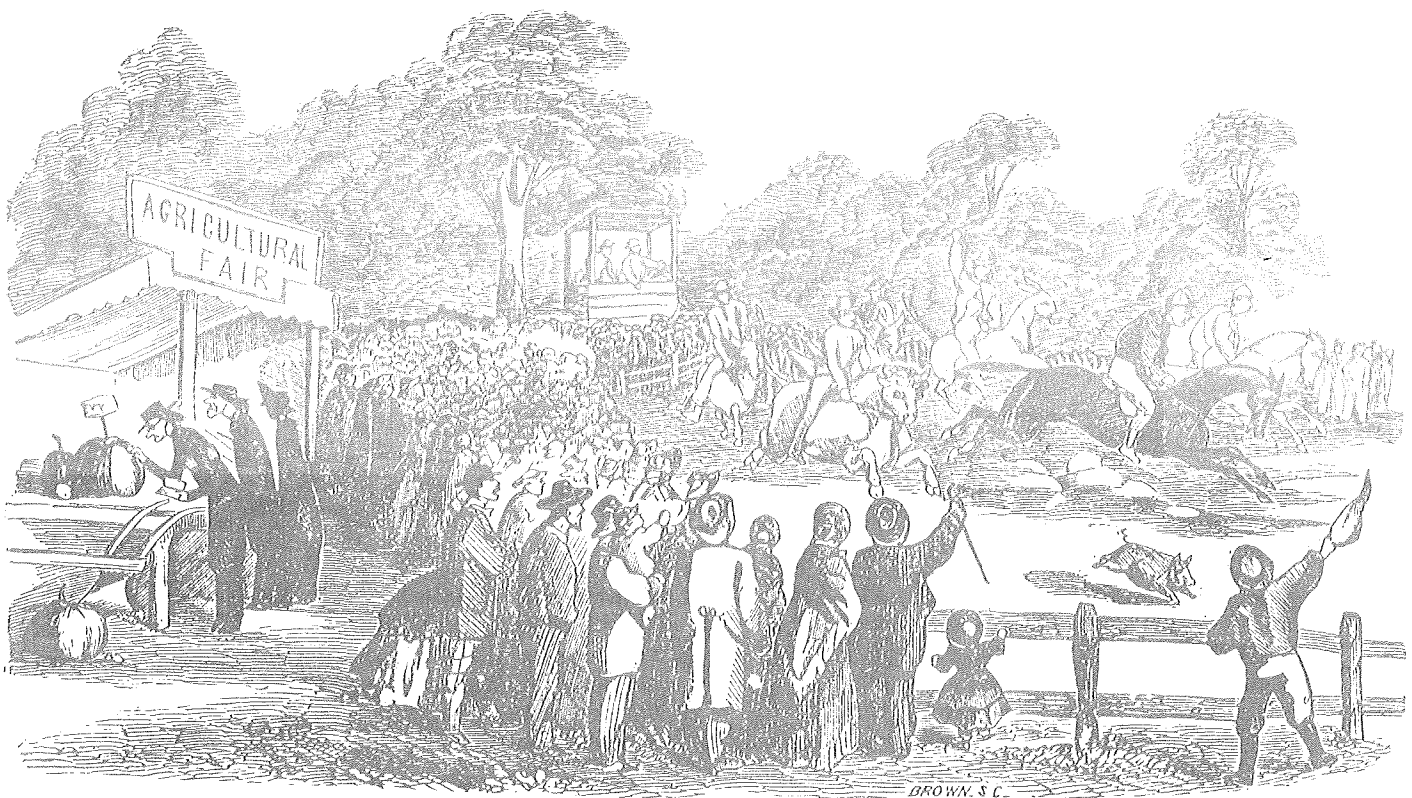
At the state plan meetings, it was agreed that

the Commission should look for ways of improving the Bryant Pond School and encouraging teacher participation. It is recommended that every district sponsor at least one teacher to Bryant Pond each year. It is further recommended that districts support programs sponsoring students, as is done by the Southern Aroostook SWCD.

At the summary meeting, three other school-related areas for targeting education were also suggested: the University of Maine and/or School of Forestry; Adult Education programs; and, "Junior Boards" such as the 4-H, Future Farmers of America and similar groups.



## General Public



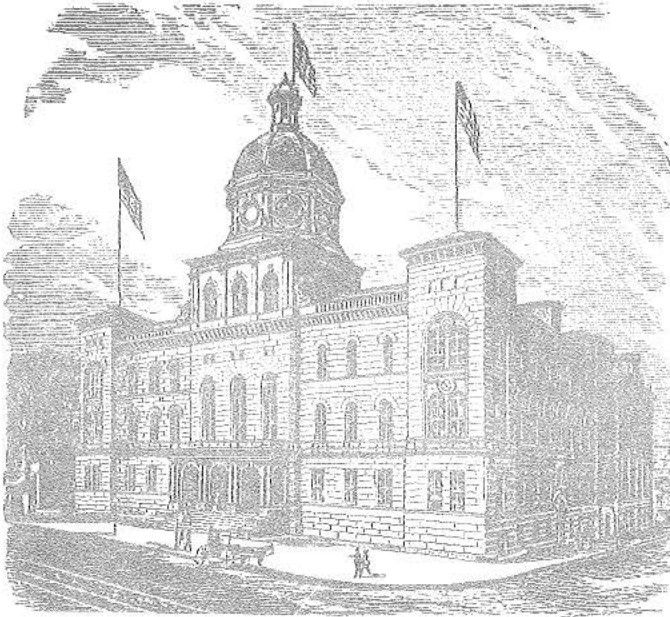
Communication and public relation efforts directed toward the public at large are another important conservation tool. Some districts regularly get media coverage for their seminars, "Cooperator of the Year" awards, local assistance projects and other activities. However, many district supervisors lack the time, as unpaid volunteers, or the expertise to

attempt extensive public relation efforts.

One of the responsibilities of the Soil and Water Conservation Commission is supervisor training. The Commission should be aware of and responsive to district public relation needs and encourage improvement of supervisors' knowledge and skills in this area.



# Legislators and other Policymakers



Another important target for action is the development of increased support for conservation programs through education of legislators, municipal officials and other policymakers who control government decisions and purse strings. In the past, government priorities have often focused on "cleaning up" the environ-

ment rather than on protective and preventive measures. Urban concerns dominate local government in Maine's larger communities, where agriculture tends to receive attention or assistance only when the general population is affected by farm-related water pollution.

All districts see the need to have state and federal legislators and local government officials support their mission. In part, this is a matter of keeping policymakers informed of district activities and conservation issues. District supervisors also see the need to actively lobby for their programs and goals, and to be competitive with other special interest groups for attention and funding.

State and federal agencies, including the Soil and Water Conservation Commission, cannot take political action. However, conservation agencies may provide information to districts and organizations such as the Maine Association of Conservation Districts, which can actively lobby. It is recommended that the Commission take a lead role in providing this information by publishing a newsletter, in cooperation with the MACD. It is also recommended that a legislative bulletin be published and sent to supervisors, districts and other interested parties when the legislature is in session.

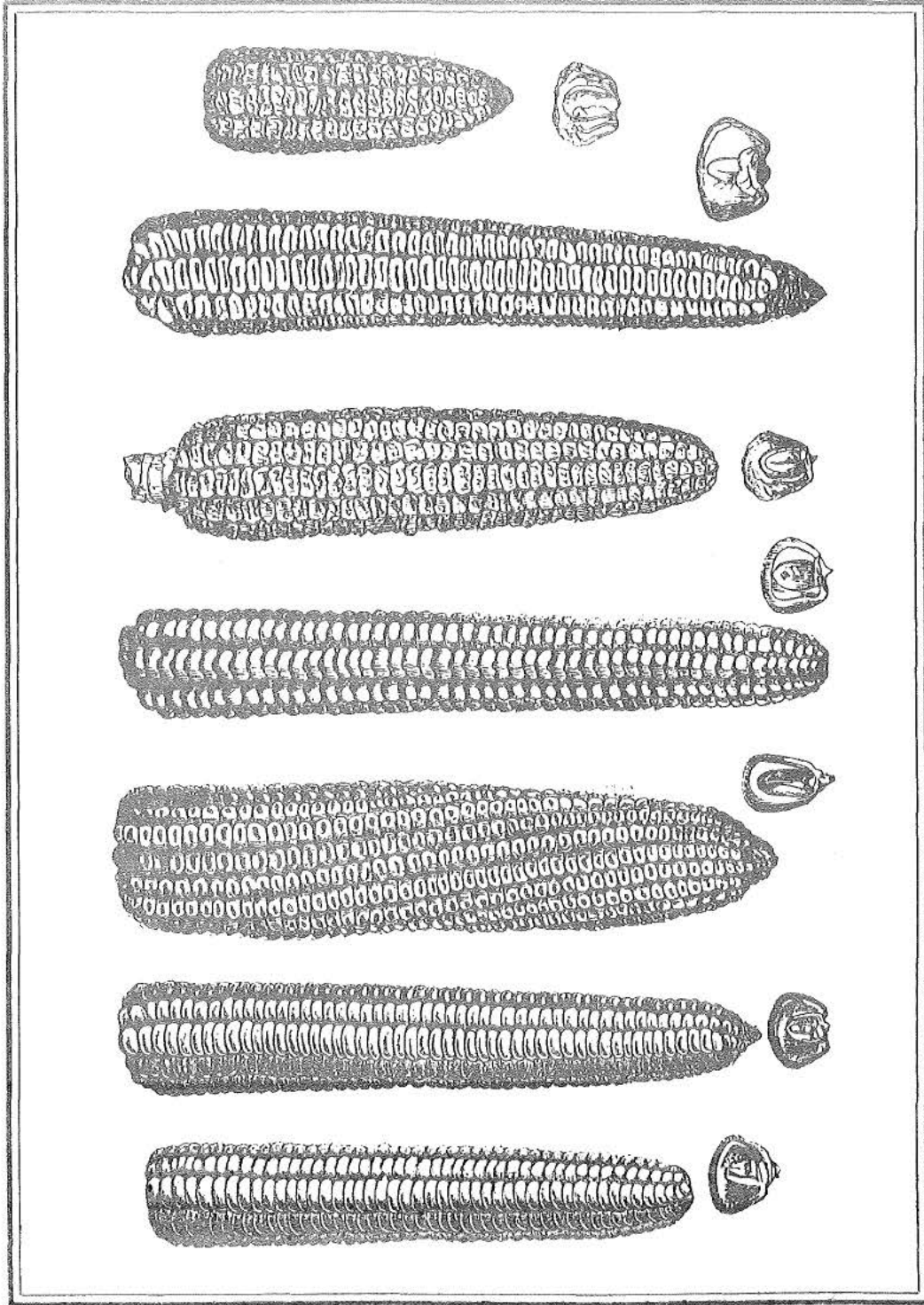
## Education: Objectives

- A. The Commission and Districts will work to accelerate district information and education efforts allowing cooperating agencies to concentrate on technical assistance.**
- B. The Commission and Districts will assure an effective education program in public schools by:**
  - 1. encouraging teachers to teach conservation values in public schools.**
  - 2. encouraging and sponsoring programs at Bryant Pond Conservation School.**
  - 3. establishing an Education Committee to assist districts in program development.**
- C. The Commission and Districts will assure that cooperators receive adequate information and service by:**
  - 1. sponsoring seminars in conservation methods and practices.**
  - 2. sponsoring publications of guidelines and recommendations for solutions to conservation problems.**
- D. The Commission and Districts will strengthen public relation efforts to bring districts more visibility with the general public by:**
  - 1. publishing newsletters.**
  - 2. publicizing district events.**
  - 3. training supervisors and district staff in public relations.**
- E. The Commission and Districts will inform, teach and educate our youth, landowners, and operators and public in conservation practices and values.**

Section IV



# RESEARCH AND DEVELOPMENT





Another important conservation action area is research and development. Basic research, such as the SNAP study of agricultural pollution, is crucial to understanding conservation problems and targeting priorities. Demonstration projects are an important way of creating workable solutions.

One of the current ongoing studies involving soil and water conservation issues is FARMS, the Field Appraisal of Resource Management Systems. FARMS will take a close look at how the installation of conservation practices affects crop production. It may provide the first available data on the relationships between farm income and conservation practices and, thus, help provide a better basis for cost-sharing allocations between the public and farm owners.

The Commission and districts are currently involved in a number of conservation demonstration projects. Since funding and manpower are limited, many of these projects are the cooperative efforts of various agencies, each of which may be asked to assist in completing part of a project.

For example, in the case of certain lake and watershed restoration efforts, the Soil Conservation Service provides the planning and technical assistance to farmers. The EPA provides funding for some of the technical manpower and shares the cost of constructing expensive conservation structures. The Agricultural Stabilization and Conservation Service also provides some cost-sharing, while the S & WC districts take care of local coordination and public relations and the DEP monitors water bodies and aids in the identification of specific problems.

Another major cooperative effort that may

soon be implemented is the Irrigation/Conservation Research Demonstration Project in Aroostook County. The initial study was completed by the Corps of Engineers in May of 1980. The Department of Agriculture, Food and Rural Resources, designated as lead State agency by the Governor, is actively seeking financial support for implementation.

The project is designed to demonstrate on three Aroostook County farms (one in each Aroostook S & WC district) that proper water management combined with other conservation practices will increase the yield and profitability of potatoes, that the initial investments would pay off over the long term and that, at the same time, soil quality will be improved. Research would also be done on how to maximize benefits.

Yet another cooperative project involves the use of peat for Agriculture. Several Maine vegetable growers have used peat as a soil amendment. The results indicate that peat increases soil fertility, tilth, humus or organic matter, water holding ability and ion exchange rates and that proper application of peat can increase crop yields while decreasing erosion. Currently, a Peat Task Force is studying the possibilities of using Maine's peat resources for agricultural purposes.

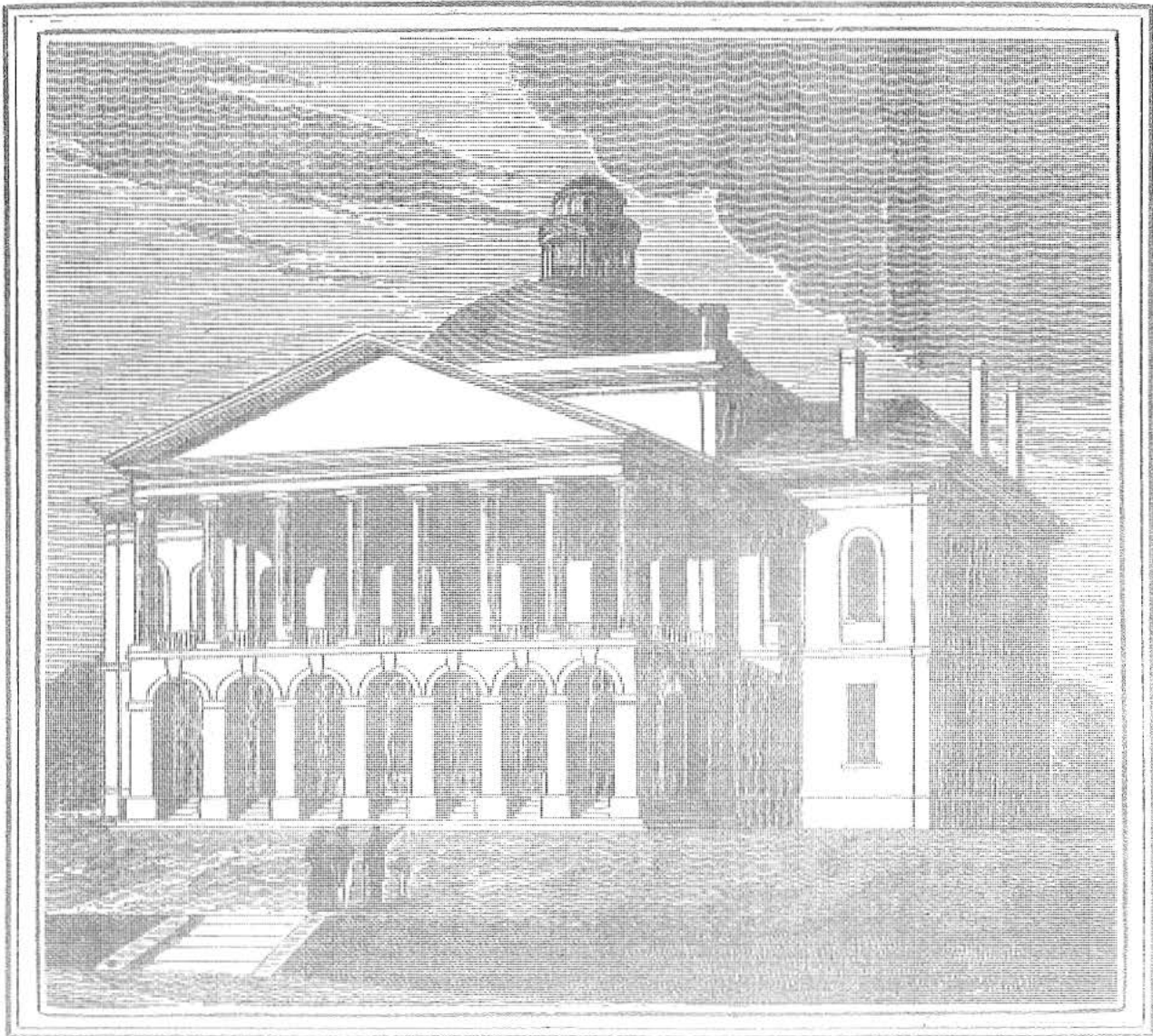
Areas that need more research and development in Maine include: 1) Integrated Pest Management; 2) Soil and water management practices to increase production; 3) Sludge disposal, solid waste management and recycling; 4) Agricultural energy-saving techniques; and 5) Economically viable alternate cash crops for rotation (one of the keys to more responsive thinking about conservation practices by Aroostook potato farmers).

## Research: Objectives

- A. The Commission and Districts will continue to support and encourage research in better conservation practices and alternatives by:**
  - 1. continuing to work for the early completion of the soil survey.**
  - 2. supporting Updates of the SNAP Report.**
  - 3. meeting annually with Maine Agricultural Experiment Station and USDA's Agricultural Research Station in Orono to review research progress.**
  - 5. cooperating with other state and federal agencies to develop research needs.**
  - 6. promoting studies and demonstrations such as the Aroostook County Water Management Project, Peat Task Force, Integrated Pest Management studies and other research opportunities that may develop.**
  - 7. supporting studies of ground and surface water to assure adequate future supplies of high quality water.**

Section V

# FUNDING AND ADMINISTRATIVE RESOURCES







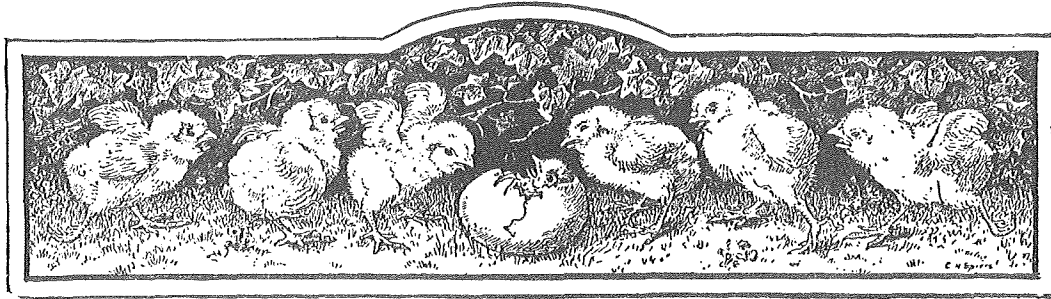
Important limiting factors in addressing Maine's soil and water conservation problems are funding and personnel. If current efforts were adequately staffed and funded, no new programs would be necessary. Unfortunately, given current budgetary restrictions, it will take many decades to implement the conservation strategies needed to solve existing problems.

All Soil and Water Conservation Districts rely

on cooperative agreements with the USDA, SCS, ASCS, DEP and other federal and state agencies to provide and coordinate technical and financial assistance to landowners. In recent years, local, state and federal programs are being asked to do more with less funding and fewer personnel. Eventually, we must reach a point of diminishing returns unless this trend is reversed.



## District Resources



One of the greatest strengths of the Soil and Water District program is that it is voluntary in nature. Another is that it provides for the establishment of local conservation priorities by local residents.

The Soil and Water Conservation Commission is a major source of funding for district efforts. It now provides a \$2,100 annual grant to each district. Some districts also receive the majority of the financial support for their programs from county governments. Others are unable to get more than token assistance, despite the widespread public benefits of their conservation efforts. Some districts raise additional funds by selling trees and shrubs, tile, trout, oats and

grass seed.

As a result of this haphazard funding process, many districts lack even a full-time clerical staff person. Some have only the services of a volunteer secretary for a few hours per week. At minimum, each district should be able to afford a full time secretary.

It is recommended that the Commission's annual district appropriation be increased to at least \$4,500 per district. It is also recommended that a total of at least \$5,000 be provided to each district by local county and municipal governments. This would enable every district to have, as a minimum, an office manager or secretary.



## Commission Resources

In 1979-80, the Soil and Water Conservation Commission divided \$30,000 among the districts and assisted the State Soil Survey with a \$10,000 appropriation. Other annual outlays include salaries for a small staff (an Executive Director, a soil scientist and a secretary), office expenses and funds for development and publication of educational and technical materials. The primary source of the Commission's funds is the State General Fund.

By 1982-83, \$35,000 will be available to split between the districts. However, due to budget restraints, the Soil Survey money has been cut.

It is recommended that funding to the Commission be increased to allow appropriation of at least \$4,500 to each district and \$10,000 to the Soil Survey. Assuming other expenses and personnel stayed the same, implementation of these recommendations would require a total budget of about \$170,000.

(As previously recommended, the Commission has now been relieved of the time-consuming responsibility for the Dam Legislation. This will allow the staff to concentrate on its primary mission of providing services to the Districts.)



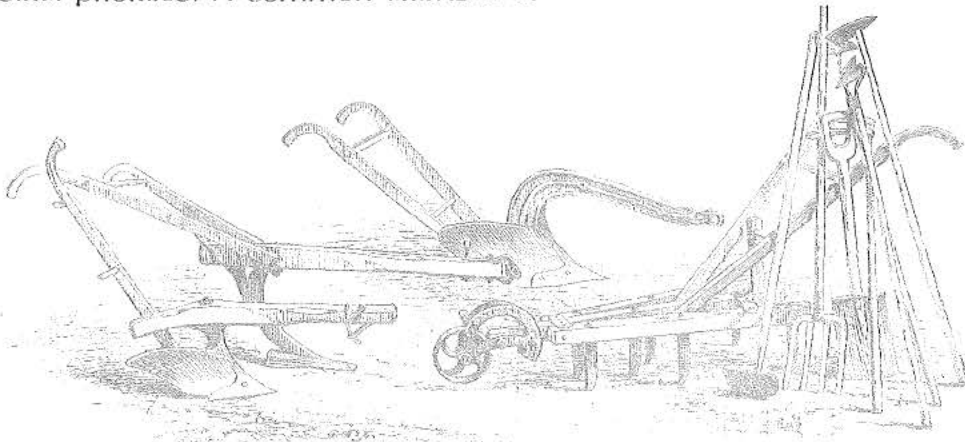
# USDA Resources

Commission and district limitations are compounded by the budget cuts of the USDA. Over the past several years, Soil Conservation Service staff resources have declined by about 18%, significantly reducing the technical assistance that can be provided to districts and local landowners. It is apparent that the current level of SCS manpower is not adequate to accomplish the work that needs to be done. Therefore, it is recommended that SCS be funded at a level that allows it to maintain a District Conservationist and necessary technicians in each district.

One of the most important sources of funding for implementation of conservation practices by landowners and operators is the USDA's Agricultural Stabilization and Conservation Service. The ASCS has tried to address the worst cases first and has a good working relationship with the districts in terms of dealing with district priorities. A common criticism of

the ASCS program is its \$3,500 annual limit for cost-sharing per farm. It has been recommended in district long range planning meetings that the limit be raised to \$5,000. It also recommended that the U.S. Congress fund the ASCS up to its authorized limit. This would about double the ASCS funds.

Of course, such an increase in funding would require a national policy change. In the absence of congressional action to this effect, the best route for increased ASCS funding may be special project funds. If Maine can show the need, special projects can receive additional financial assistance. An example is the Aroostook-Prestile Special ACP Project, which is targeting Agricultural Conservation Program (ACP) funds for a nine-town area in Central Aroostook County. This funding is in addition to the State and County ACP allocation.



MODEL FOR A SAKAWERRY FERRY

## Program Resources: Objectives

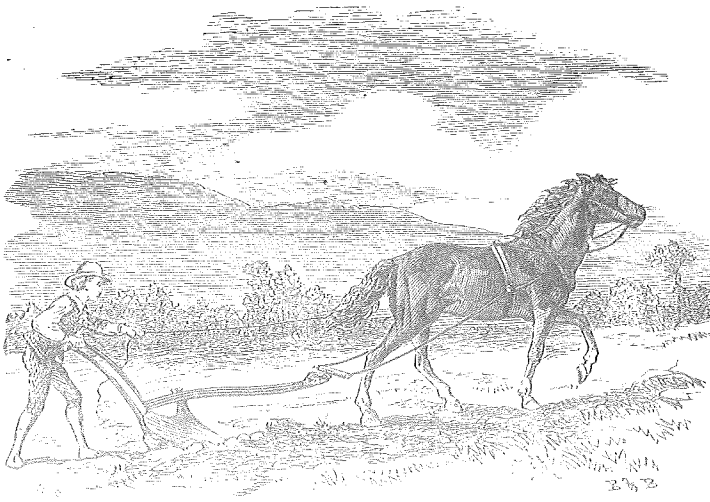
- A. *The Commission and Districts will work to upgrade their staffing and resources by:*
  1. *reviewing Commission and District plans (annual and long range) each year.*
  2. *working to increase the state grant to each district.*
  3. *reviewing program development to assure necessary personnel and funding.*
  4. *providing workshops and training for supervisors and district staff.*
  5. *assuring each district has a minimum of a full time clerk and D.C.*
  6. *annually reviewing cooperative agencies agreements.*
  8. *inviting DEP commissioner (or his representative designate) to attend all Commission meetings.*
  9. *continuing to support the Resource Conservation and Development program.*



Section VI

# AREAS OF RESPONSIBILITY





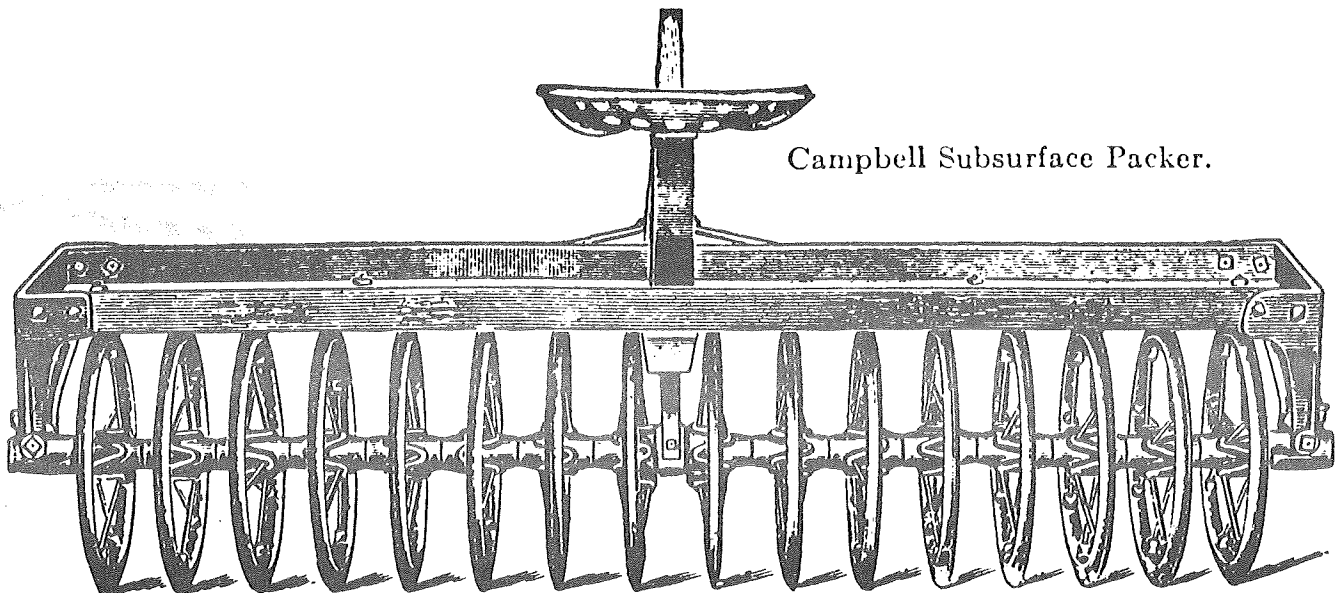
At the meetings upon which this plan is based, areas of responsibility for implementation of the recommendations were identified with respect to each of the major local, state and federal level participants. These responsibilities are briefly outlined below.

## 1) SWCD's and District Supervisors will:

- identify local conservation needs and priorities
- coordinate local, state and federal agency resources brought to bear on local conservation problems
- suggest and encourage conservation practices
- develop annual and five-year long range plans at the district level
- develop, with the Commission's assistance, goals and objectives to be met with Memos of Understanding with each cooperating agency each year
- support local conservation research and pilot projects

## 2) The Soil and Water Conservation Commission will:

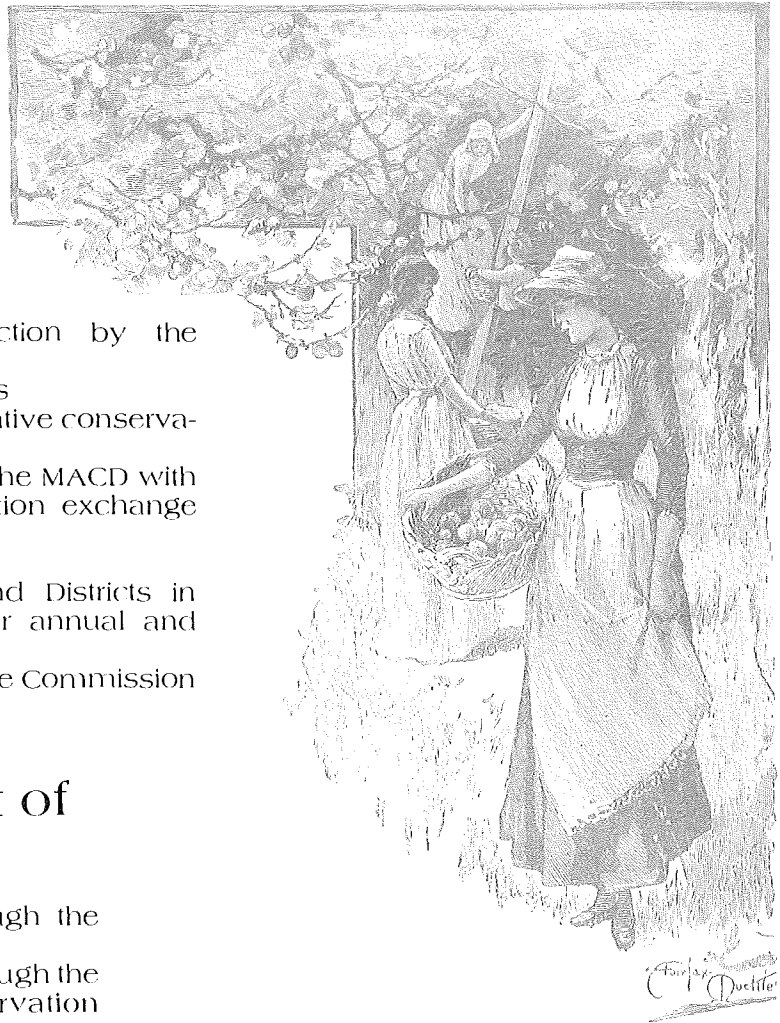
- support District activities
- coordinate activities of statewide importance between Districts and state and federal agencies
- coordinate state conservation education efforts through the formation of an Education Committee
- assist Districts in their public relation efforts
- act as the lead State agency (for the Maine Department of Agriculture, Food and Rural Resources) in promoting conservation research and pilot projects
- provide training to District Supervisors with respect to their roles, conservation issues and conservation practices
- develop, with the Districts' assistance, statewide annual and long range plans



Campbell Subsurface Packer.

### 3) The Maine Department of Agriculture, Food and Rural Resources will:

- support and facilitate action by the Commission
- hold conservation workshops
- monitor progress on cooperative conservation projects
- assist the Commission and the MACD with newsletters and other information exchange efforts
- monitor relevant legislation
- assist the Commission and Districts in writing and implementing their annual and long range plans
- serve as a liaison between the Commission and other state agencies



### 4) The U.S Department of Agriculture will:

- provide technical assistance through the Soil Conservation Service (SCS)
- provide cost-sharing assistance through the Agricultural Stabilization and Conservation Service (ASCS)
- provide further incentives for conservation through the Farmers Home Administration, by continuing the state policy of not loaning money for farming on land without a conservation plan
- provide conservation information and

education and promote conservation practices through the Cooperative Extension Service (CES)

- support conservation research at the Plant, Soil and Water Lab at the University of Maine at Orono

### 5) The Maine Association of Conservation Districts (MACD) and the Soil Conservation Society of America (SCSA) will:



- assist in information exchange and educational efforts.
- support and co-sponsor conservation research studies
- actively lobby for conservation legislation and interests



## Members

### Soil and Water Conservation Commission

**Burns Lilley**  
*Area I Representative*

**Brewer Andrews**  
*Area II Representative*

**John Fogler**  
*Area III Representative*

**Alexander Hardie, Jr., Chairman**  
*Area IV Representative*

**Dana Douglass, Vice Chairman**  
*Area V Representative*

**John Palmer**  
*Area VI Representative*

**Billy Abercrombie**  
*State Conservationist*  
*Soil Conservation Service*

**Dean Kenneth E. Wing**  
*College of Life Sciences & Agriculture*

**Stewart N. Smith, Commissioner**  
*Department of Agriculture, Food & Rural Resources*

**Richard Anderson, Commissioner**  
*Department of Conservation*

**Glenn Manuel, Commissioner**  
*Inland Fisheries & Wildlife*

**Spencer Apollonio, Commissioner**  
*Department of Marine Resources*

### Commission Staff

**Frank W. Ricker**  
*Executive Director*

**Paul A. Beers**  
*State Soil Scientist*

**Sandra Curtis**  
*Secretary*

### Soil and Water Conservation Districts in Maine

**Androscoggin Valley SWCD**  
1 Great Falls Plaza  
Auburn, Maine 04210  
(Includes Androscoggin & Sagadahoc Counties)

**Central Aroostook SWCD**  
P.O. Box 1269  
Presque Isle, Maine 04769

**Cumberland County SWCD**  
587 Spring Street  
Westbrook, Maine 04092

**Franklin County SWCD**  
11 Broadway  
Farmington, Maine 04938

**Hancock County SWCD**  
P.O. Box 456  
Ellsworth, Maine 04605

**Kennebec County SWCD**  
Federal Building, Room 408-C  
Augusta, Maine 04330

**Knox-Lincoln SWCD**  
Rt. #1  
Waldoboro, Maine 04572

**Oxford County SWCD**  
1 Main Street  
South Paris, Maine 04281

**Penobscot County SWCD**  
89 Hillside Avenue  
Bangor, Maine 04401

**Piscataquis County SWCD**  
58 Union Square  
Dover-Foxcroft, Maine 04426

**St. John Valley SWCD**  
1 Bolduc Avenue  
Fort Kent, Maine 04743

**Somerset County SWCD**  
7 High Street  
Skowhegan, Maine 04976

**Southern Aroostook SWCD**  
P.O. Box 158  
Houlton, Maine 04730

**Waldo County SWCD**  
37 Church Street  
Belfast, Maine 04915

**Washington County SWCD**  
P.O. Box 121  
Machias, Maine 04654

**York County SWCD**  
P.O. Box 392  
30 School Street  
Sanford, Maine 04073