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Management of Water and Related Land Resources in the State of Maine

JUL 1 1975

Summary Report

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March 1975

State Planning Office
Executive Department
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New England
River Basins
Commission

State Planning Office
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ACKNOWLEDGEMENTS

This report has been prepared by the State Planning Office of the State of Maine in cooperation with the New England River Basins Commission. It could not have been produced, however, without the helpful assistance of numerous State, Federal, regional, local, and private organizations, many of which are mentioned in the text. We extend our thanks to all the persons who gave their time and expertise; we would like to acknowledge specifically, however, personnel of the following Departments of the State of Maine who were exceptionally patient, and gave generously of their time and encouragement.

Agriculture
Civil Emergency Preparedness
Commerce and Industry
Conservation
Environmental Protection
Finance and Administration
Health and Welfare
Inland Fisheries and Game
Marine Resources
Transportation

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This booklet is an abstract of a larger report on the management of water and related land resources. Also included is the introduction, summary and table of contents of the full report. Copies of the full report are available at the State Planning Office, 184 State Street, Augusta, Maine 04333. Telephone: 207 289-3261, 289-3253.

The preparation of this document was financially aided by monies from Title III of the Water Resources Planning Act of 1965.

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TEL. (207) 289-3253

May 6, 1975

We are pleased to distribute this copy of the Summary Report, "Management of Water and Related Land Resources".

The full report is now being printed and will be distributed in approximately two weeks.

Burton R. Anderson

Charles F. M. Watson

04521

To The Governor, the Legislature and the People of Maine

NOV 1 1975

I am pleased to transmit this Report on the Management of Water and Related Land Resources in the State of Maine. The Report is a product of the Maine Guide Plan Program, a jointly funded planning partnership of the State Planning Office and the New England River Basins Commission initiated by formal agreement on December 2, 1971. The broad objectives of the Guide Plan Program are to provide a preliminary plan for the wise management of water and related land resources designed to achieve broad social goals through balancing economic development and environmental conservation. We believe that the Report will aid significantly in our gaining a better perspective of Maine's vital natural resources.

The results of our efforts to date serve to bring to the attention of all concerned the need for:

- a formal organizational mechanism for the development and coordination of overall land and water resource policies;
- the adoption of comprehensive planning processes relating to water and land resources;
- cooperation with neighboring states and other jurisdictions concerning regional issues; and
- a unified and positive influence on the future course of national water and related land resources policies.

The reason why State institutional arrangements are so important is the pervasive nature of the water and land resources issues. The State's economy hinges on the allocation and conservation of these resources. To insure a continued pattern of well-being, we need to improve the coordination of all the State functions related to water and land resources. Grand and sweeping schemes are not only costly but unnecessary. We simply need to intregrate the specific expertise the State already possesses and focus on the solution of today's complex problems.

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

Sincerely,

Alan D. Goodwin

Alan D. Goodwin
Acting Director

March 10, 1975

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Prepared by The State Planning Office and The New England River Basins Commission

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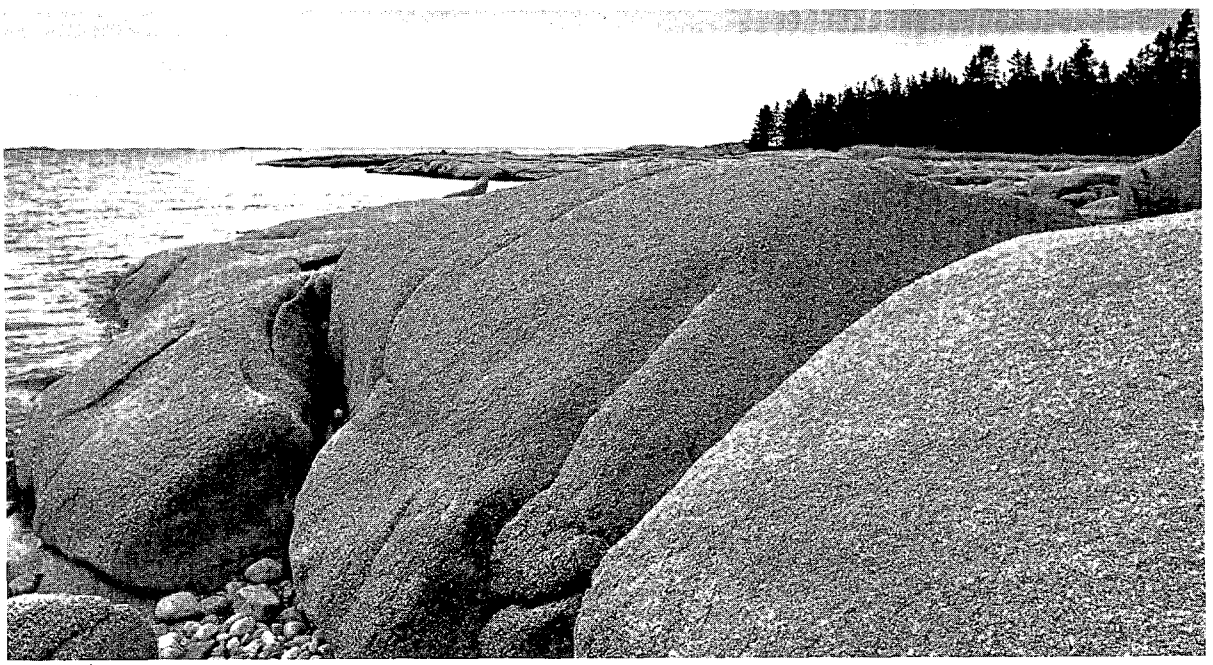

Alda Stich

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INTRODUCTION TO THE FULL REPORT

With over 5000 lakes and ponds, covering fully 7 percent of the surface area of the State, there is no question that Maine's water resources are abundant. If we assume a mean depth of 22 feet for the average lake or pond, the water volume approximates 10 trillion gallons. In addition, half of the average 42 inches of precipitation falling on Maine each year finds its way to the State's rivers and streams for an average daily runoff of one million gallons per square mile — 33 billion gallons statewide.

The magnitude of these numbers is staggering; one would certainly not characterize Maine as water-short. The water is always there, as close as the tap or the nearest stream. And it is logical to assume that it will always be there — cheap, accessible, pure. Logical, but not accurate.

During the 1961-1965 drought in the northeastern states, the delivery of water to homes was severely threatened in some major cities. While awareness of the value of water increased during this period, the bulk of the concern was carried by water company officials. The attitude and water use habits of the general public did not appreciably change, and Maine's abundant water resources continued to be taken for granted.

Natural events are by no means the only threat to the State's water resources. As the dense press of people and commerce known as the Northeast Megalopolis moves northward from Boston through Portland and Lewiston, the pressure for new development will place tremendous demands on Maine's water and related land resources. The need for truly comprehensive management of these resources has never been greater, nor has the opportunity.

Lucy Martin/Maine Times

The Guide Plan Program

In January, 1972, the State of Maine and the New England River Basins Commission established the Maine Guide Plan Program, a jointly funded planning partnership designed to produce a perspective for the establishment of far-reaching water and related land resources policies in the State of Maine. In many ways the Guide Plan Program is the product of a realization on the part of both the Federal and State Government that there was a need for significant change in the way water and related land resources were managed. Both levels of government came to this conclusion in 1967.

In that year, the Advisory Council on Outdoor Recreation and Natural Resources of the State of Maine released a report[1] calling for "a complete inventory of the water resources of Maine and a thorough analysis of all our State's water needs..." The Council advised that "water resources development should be considered as but one integral part of the overall economic picture of the State." And, in a manner almost predictive of the difficult economic bind we find ourselves in today, the Council noted that "comprehensive water planning will help us get greater returns for the dollars we spend by coordinating our efforts and setting forth broader objectives than can be achieved by the unilateral attempts of any single agency."

Also in 1967, the President, at the request of the New England Governors, issued an Executive Order creating the New England River Basins Commission under the authority of the Water Resources Planning Act of 1965. Under the Act, the Commission is responsible for, among other things, coordinating water and related land resources planning throughout New England, and recommending long range priorities for meeting the region's most important information, planning and resource management needs. In Maine this means the Commission can assist the State in making decisions on resource development, give it a stronger voice in Federal resource programs, and provide a forum for the discussion and solution of specific resource allocation problems.

The initiation of the Maine Guide Plan Program was an eventual result of these two parallel developments. After research and study, and in response to new requirements in Congressional legislation, the State developed a broad framework approach within which natural resources management policies and subsequently developed comprehensive river basin plans could be discussed and evaluated. The consideration that there would be a new Governor and a new session of the Legislature beginning in 1975 provided a desirable target date for completion of the project.

A Developing Strategy for Water Resources Management in Maine

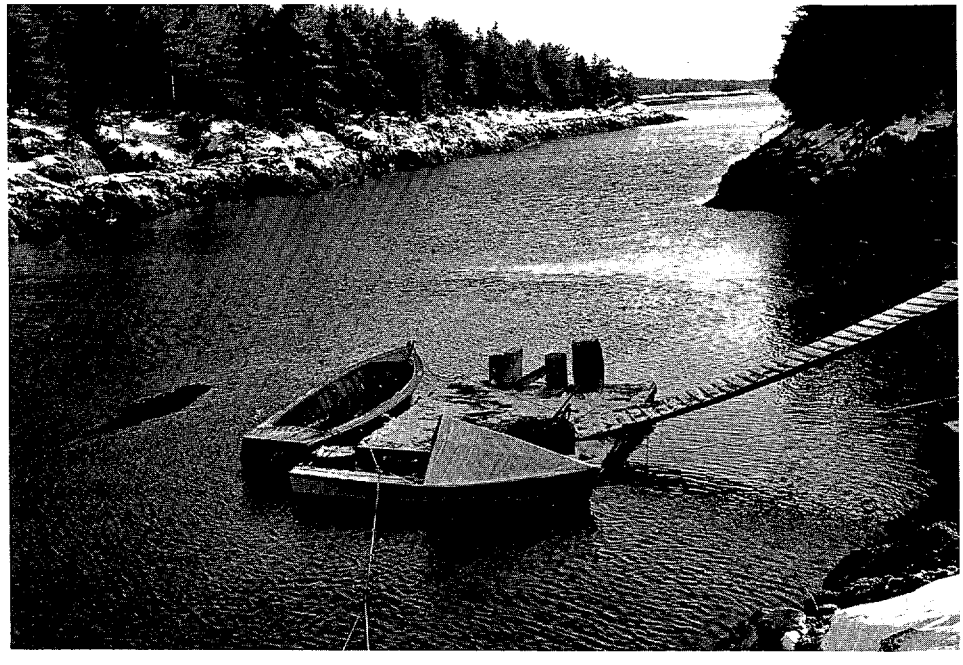
Maine's recent decisive actions in the areas of water quality improvement, land use control, major facility siting and coastal resources management have been responsive to both the needs of the State and the emerging national program to improve comprehensive natural resources planning and management. This national strategy recognizes the state as the dominant level of government, gives the state primary responsibility for natural resources management within the framework of national policies, and provides financial assistance to carry out these responsibilities. This strategy is explicit in Title III of the Federal Water Resources Planning Act of 1965 (P.L. 89-80), in the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) and in the Coastal Zone Management Act of 1972 (P.L. 92-582). These are examples of the linkages which have already been forged between the states and the Federal government.

[1]Maine's Water Resources. 1967. Office of the Coordinator, Comprehensive Plan. State of Maine.

The relationships of the State to the New England River Basins Commission, the New England Interstate Water Pollution Control Commission, the Governor's Conference and the New England Regional Commission are indicative of Maine's desire to become a more integral part of the national and regional strategy.

It is clear that we are not at the beginning. We have made much progress nationally, regionally and especially within the State of Maine. It is important at this critical time that we strengthen our water-related institutional arrangements, create balanced water resources policies, develop a comprehensive planning process and employ these tools in the development of broad-based comprehensive planning for all elements of Maine's future. These complex tasks are proposed in order that we may proceed more quickly and more effectively toward cooperative, integrated management methods before population and development pressures greatly increase competition and conflicts for our increasingly scarce water and related land resources.

Tom Jones/Maine Times



SUMMARY OF THE FULL REPORT

In the western states, where water is scarce and supply falls behind demand, state government recognized early that normal settlement and development depended upon successful management of water. Large and powerful water resources departments were created for determining the broad usage of what was clearly recognized as a limited resource, especially since early allocations were made predominantly for agricultural use. Comprehensive planning developed, integrating all potential and actual uses of water into a balanced allocation for the most efficient and beneficial development of the state.

Lucy Martin/Maine Times

Similarly, in water-rich areas where development has reached an advanced level, comprehensive water resources management practices have been developed to resolve conflicts among strongly competitive users of water to insure economic stability. An extreme example of this is the Ruhr Valley in West Germany, in which 10 million people live and 90 percent of the nation's heavy industry is located. Perhaps the most important governing body in the valley is the Water Resources Board, including representatives from all classes of water users. The Board succeeds in its task because it must succeed — everyone understands that if water management fails, the people must abandon the valley and live elsewhere.

In contrast, water-rich and lightly settled Maine, until recently, had little need to develop a capability for comprehensive water resources management. The abundance of water has, in part, delayed the development of an integrated approach to water resources planning and management. This situation is changing rapidly and conflicts between users of the State's water resources are becoming readily apparent. For example, early uses of Maine's major rivers included transporting of logs, production of hydroelectric power and disposal of wastes. Public interest in rivers for other uses, such as recreation, was diminished because of conditions resulting from such operations, and currently it is with great difficulty and cost that these conditions are ameliorated to accommodate additional uses. Water companies have tended to abandon rivers as sources of domestic supply, but in the future there is the likelihood of mergers of small companies to provide water for larger regions forcing possibly a return to rivers as sources of large reliable supplies. Continued development of the State encroaches upon visual and cultural quality of landscape and upon land and water sites noted for their recreation and wildlife value.

It is the major conclusion of the Guide Plan Program that the fundamental water resources problem in Maine is institutional, rather than functional. The authority for managing Maine's water and related land resources is fragmented among at least ten individual State agencies. Each has some degree of responsibility and authority to establish and enforce standards for the use of these resources, to undertake actions which will in one way or another affect the quality or quantity of these resources. There is no central State body responsible for establishing basic policies for the conservation and development of

Maine's water and related land resources or for placing those policies within the context of the State's overall environmental, economic and social goals. There is a keenly felt need for an integrated water and related land resource planning and management program which will be consistent with broad national policy objectives, will reflect the interests of all State agencies having water-related responsibilities, and will provide guidance for action by other levels of government and the private sector. It is recommended that a natural resources management policy-making body be created. As recommended, this comprehensive policy-making body should:

1. Be the focal point within the State for overseeing natural resource programs and plans to insure that they are designed to contribute to the achievement of the broad social, economic and environmental goals established or concurred in by elected public officials;
2. Be the mechanism for developing and maintaining working linkages among State natural resource programs, and between state-local and state-regional-federal programs.
3. Provide a linkage to and help set priorities for budget decisions, in both the executive and legislative branches; and
4. Provide a mechanism for citizen participation in the process of establishing State resource management policy.

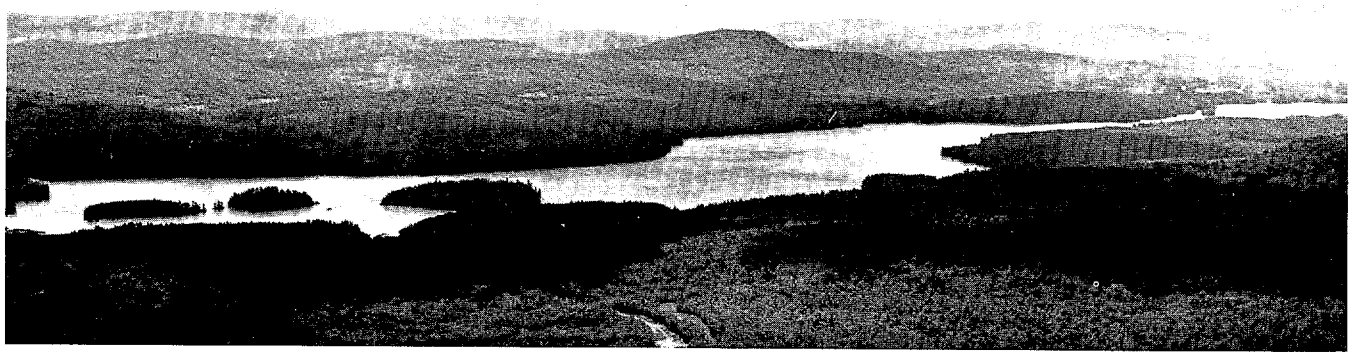
Whether or not this policy body should be established as an extended consolidation of natural resources agencies into a formal Department of Natural Resources or brought about less formally as a special cabinet committee has not been addressed in depth by this report. However, the membership of this body should include personnel from the Departments of Conservation, Environmental Protection, Inland Fisheries and Game, State Planning, and Marine Resources. In addition to this regular membership, the policy body could also include in its deliberations the Departments of Agriculture for its soil and water conservation functions, Finance and Administration for its property taxation functions, Transportation for its environmental impact assessment of capital projects and regulation of waterborne transport, Health and Welfare for public water supply, and the Bureau of Civil Emergency Preparedness for flood warning and control, the federal flood insurance program and dam safety inspection.

Tom Jones/Maine Times

The primary responsibility of this body should be to develop and recommend State policy positions on critical natural resource management issues. In so doing, the policy body can spur the integration of the many functional water and related land resources planning and management programs in the State and guarantee a coherent voice for State and local viewpoints in the natural resources conservation and development programs of the Federal government.

The creation of a natural resources management policy-making body is the most important and comprehensive recommendation of the Guide Plan report. This conclusion was reached after detailed review of a number of important water-related subjects. The principal findings and recommendations of these investigations are presented below.

Tom Jones/Maine Times



The Data Base

There is a singular lack of basic data on Maine's natural resources. The need for large-scale geographic mapping, geological surveys, soil surveys, land use and land cover inventories, hydrologic investigations and environmental quality measurements is keenly felt and now only partly met. This basic information is needed if the caretakers of the State's resources are to meet adequately the information requests of policy makers and carry out effective natural resources planning and management programs. In particular, the State is missing out on fully using the capabilities of Federal data-gathering agencies, such as the U.S. Geological Survey. Without this base of information the State cannot progress toward the development of comprehensive resource management policies and programs.

The Legal Issue

The body of Maine's water law, based on a system of riparian rights, is likely to be a hindrance in the development of programs to insure orderly future development and management of water resources. This hindrance in part relates to the involvement of the courts as a dispute-settling device since common law is court-administered, not statutory. When the law is not codified and resolution is through the judicial system, the process of solving disputes is often time-consuming, costly and may be inconsistent and contradictory.

The question of water rights is particularly critical in light of the massive public investments in water quality improvements in recent years. It is pertinent to ask whether it is appropriate to spend large amounts of public funds for the benefit of only a few riparian owners.

At least one alternative which should be investigated in Maine is the possibility of instituting a permit system in the Executive Branch of State Government to allow non-riparian use of water under certain strictly defined conditions.

A related problem is the lack of understanding of water law by resources specialists. Personnel of the Portland School of Law have contributed significantly in this regard with reports on the interface of law and resources management. It is suggested that this interface between specialists in law, administration and resource technology continue.

Water Supply

The task of supplying water for domestic needs is the most important aspect of water resources management. In Maine domestic water is provided to two-thirds of the residents by 162 individual water companies. The State has recently adopted strict quality standards for potable water supplies distributed by the water companies. Considerable capital expenditures will be required during the next several years to meet these standards. However, unlike treatment of wastewater, there is no large, clearly defined Federal or State funding program to assist water companies in the accomplishment of their task. Despite the recent passage of a Federal Safe Drinking Water Act it appears clear that the burden of raising the capital necessary to meet State and Federal standards will be borne by individual water companies and, ultimately, the consumer.

The supply of water in Maine is sufficient to meet the State's needs for consumptive uses to the year 2020 and well beyond. Total supply far exceeds current demand. However, the availability of water for certain large non-consumptive uses, such as industrial process water, may be limited, particularly in the southern part of the State. The amount of usable water storage in the State could be doubled through construction of multi-purpose reservoirs proposed in previous water resources studies.

It is not unreasonable to expect that the State of Maine may be called upon in the not-too-distant future to transfer some of its abundant water resources to help meet the needs of nearby water-short basins or states. The State needs to establish policies on storage, safe yield and particularly inter-basin transfer and export in order to be prepared to take decisive steps in these areas when the need arises.

Tom Jones/Maine Times

Alda Stich

Water Quality

Maine's program to reduce water pollution substantially is moving rapidly and should succeed within a few years. Ironically, the major obstacle to progress in the program — the delay in Federal treatment facility construction funds — has been replaced by the thorny problem of how to use the funds effectively now that they have been released. The Guide Plan Program suggests the strict adherence to the 1977 deadline for statewide secondary wastewater treatment or the 1985 no-discharge deadline mandated in the Federal Water Pollution Control Act Amendments of 1972 is not cost-effective and that the enormous investments necessary to meet these goals may yield municipalities diminishing returns. The need for establishing carefully thought out priorities for the use of these funds is one of the most eloquent and fiscally compelling arguments for developing a more comprehensive approach to resources management and policy-making in the State.

As we begin to gain control over the most easily pinpointed sources of pollution — municipal and industrial discharges — it has become clear that non-point sources — soil erosion, fertilizer and other agricultural runoff, urban stormwater runoff and road salting — are more important contributors to water quality degradation than originally imagined. Finding solutions to these critical water quality problems will require much greater cooperation between State water quality agencies and those agencies overseeing land use, agriculture and forestry than has been the case previously.

Finally, it should be understood that as we approach attainment of our water quality goals, demands on the use of the State's waters will intensify — demands which may threaten the massive public investment made to achieve that high quality and hamper efforts to maintain it.

Flood Damage Reduction

The U.S. Army Corps of Engineers and the Soil Conservation Service estimate that annual property damages from flooding in Maine will double by 1985, approaching $9 million. And yet public awareness of flood risk is minimal. Moreover, there is widespread public resistance to both structural flood controls and non-structural flood damage reduction measures.

Nevertheless, the groundwork has been laid for an approach toward resolution of these problems. Improved techniques for flood warning are being developed by the National Weather Service. The U.S. Army Corps of Engineers and the Department of Agriculture's Soil Conservation Service are conducting flood hazard area identification studies. The U.S. Army Corps of Engineers is also assisting the State of Maine in the preparation of an inventory and analysis of the safety of impoundments in the State. There are programs available to reduce flood damages through the construction of structures on main stem rivers and tributaries. The State's Shoreland Zoning and Subdivision Controls Act and the National Flood Insurance Program mark a significant beginning toward the development of formal floodplain management programs. Such programs are designed to protect damageable property from flooding and to prevent indiscriminate construction of new damageable property in floodplains. It is suggested that such programs as the ones mentioned here receive stronger formal State support.

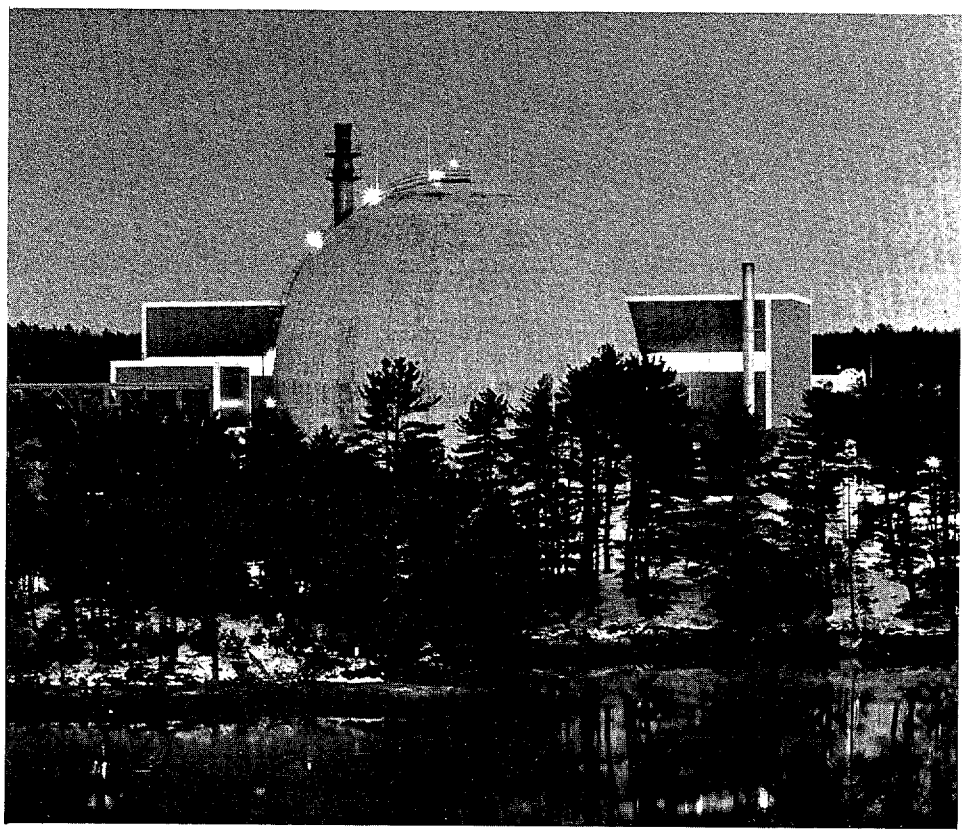
Land Use

The State has begun to compile land use inventories and to establish policies to assure the appropriate allocation of land to meet broad public goals. General land capability and specific soil suitability guides have been prepared to assist in forest and crop management and in the development of suitable nonagricultural land use management practices. A multi-purpose land capability display is being prepared for communities along the coast. Moreover, development of standardized coding and information for use in data processing is underway to expedite the correlation between land capabilities and present and projected land uses. However, the State is lacking fundamental land activity and land cover inventories. Funding for land use planning should be directed first toward undertaking these inventories.

It is strongly recommended that general statewide policies be developed to serve as guides for land use planning and management. Such policies would then become the frame of reference against which all land use plans or proposals would be judged. They would also improve the administration of the major programs for regulating land use, since the State of Maine has been forward-looking in the development of legislation and programs to guide and mitigate the effects of the siting of major facilities. The development of these overall policies would offer a consistent basis for decision-making regarding geographically-oriented master plans for local communities, substate regions and statewide functional planning. Several elements of land use policy are described in the full report.

Conservative estimates place Maine's power needs by the year 2000 at roughly triple that of present consumption. There is an urgent need for entirely new methods to generate electric power to avoid the problems of fuel supply or costs, storage of nuclear wastes and excessive amounts of waste heat that attend the expansion of present methods. Despite impressive advances in technology, none of several new methods is expected to be developed sufficiently for large-scale production before the end of this century. Therefore, a small number of large stream generation plans powered either by nuclear energy or by fossil fuels and constructed along the coast, plus pumped storage hydroelectric plants constructed inland, form the most probable future expansion of the power generation network. There is a substantial need to improve siting procedures to insure timely location and construction of new power plants. Also it should be noted that approximately three dozen standard hydroelectric power projects were described and recommended in 1955, but not constructed because of unfavorable returns on investments. Despite significant increases in the cost of alternative energy sources, these projects, if pursued on a single-purpose basis, would likely still have unfavorable cost ratios. It may well be, however, that this situation could change if the projects were reviewed and rescoped not only to provide for power generation but also to increase safe yields for water supply, augment seasonal low river flow rates, or provide storage for flood waters.

Tom Jones/Maine Times



Joel Cowger

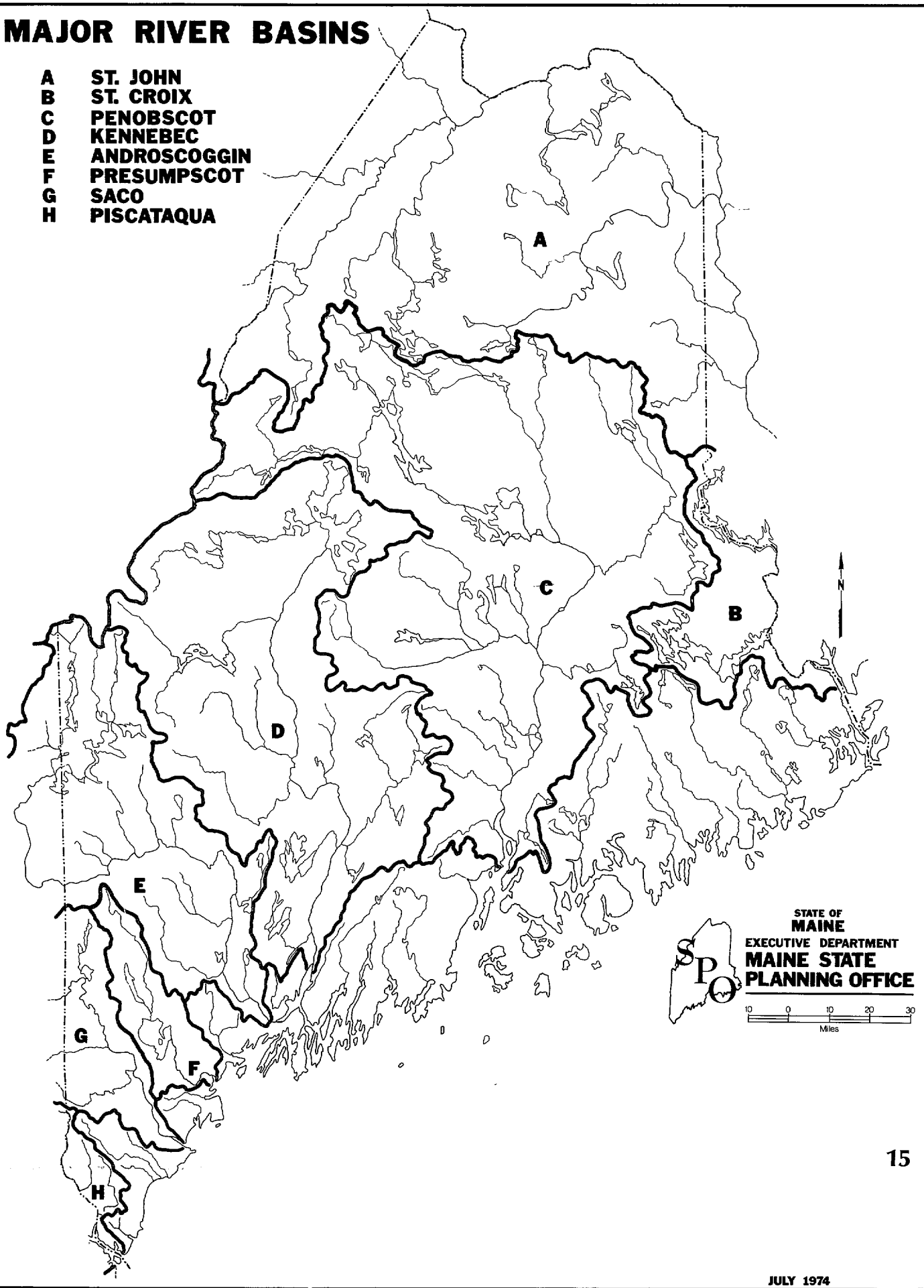
Recreation and Wildlife

The State of Maine provides a superior setting for outdoor recreation, fishing and hunting and for the appreciation of wildlife in its natural habitat. Yet the perpetuation of this setting is not assured. As the pressure for development increases, the pressure to take wildlife habitat and prime recreation land for other uses will intensify. It is unrealistic to attempt massive land acquisitions through public investment as a principal means to secure these valuable resources. Aside from fee simple purchase of certain areas to fulfill specific needs, the purchase of easements, cooperative agreements with landholders, and application and continued development of appropriate land use controls are alternative means to insure perpetuation of recreation, fish and wildlife resources. Public access to water-related recreational areas has generally enjoyed a priority status because of public ownership of the State's great ponds. Recognizing the large expenditure of public funds for water quality improvement in rivers and lakes to date, the Guide Plan Program recommends the application of these more cost-effective measures to insure public access to waterways improved through the expenditure of public funds.

* * * * * * *

The State of Maine enjoys an unusual abundance of water and related land resources. And in that abundance lies responsibility and opportunity — responsibility to insure the availability of those resources to present and future generations and the opportunity to take decisive steps now to develop integrated state policies for the balanced conservation and prudent development of these valuable resources. The responsibility is enormous and the opportunity is unlikely to linger.

MAJOR RIVER BASINS



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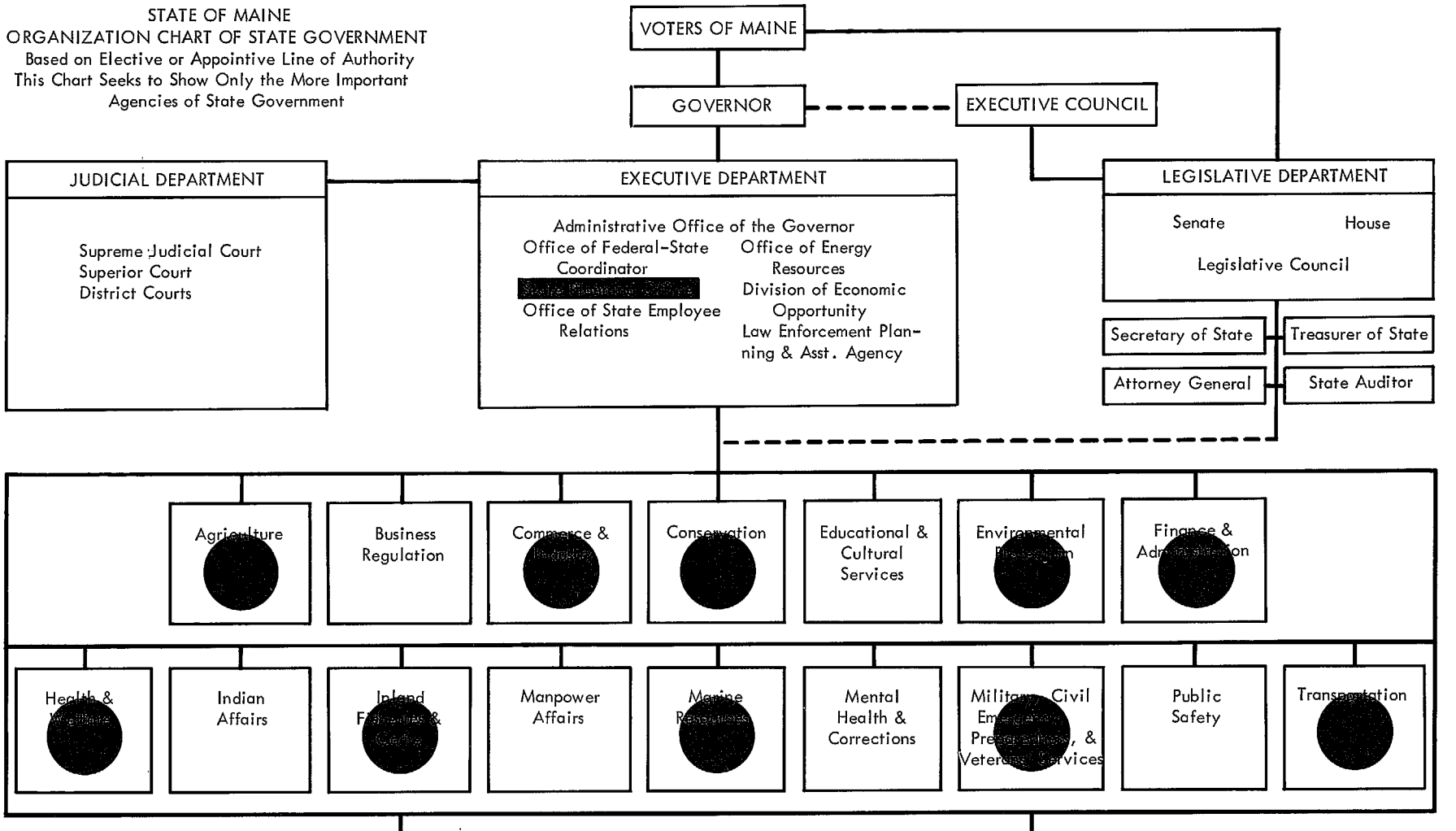
STATE OF MAINE
ORGANIZATION CHART OF STATE GOVERNMENT
Based on Elective or Appointive Line of Authority
This Chart Seeks to Show Only the More Important
Agencies of State Government



Prepared by
State Planning
Office
July, 1974

● *Agencies with a vital interest in water and land resources management*

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