REPORT TO THE GOVERNOR

AND THE 113TH MAINE LEGISLATURE

WATER SUPPLY AND ALLOCATION STUDY

February 1, 1988

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ACKNOWLEDGEMENTS

The Public Utilities Commission (PUC) was directed to conduct this study. The following individuals from the PUC contributed to its drafting:

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Five other state agencies were directed to provide assistance in the drafting of the study. The following individuals from these agencies provided assistance:

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In addition, many interested persons made significant contributions to the study. Particularly noteworthy among these contributors are Thomas Maloney and Derrill Cowings of the United States Geological Survey and Dr. Gregory White of the University of Maine's Land and Water Resource Center.

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I. PROCEDURAL HISTORY

On June 12, 1987, the Governor approved Resolve 1987, Chapter 27, which directed the Maine Public Utilities Commission to conduct a study of water supply and allocation in Maine and issue a report to the Legislature and Governor by December 1, 1987. The legislation further directed the Department of Human Services, the State Planning Office, the Department of Environmental Protection, the Department of Agriculture, Food and Rural Resources and the Attorney General to provide assistance in compiling the study.

Each assisting agency assigned one or more representatives to participate in the compilation and drafting of the study. This working group of agency representatives met regularly as a whole and in subgroups to organize, draft and edit the study. The legislation also directed the Commission to solicit the views and assistance of other interested parties. To discharge this directive, the Commission compiled a service list of interested persons who were given periodic progress reports on the development of the study. In addition, the Commission issued an information request to interested persons on the various issues to be addressed in the study. Responses to the information request were received from twenty-six water utilities, seven municipalities, four regional planning groups, one state agency, two engineers and one water association. Roundtable conferences with interested persons were held on August 5, 1987, October 30, 1987 and January 15, 1988 to gather information and discuss the study.

On October 15, 1987, the Governor approved emergency legislation (Resolve 1987, Chapter 75) extending the deadline for completion of the study to February 1, 1988. A preliminary staff report was sent out for comment to all persons on the service list on January 8, 1988. Oral comments on the preliminary report were received at the January 15 roundtable conference. Written comments on the preliminary report were submitted by eleven individuals and organizations.

II. SUMMARY OF ISSUES, FINDINGS AND RECOMMENDATIONS

In Resolve 1987, Chapter 27, the Legislature outlined several specific issues to be addressed in this study. To provide a framework within which to analyze these issues, this study contains a discussion of a possible management structure that would allow for local and state planning regarding Maine's water resource. The management structure, explored in Part IV below, is provided primarily for illustrative purposes and does not constitute a definitive recommendation. The structure suggested will hopefully facilitate consideration of the various and complex issues inherent in an analysis of the waters of the State. The specific issues posed by the Legislature, and the findings and recommendations with respect to those issues are summarized below:

- Should there be limits placed on the export of water from one sub-basin to another?

FINDING: The transportation of water from one sub-basin to another is an important element in the prudent management of the water within each sub-basin and of the waters of Maine as a whole. If the export of water from one sub-basin to another is, in a particular case, consistent with the prudent management of the resource, it should be permitted.

RECOMMENDATION: Local management groups, referred to in this study as "sub-basin management units," could be established in each of the State's sub-basin regions. Each sub-basin management unit could be directed to formulate a local management plan that would contain, among many other things, a recommendation with respect to limits that could be placed on the transportation of water into or out of the sub-basin region. In addition, a state agency could be charged with the ultimate responsibility of formulating a plan for the management of the State's waters as a whole with the authority to coordinate the implementation of, and compliance with, that plan.

o Should there be limits placed on the export of water out of State?

FINDING: Title 22 M.R.S.A. § 2660-A already places limits on the export of water beyond certain local boundaries, including

transport out of state. The statute appears to have been enacted in response to anticipated large-scale commercial export of water. From a water management perspective, individual proposals to export water out of state should be reviewed in the context of the hydrologic characteristics of the sub-basin from which the proposed water withdrawal is to take place. From a legal perspective, the extent to which Maine can prohibit the interstate export of water is uncertain.

RECOMMENDATION: To the extent allowed by law, the state agency charged with managing the waters of Maine should monitor and control the interstate export of water. The Legislature should request an advisory opinion from the Office of the Attorney General to determine the extent of the State's authority in this regard.

o Should there be limits on the use of ponds of less than ten acres?

FINDING: Maine's common law and statutes recognize a distinction between Great Ponds and ponds of less than ten acres. Ponds of less than ten acres are a part of the hydrologic network that constitutes the waters of this State. Therefore, ponds of less than ten acres should be managed in a coordinated and consistent fashion with the other elements of

the hydrologic whole. A determination of the need for and extent of limitations on the use of ponds of less than ten acres should be based on the characteristics of the pond and the sub-basin in which the pond is located.

RECOMMENDATION: The state agency charged with managing the waters of Maine should make the determination of the need for and extent of limitations on the use of ponds of less than ten acres. The state agency's determination in this regard should be guided by the recommendations of the relevant sub-basin management units.

- Should there be limits placed on the use of groundwater (and surface water) on and off the user's land?

FINDING: Maine's courts and Legislature have already placed some limitations, particularly in the area of environmental protection, on the use of water on and off the user's land. Additional limitations, especially with respect to the regulation of water withdrawals, should be considered, but only under clearly defined circumstances in stressed sub-basin regions.

RECOMMENDATION: The state agency charged with coordinating the management of the waters of the State should determine which regions within a sub-basin are stressed and, with input from the local sub-basin management units, determine the necessary limits to be imposed in a stressed region.

o Do municipalities have any interest in water that "is within their borders," but "not related to municipally owned land?"

FINDING: Municipalities do have an "interest," primarily regulatory, in water within their borders. Municipalities, however, do not have greater or lesser legal ownership interests in water than any other landowner. Municipalities have been delegated by the State significant regulatory and quality control authority over sources of public water supply. The State's interest in managing the waters of the State are broader than those of a municipality. Therefore, to the extent municipal interests may be inconsistent with the coordinated management of the waters of the State as a whole, those interests should be limited.

RECOMMENDATION: Municipalities would play a fundamental role in the formulation of the sub-basin management plan that would, among other things, address existing competing uses in the

sub-basin region and attempt to forecast and avoid future conflicts. Accordingly, municipalities could actively participate in initial attempts to reconcile conflicting interests and uses at the local level within the proper sub-basin management unit. If conflict resolution is not possible at the local level, or if the recommended resolution is inconsistent with statewide water management interests, the state agency charged with managing the State's waters should ultimately resolve the conflict.

- Review water conservation practices to identify available techniques and survey their application.

FINDING: There are a variety of available conservation techniques that would likely reduce the demand for water. The need for conservation measures, selection of a specific conservation program and ultimate success of such a program will vary widely depending on the characteristics of the sub-basin in question. Water conservation programs are rare in Maine.

RECOMMENDATION: Under certain clearly specified circumstances, mandatory conservation measures may help a sub-basin region manage its stressed water supply. Each locally generated

sub-basin management plan could incorporate a recommended emergency conservation program. The state agency charged with managing the waters of the State should have ultimate authority with respect to implementation and enforcement of an emergency conservation program.

- In the case of scarce supply and competing uses, should there be a standard order of priorities that might be applied?

FINDING: There exist currently in Maine several instances in which competing users are in conflict over limited local water resources. It is likely that the frequency and magnitude of these conflicts will increase as Maine's population and industry grows and diversifies. The existing legal framework for resolving such conflicts is inadequate. A new mechanism for resolving existing water use conflicts and anticipating and resolving future conflicts is therefore necessary.

RECOMMENDATION: A statewide mechanism should be created to manage the waters of the State in an efficient, consistent and equitable manner. This mechanism could include local planning and local participation within each of the State's hydrologically distinct sub-basin regions as well as coordinated management and ultimate conflict resolution authority at the state level.

- Particular attention should be given to the need of water utilities for access to adequate water supplies to meet the needs of a growing population and economy.

  FINDING: Maine is fortunate to have abundant fresh water supplies. Those supplies are, however, limited. Conflicts relating to the provision of adequate supplies of potable water exist today and will likely expand in the near future. The supply of water is further limited by quality concerns. It is essential that people in stressed and soon to be stressed areas realize and plan today for the increased demands for water that inevitably accompany population and economic growth.

  RECOMMENDATION: Guaranteeing adequate water supplies for residential use is one of the primary motivating forces behind the state/local management mechanism suggested in this study. Utilities should play an active role in the formation of local water management plans for the regions they serve.

Additional fundamental findings and recommendations generated by this study that were not specifically requested to be addressed by the legislation are summarized below:

- The waters of the State constitute a limited resource which must be managed prudently. Groundwater and surface water are interdependent parts of the limited resource. Maine's water resources should be viewed as an integrated hydrologic whole and managed accordingly.

- Maine's statutory law should be revised to recognize the interdependent nature of the various components of the waters of the State and to permit the management of those various components consistently.

- Background data for the creation of the suggested statewide water management mechanism does not now exist. The gathering and organization of basic data is essential to the efficient management of Maine's waters. Such data might include a delineation of high yield bedrock aquifers, delineation of recharge areas for sand and gravel and bedrock aquifers and the identification of high yield zones and stressed areas.

- Much water data is currently being gathered by a variety of agencies in an uncoordinated manner. Organizing this disparate data into usable form is necessary in order to effectively manage Maine's waters.

- The Legislature should establish a Task Force, supported by staff, to review and develop the various options which are raised by, but beyond the scope of, this study and to coordinate the development of a comprehensive State water management mechanism.

III. CURRENT WATER LAW IN MAINE

A. Introduction

In Maine, the laws governing surface water and groundwater have developed largely as a result of court decisions, often described by lawyers as the "common law." The common law continues to govern much of Maine's water law. Only recently has the Legislature begun to assert its authority in the area of water rights. It is therefore useful to examine briefly Maine's common law of surface water and groundwater so that current and proposed plans dealing with water rights can be evaluated in an historical context.

Surface and subsurface water rights in Maine derive principally from legal doctrines established in England several centuries ago. In addition, because Maine was part of Massachusetts until 1820, Maine's common law of surface water and groundwater derives in part from the common law and statutes of Massachusetts.

B. Common Law of Surface Water

In Maine, rights to surface water, such as lakes, ponds, rivers or streams derive from the "riparian rights doctrine." In general terms,

"riparian" refers to something that is on or relating to the bank of a natural course of water. Under this doctrine, water rights belong to the landholders who abut these bodies of water. These landholders possess the right to reasonably use the water relative to other riparian owners, by virtue of their land ownership. Reasonable use is considered by courts to be a question of fact to be resolved on a case-by-case basis. Riparian rights do not extend to containing the water in some manner and transporting it off the land; typically approved riparian uses are for household uses such as drinking and washing, irrigation, watering livestock, and recreation. Although no general rule applies, any transportation of the water for use beyond the boundaries of the riparian land is considered per se unreasonable, and may render the user liable to other riparian users if the diversion results in damage.

The source of these riparian rights differs according to whether the lands beneath these waters are state owned or privately owned. For example, the State has title to ponds in excess of ten acres (Great Ponds) and tidal rivers. The rights of the public in these bodies exist through state ownership which is often described as ownership in trust for the public. The State may, and often has, granted municipalities, individuals and corporations the right to use these waters for a variety of purposes including, most importantly, as public water supplies. Private landowners abutting public waters exercise rights in those waters subject to the rights of the public. The riparian landowners themselves, however, hold title to the beds of bodies of water such as non-tidal rivers and ponds of less than ten acres in size.

Allocation of water within a riparian system is difficult to achieve for a reason fundamental to the system itself: riparian rights cannot be quantified. They are governed only by subjective rules of reasonableness, and are adjudicated between individual parties in decisions which have no binding effect on other riparian users of the same body of water. Since the rights cannot be quantified, it is apparent that they cannot be "administered" by a public agency; nor can a supervised distribution of water in accordance with recognized rights occur unless, and until, it is known exactly what those rights are. Instead, riparian states attempt to protect the public interest in water supplies either through regulations superimposed on a riparian framework, or by moving away from riparian principles altogether.

C. Common Law of Groundwater

The common law generally classifies subsurface water as either a flowing underground stream or as percolating water, and different rules with respect to ownership apply to these categories. Underground streams, rare in Maine, flow in well-defined channels and are usually subject to the same rules that govern surface watercourses. Percolating waters seep or filter through the soil beneath the surface. Maine's law of percolating groundwater is described as the English Rule. Under the English Rule, a person who digs or drills a well in good faith on his own land to obtain water for his domestic uses is not liable for the consequent diversion of unknown subsurface waters from an adjoining landowner. The percolating groundwater is regarded as being part of the soil or other materials through which it percolates, and the owner

of the land has an absolute right to intercept the water before it leaves his premises. The only common law limitation on this "absolute" right in Maine is as follows: if a person maliciously or deliberately cuts off another landowner's water supply from common groundwater, that person may be liable for the resulting damages.

Most eastern and riparian states have moved away from the English Rule towards the American or "reasonable use rule." Maine is one of only a handful of states that still retain the English Rule as part of their functioning common law.

The reasonable use rule states that each landowner is restricted to a reasonable exercise of her own rights and a reasonable use of her own property, in view of the similar rights of others. In many states following this view, when the rights of others are affected, a landowner's right to use common subterranean percolating water is limited to a reasonable and beneficial use of the waters upon the land or to some purpose connected with its occupation and enjoyment. Under the reasonable use rule, immunity from liability depends on whether the interference was reasonably necessary in connection with the use or improvement of the land. The reasonable use rule thus resembles the common law riparian rights doctrine.

The English Rule, the reasonable use rule, and the riparian rights doctrine each differs markedly from the dominant water rights doctrine

applicable in most states west of the Mississippi River - the "Prior Appropriation Doctrine." Under this doctrine, water rights are independent of land ownership and water use is not restricted to the overlying land or watershed from which it came. Water rights are acquired by precedence of use. Appropriators of water have a right to a fixed quantity of water, depending on their priority in time. Rights can be sold or may be lost by non-use or abandonment. Allocations are usually administered by the state through a permitting system.

Maine's common law with respect to surface water and groundwater is, as can be seen above, complex and fragmented. The legal distinctions between surface and groundwater originally developed at a time when there was little knowledge of the interrelationship between surface and groundwater and demands for water were light, relative to supply. The coordination and, in many instances, simplification of the law to reflect the various interdependent aspects of the water cycle is indispensable to the implementation of any comprehensive plan affecting water supplies.

D. Maine's Common Law of Surface and Groundwater - Effects on Particular Users

Maine's common law of surface water and groundwater has had a direct impact on how the resource has been used and managed over the years. Of particular interest to this study is how the law has affected the ability of water utilities and municipalities to provide water to the public efficiently, safely and economically.

1. Water Utilities

Water utilities, which may be either investor-owned companies or municipal-owned or affiliated districts, are primarily interested in maintaining access to enough potable water to meet the needs of their customers. Water utilities have historically served the public by virtue of charters granted by the Legislature. Generally speaking, two different classes of water utility charters exist: those that grant access to a Great Pond or tidal river for their water supply, and those that empower the utility only to take water from other surface and underground sources. The majority of charters fall into the latter class. Utilities with charters granting the right to use water that is not within a Great Pond or tidal river can be held liable for damages caused by appropriation of water when that appropriation injures a riparian owner. Utilities with such charters must compensate other riparian owners for any damage caused by their withdrawals. Compensation is required even if the utility itself is a riparian owner - supplying the public with water is not considered by the common law to be a reasonable riparian use.

Water utilities with chartered access to Great Ponds or tidal rivers are in a more secure position. As noted above, Great Ponds and tidal rivers are owned by the State of Maine in trust for its people. Corporate charters granting access to the waters of a Great Pond have been viewed as constituting a grant of the water itself. A utility, therefore, need not be concerned with compensating riparian owners in such cases.

Finally, water utilities with chartered rights to a municipality's groundwater must, under the English Rule, either obtain title to the land over the aquifer from the existing landowner, proceed through eminent domain, or obtain the permission of the landowner to withdraw. In short, a utility must have some proprietary or other appropriate legal interest or right in land overlying the groundwater before it may withdraw that water.

2. Municipalities That Are Not Water Districts

A municipality does not have any greater or lesser legal ownership interests in the surface waters or groundwaters of the municipality than any other landowner. Furthermore, the prevailing common law view is that even if a municipality owns land bordering on a stream, such ownership by itself does not affect the general common law rule noted above: use of water to supply residents of a municipality with water for domestic purposes is not a riparian right. This rule has been applied in some jurisdictions even to a stream having its origin in springs on the property of the municipality. Therefore, if municipal property borders a stream or other surface water source, use of that water for a public water supply would be conditioned on making full and just compensation to riparian owners for all the injury which they might sustain as a result of such use.

E. Existing Conflicts and Problems

Relative to the arid west, Maine's fresh water supply is still abundant. Nevertheless, as will be discussed in Part IV(A)(1) below, Maine's

water supply is limited and demands on that water supply are increasing. Maine's growing population, increased land development and continuing industrialization are putting an unprecedented strain on Maine's ground and surface water supplies. This increased demand for water is demonstrated by the growing number of water allocation and use conflicts which have arisen in recent years. The following summary of a few such allocation and use conflicts are illustrative:

- The Greenville Water Company is now experiencing water supply limitations. The utility recently accepted the Greenville Steam Plant (which generates electricity by burning waste wood) as a customer. In August 1987 the Greenville Water Company had to reduce the plant's water supply from 175 GPM (gallons per minute) to 45 GPM in order to provide a dependable supply to both the new plant and existing customers.

- Moosehead is the largest lake in the State of Maine. The Kennebec Water Power Company regulates outflow from the lake to meet the sometimes competing needs of several agencies, industries, and recreational interests. The flows at the East and West Outlets are adjusted in several ways: to meet the streamflow requirement of its Federal Energy Regulatory Commission license; to conserve and release water for electricity production at downstream hydroelectric facilities; to control impacts of floods; to maintain (hydrologic

conditions permitting) water levels in the lake from Memorial Day to Labor Day for recreational users; and to maintain lake water-levels to facilitate lake trout spawning.

- The Belfast Water District has wells in an aquifer near the Goose River in Belfast. One of the wells indirectly draws a portion of its water from the Goose River thereby reducing the river flow available to the federally licensed Goose River Hydro for the generation of electricity. The District's wells preceded the hydro development and there appears to be no dispute over the use of the wells to supply the City of Belfast. A dispute is likely to arise if the Belfast Water District expands its use by selling water, on a sustained basis, to the Searsport Water District or another surrounding municipality.

- Sand and gravel pits are frequently located over sand and gravel aquifers. Depletion of the material above the water table may prompt the owner/operators to excavate submerged material to sustain their operations. One method of excavating submerged sand and gravel is to lower the water table by ditching or pumping, thereby exposing the material and making it easier to remove. The lowered water table may be below the bottom of some existing dug wells and may reduce the capacity and quality of deeper wells. Those damaged wells generate complaints from the injured owners.

- The Passamaquoddy Water District located and proposed to develop a well in an aquifer in the Town of Pembroke. The citizens of Pembroke became concerned about the possible drawdown of their own private wells in the aquifer and protested the District's proposed well. As a result, the District decided to construct a new filter plant at considerably more cost and Pembroke submitted legislation to create a water district with charter rights to the groundwater.

- During a drought in the late 1970's, the Kittery Water District was forced to pump water from Chase's Pond, York Water District's source of supply, to replenish Kittery's supply ponds. The Kittery Water District has since begun to design and build a dam to create the "Bell Marsh Reservoir", in the Town of York, to provide additional supply capacity.

- Inquiries from out-of-state beer and soft drink firms about the possibility of transporting pure Maine water to their plants by the tank-car load apparently prompted the Legislature to pass a law prohibiting companies, except under certain conditions, from transporting water in anything larger than ten gallon containers across municipal lines for commercial purposes. The new law, 22 M.R.S.A § 2660-A, allows the Commissioner of Human Services to authorize the transportation of water for commercial purposes for three year periods under certain circumstances. The Poland Spring

Corporation, bottler and distributor of Poland Spring water, applied for and was granted an exemption under this law. As discussed below in Part IV(F)(2), significant legal and policy questions are raised by this statute.

- The Camden and Rockland Water Company needs to develop additional water supply capacity to meet increased demand caused by growth in its coastal service area. The Company attempted to address the supply problem by preparing legislation that would have allowed the Water Company to use Megunticook Lake as an emergency source of supply. The legislation was opposed by the owners of lakefront property and some of the area towns. The Legislature ultimately granted the Company the right to take its emergency supply from the Megunticook River downstream from the outlet dam for Megunticook Lake. The water at that point, if used, will be lower quality and the site will be more expensive to develop.

- In 1986 Legislation was introduced (L.D. 1887) which would have deleted the authority to take water from Hobbs Pond and Fish Pond from the legislative charter of the Camden and Rockland Water Company. The bill was introduced in response to concerns that the company was planning to exercise the authority in question. In addition, another bill was introduced which would have created the Lincolnville, Camden, Hope, Searsmont and Belmont Water District

(L.D. 1942), intended in part to assert control over other water sources in the area. Both bills were granted leave to withdraw upon the agreement of the company and local officials to conduct a study of the area's water supply needs and sources.

The existence of these problems and conflicts is due in large measure to inadequacies inherent in Maine's essentially common law framework for dealing with water supply and allocation problems. The State's water supply is a valuable resource and, if managed properly, will benefit the people of Maine for many years. Such management must be coordinated and consistent. A body of water law based on 17th century English common law, however, is incompatible with existing circumstances in Maine and incapable of reasonably resolving the increasingly complex conflicts which Maine's economic growth will inevitably produce.

F. Statutory Basis for Implementing a Sound Management Approach to Water Supply and Allocation Problems.

While much of Maine's water law consists of applying traditional common law concepts, the Legislature has acted with increased frequency to supplement and, in some cases, supplant those concepts. The Legislature has been particularly active in the area of environmental protection. As a result, current Maine statutory law recognizes both the public nature of water resources and the need for public protection.

1. General Provisions

Title 38 M.R.S.A. § 361-A defines for purposes of statutes administered by the Department of Environmental Protection, "waters of the State" to include all surface and subsurface waters which are contained within, flow through, or under or border upon this State ... except such waters as are confined and retained completely upon the property of one person and do not drain into or connect with any other water of the State." This definition recognizes the essentially public nature of water and provides a basis for much of Maine's current, albeit fragmented, statutory water law.

2. Groundwater

Title 38 M.R.S.A. § 543 explicitly recognizes the public nature and hence public interest in the preservation of quality groundwater by rendering illegal the discharge of oil "into or upon any ground water ... of the State." This prohibition applies not only to "waters of the State," but also to private water supplies. An occupier of land no longer has the right to pollute his "own" water. Section 543 simply recognizes the hydrologic facts: groundwater is a fragile resource that is not easily compartmentalized, and it is the rare case that a "private" well is not somehow interconnected with the groundwater of other users.

The so-called "English Rule" was further modified by the Legislature in 1979 by enactment of Maine's Ground Water Protection Program, 38 M.R.S.A. § 401-404. Section 401 explicitly recognizes the public nature of rights in groundwater:

> The Legislature finds and declares that the protection of ground water resources is critical to promote the health, safety and general welfare of the people of the State.
>
> . . . .
>
> The Legislature further finds and declares that an adequate supply of safe drinking water is a matter of the highest priority and that it is the policy of the State to protect, conserve and maintain ground water supplies in the State.
>
> . . . .
>
> Because of the importance of ground water to the safety and well-being of the State, there is an urgent need for the coordination and development of the programs to assess the quality and quantity of and to protect ground water.

The Act goes on to provide for the study of groundwater and groundwater quality in the State of Maine. The Bureau of Geology, the Department of Conservation and the Department of Environmental Protection are required to research and study recharge and cleansing rates of groundwater in various types of aquifers, map some of those aquifers, and assess the impact of agricultural practices and chemicals on groundwater quality. This research is now in progress.

Other groundwater-related statutes that evidence the State's concern for such water include, but are not limited to, the following:

- Title 38 M.R.S.A. § 481-490, Maine's Site Location of Development Act, requires developers of large construction projects to take into account the effect on groundwater such projects are likely to produce. If projects pose an unreasonable risk to groundwater, the

Board of Environmental Protection may refuse to approve a development proposal.

- Title 38 M.R.S.A. §§ 465-C, 470, Classification of Groundwater. These statutes classify groundwater with respect to quality. Section 465-C sets up two possible classifications: Class GW-A, the highest classification suitable for public water supplies, and GW-B, suitable for all usages other than public water supplies. Section 470 sets up, in effect, a presumption that groundwater shall be classified as Class GW-A. This classification scheme illustrates a legislative preference for maintaining the highest quality standards for groundwater.

- Title 12 M.R.S.A. § 550-B, Water Wells Act, requires well contractors to report to the Maine Geological Survey within 180 days of drilling a well information relating to location, construction, and well yield. Information supplied by well contractors is then used by the Maine Geological Survey as an additional tool in the ongoing process of aquifer mapping.

The common law of groundwater is not only ill-suited as a means of protecting a vital public resource. The Legislature has also recognized that the common law is a sometimes inefficient and not always equitable arbiter of private rights. For example, Title 38 M.R.S.A. § 404 provides for

a statutory private right of action when a landowner's or occupier's domestic groundwater use is damaged by another. The statute creates, in effect, a priority for domestic groundwater use and recognizes the hydrologic interconnectedness of groundwater.

Groundwater users are given further protection by Maine's Underground Oil Storage Facilities and Ground Water Protection Act, 38 M.R.S.A. §§ 561-570-G. Section 561 recognizes that the protection of the waters of the State, including groundwater, "is of the highest importance" and that the State's waters are threatened by the existence of leaking underground oil storage tanks. The statute creates an administrative apparatus that, utilizing principles of strict liability, has the authority to award a person damages for injury to real estate, personal property or loss of income caused by a discharge of oil into that person's groundwater.

Finally, 22 M.R.S.A. § 2660-A, enacted in 1987, prohibits the transportation of water, including groundwater for "commercial purposes" in containers larger than ten gallons beyond the boundaries of the municipality or town in which the water is naturally located or any bordering municipality or town.

Section 2660-A(3) allows the Commissioner of Human Services to authorize the transportation of water for commercial purposes for three year periods if the Commissioner finds that:

- transport of the water will not constitute a threat to public health, safety or welfare;
- that the water is not available naturally in the location to which it will be transported; and
- that failure to authorize transport of the water would create a substantial hardship to the potential recipient of the water . . .

Critics of this law contend that the statute is not only unwise from a policy perspective, but also violates the Commerce Clause of the United States Constitution. Such critics argue that Maine citizens should be free to transport water in Maine and elsewhere because the water resource is important to Maine's economy. Furthermore, note the law's critics, because the United States Supreme Court has held that water is an article of commerce in the constitutional sense, interstate commercial activity in that resource cannot be unreasonably burdened.

While this Study does not take a position with respect to the constitutionality of section 2660-A, it does find that water resource allocation and use problems are best addressed through comprehensive and careful planning rather than narrowly focussed piecemeal legislation. If the Legislature thinks that a definitive analysis of the constitutionality of section 2660-A is necessary, it should request an advisory opinion on this subject from the Office of the Attorney General.

3. Rivers and Streams

A fairly well-developed statutory framework designed to protect Maine's rivers and streams currently exists in Maine. This framework, like the framework dealing with groundwater, recognizes the essentially public nature of these waters.

- Title 38 M.R.S.A. § 543, Maine's Oil Discharge Prevention and Pollution Control Act, prohibits the unlicensed discharge of oil into or upon "any river [or] stream." This prohibition applies both to public and "privately" owned rivers and streams.

- Title 38 M.R.S.A. § 435, Maine's Mandatory Zoning and Subdivision Control Act, requires that land within 250 feet of the normal high water mark of any pond, river or salt water body be subjected to zoning and subdivision controls.

- Title 12 M.R.S.A. § 401-406, Maine's Rivers Act, establishes certain policy considerations that must be considered when deciding how Maine's rivers and streams are to be used. The statute notes that "with careful planning our foreseeable needs for all of these uses may be reasonably integrated harmoniously with one another on the state's 32,000 miles of rivers and streams."

4. Great Ponds

The Legislature has codified the common law definition of a Great Pond and added to that definition as follows:

> Great Pond shall include any inland body of water which in its natural state has a surface area in excess of 10 acres, and any body of water artificially formed or increased which has a surface area in excess of 30 acres.

38 M.R.S.A. § 392(1).

Several statutes affect Great Ponds. These legislative initiatives recognize the public interest in these ponds and seek to protect them for the enjoyment of future generations.

- Title 38 M.R.S.A. § 386-396, Maine's Great Ponds Program Act, explicitly sets forth the overriding public policy concerns associated with Great Ponds. The Act specifically targets Great Ponds for special protection and scrutiny; prohibits, except by permit, certain dredging and removal activities; authorizes the establishment and maintenance of a data bank containing information about Great Ponds; authorizes research and study into Great Ponds with special consideration given to restoration and enhancement; and, establishes a Lake Restoration and Protection Fund from which monies may be allotted to restore or protect a Great Pond.

- Title 38 M.R.S.A. § 435-447, Mandatory Zoning and Subdivision Control Act. As noted above with respect to rivers, this statute, recognizing the State's role as trustee of its waters, requires that

any land within 250 feet of the normal high water mark of any pond, river or salt water body be subjected to zoning and subdivision controls.

- Title 38 M.R.S.A. § 465-A. This statute classifies, with respect to quality, both Great Ponds and ponds of less than ten acres identically. The statute prohibits new direct discharge of pollutants into these waters.

5. Municipalities

As noted above, municipalities have no greater or lesser legal ownership interests in water than any other landowner. Municipalities have been, however, delegated the authority to adopt regulations in order to ensure the maintenance of high quality public water supplies. Title 22 M.R.S.A. § 2642, for example, states that a municipality may "adopt regulations governing the surface uses of sources of public water supply, portions thereof or land overlying ground water aquifers and their recharge areas used as sources of public water supply, located within that municipality in order to protect the quality of such sources of public water supply or the health, safety or welfare of persons dependent upon such supplies." Furthermore, under 22 M.R.S.A. § 2647 a municipality "is authorized to take reasonable steps to protect a public water source from pollution." Among the "reasonable steps" a municipality, or its agent, may take is to enter and inspect a facility suspected of polluting a public water supply and issue an order to stop any illegal discharges or practices.

Municipalities are also authorized to regulate materials, construction, alteration, and inspection of all pipes through which water is carried, pursuant to 30 M.R.S.A. § 3221. Section 3221 explicitly requires such regulation to comply with regulations promulgated by the Department of Human Services.

Thus, municipalities have significant regulatory and quality control interests in public water supplies. Because of these existing statutorily recognized interests, municipalities should play a major role in the development of any sub-basin management plans.

G. Conclusion

These statutes, taken together, indicate that the Legislature has already modified in part the common law of groundwater and surface water in areas where regulation in the public interest has been considered necessary. A legislative decision to comprehensively regulate water withdrawals when such regulation will promote the public's general health and welfare would therefore be neither extraordinary nor unprecedented. Comprehensive water legislation in many other states that has had the effect of modifying landowners interests in water under or abutting their land has been upheld in the courts where a reasonable relationship exists between the end sought by regulation and the means by which that end is sought. The United States Supreme Court has held that a state has a paramount interest in protecting its water resources. Thus, to adopt a comprehensive water management plan in

Maine would be a logical next step in the State's continuing effort to preserve for future generations one of its most valuable resources.

IV. A SUGGESTED APPROACH TO THE PRUDENT MANAGEMENT OF THE WATERS OF MAINE

A. Introduction

1. Maine's Fresh Water is a Limited Resource.

As noted above, Maine's surface and subsurface water are parts of the same hydrologic network which spreads throughout the State. Maine is blessed with generally abundant supplies of fresh water and those supplies are recharged with generally consistent rainfall. Maine's abundance of fresh water has led to an assumption shared by some suppliers and users that our water supply is unlimited and therefore requires no monitoring or management. Indeed, that assumption has largely guided the State's judicial and legislative approach to the supply and allocation of water rights for the past 300 years.

Changing circumstances brought about by Maine's growing and diverse population and economy have caused many experts in the field of water resource management to reconsider the notion that the State's fresh water supply is and will always be available in sufficient quantities. The conflicts summarized in Part III (E) above, as well as the commissioning of this study itself, illustrate a growing concern that the State's management of its valuable fresh water resource (or conspicuous lack thereof) is in serious need of reassessment.

Unfortunately, the abundant surface water supplies we see and oftentimes take for granted are not as unrestricted as they may appear. Unseen limitations, such as federal control over navigation and hydro facilities restrict the use of Maine's surface water. The federal Safe Drinking Water Act will also inevitably modify the use of surface water in Maine. Another limiting factor to the usefulness of both groundwater and surface water is water quality. Abundant supplies of water mean little if that water is not fit to be used. Sub-basins with plentiful fresh water supplies today may be faced with difficult decisions in the near future if they do not carefully manage the quality of their resource.

An additional restriction on the State's fresh water supply that is often overlooked is the location of the water source. Statewide usage and recharge figures are impressive but tend to ignore the fact that much of the State's water is located where it cannot be readily used without incurring significant expense. In areas of high demand and low yield, difficult water management decisions must be made.

No management mechanism currently exists, on either the local or state level, that is equipped to make these difficult water management decisions. The remainder of this study is devoted to analyzing a possible management mechanism for addressing Maine's fresh water concerns. Set forth in Parts IV(B) and (C) below is a possible management structure that could be used to meet the State's water management needs. This potential structure

provides for initial management recommendations to be generated at the local level with coordination of these local recommendations at the state level in a manner consistent with the prudent management of Maine's waters as a whole.

The drafters of this study emphasize that the two-tiered management mechanism outlined below is provided primarily for illustrative purposes and does not constitute a definitive recommendation. As pointed out in Part V below, additional research and thought is required before the proper structure and function of a comprehensive management mechanism for Maine's groundwater and surface water can be determined. It should also be emphasized that the proposals contained in this study focus on water quantity and are intended to complement rather than modify the existing regulatory structures that focus primarily on water quality.

2. Dividing the State into Sub-Basins

Management of the waters of the State should be closely tied to local water characteristics. One way to allow for local input in the water management process is to divide the State into local management units. The units should be small enough to be reflective of a region's fresh water capacity and demand for that capacity. The units should also be large enough to allow for coordination on a statewide basis.

Maine's surface water and groundwater network has been divided by the United States Geological Survey (USGS) into six major river basins. A

USGS map delineating Maine's six major river basins is attached as Appendix A. Because demographic and hydrologic circumstances vary widely within each of these basins, the major basin regions are too large and diverse to be used as local management units.

The major basins, however, can be further broken down into sub-basin regions. Each sub-basin is an integral part of a major basin and is indirectly related to the other sub-basins situated in its major basin area. The USGS has divided the State into 21 sub-basins. An alternative to the USGS breakdown is a sub-basin analysis done by the U.S. Army Corps of Engineers which has divided the State into 64 smaller sub-basins. Maps of the 21 and 64 sub-basin divisions are attached as Appendices B and C of this study. For obvious reasons, determining the proper size of the sub-basin regions is crucial to the effective management of local water supplies. Such a determination, however, is beyond the scope of this study. As discussed in Part V below, the study recommends that a legislative Task Force be established to answer this and other fundamental water management questions raised, but beyond the scope of this study.

B. State Regulation

1. Why State Regulation is Necessary

Although management of the waters of the State should reflect local circumstances and include local input, it should be coordinated on a statewide basis for three primary reasons. First, while hopefully most local

water conflicts can be avoided or resolved at the local level, some of the most difficult or politically charged water conflicts will defy local resolution. Some higher authority would be needed to resolve such matters. Second, recommended plans of the different sub-basin mangement units may conflict with one another. Again, some higher authority would be needed to resolve the dispute. Finally, some water management decisions must be made on the major basin or state level. A state entity capable of transcending a local perspective would be needed to make such decisions.

2. Choosing an Administrative Agency

If the Legislature determines that statewide water management is desirable, it must determine which state agency or group of agencies will discharge that function. It is noteworthy that Maine is one of the nation's few states without a state agency, department or bureau that is responsible for managing the State's water resources. Just as Maine's water law is fragmented, so too is Maine's regulatory framework with respect to water resources. There are currently several state agencies with water resources responsibilities. The functions of these agencies are summarized in Appendix D of this study. The State's decentralized management of water resources means that there is no existing state agency or other entity capable of administering the comprehensive statewide water management program suggested by this study.

The fact that no existing state agency is currently equipped to handle the management function presents the Legislature with several options: 1) designate an existing state agency as the administering body; 2) designate several state agencies as responsible for the management function and require those agencies to coordinate their activities; 3) create an independent water resource management agency or bureau that would have the capacity to manage Maine's waters; or 4) establish an entity like that described in "3" above but placed under the auspices of an existing state agency. This study makes no recommendation with respect to which option the Legislature should adopt. Whatever option is selected, additional staffing and funding necessary for the entity to manage Maine's waters competently and efficiently will be necessary. The Task Force described in Part V below might properly address this issue.

3. Functions of the State Agency

The state agency charged with coordinating the management of the waters of Maine would likely be required to perform at least five key functions, summarized below:

- Gathering and Coordinating Data

  The diverse data currently being gathered by various existing state agencies must be consolidated if it is to be usable for the broader purpose of comprehensive statewide water management. The state agency would also

be required to integrate data gathered by the local sub-basin management units. Finally, the state agency would need to coordinate additional research necessary to its management function.

o Permitting and Registration of Large Users

One of the central functions of the state agency could be to administer a permitting and registration system for the State's large water users. The specifics of a permitting system, such as the duration and reviewability of a permit, threshold usages which trigger permitting requirements, treatment of existing users and exemptions from the system should be determined by the Task Force recommended to be created in Part V below.

o Dispute Resolution

Disputes within a sub-basin that cannot be resolved at the local level and disputes between sub-basins, should be resolved in a consistent, predictable and efficient manner. The state agency's role in dispute resolution would likely be heightened during times of water related emergencies during which the state agency may impose mandatory conservation requirements or a system of priority uses. The water Task Force recommended in Part V

below may want to consider mediation or the appointment of special hearing examiners as intermediate dispute resolution devices.

- Promulgate Rules and Guidelines

  As part of its overall management function the agency could promulgate rules which define its administrative role and give guidance to the sub-basin management units.

- Help Provide Technical Assistance to Sub-Basin Management Units

  Another agency function would likely be to coordinate the provision of financial and technical assistance to the sub-basin management units. Reliance on correct and consistent technical information at the local level will help ensure coherent overall management of Maine's water resources. Expertise residing in existing state agencies should be made available to sub-basin management units to assist in the formulation of the management plans.

4. Local Involvement

Whatever state agency ultimately administers the statewide management mechanism, this study suggests that it provide the sub-basin management units with as much control and authority as possible without diluting the overall purposes of statewide regulation and oversight. The

plans and recommendations developed by the various sub-basin management units should generally be deferred to unless greater statewide or inter-basin concerns dictate that another outcome is necessary to ensure an equitable and efficient result in any individual case.

C. Sub-Basin Management Units

1. Introduction

This study suggests that the planning and management within each sub-basin be initiated locally. Each sub-basin could be directed to create an organization designed to discharge this function. This study uses the term "sub-basin management unit" to refer to each local planning and management entity. Each sub-basin management unit could be responsible for the compilation and maintenance of a detailed recommended plan for the management of water within the sub-basin. The findings and recommendations contained in the plan would be reviewed by the state agency. The state agency in turn would coordinate and integrate the various recommended management plans to ensure consistency and compatibility.

There are a variety of ways in which sub-basin management units could be organized and management plans drafted. A final determination of the specific sub-basin management unit organizational structure and management plan format is beyond the scope of this study and should be addressed by the Task Force recommended in Part V below. The following discussion is a summary of a possible structure and format which may help facilitate consideration of the various and complex issues inherent in local water resource planning.

2. Organization of Sub-Basin Management Units

Each sub-basin management unit could have a coordinating committee composed of, at a minimum, one member from each eligible water utility and municipal government. The circumstances within each sub-basin area could determine additional committee membership. Additional committee membership could include representatives from regional planning and development agencies, large users and other interested consumers. In addition, the committee should be encouraged to solicit input from knowledgeable sources within the sub-basin that are not directly represented on the coordinating committee.

3. Drafting the Management Plan

The coordinating committee's purpose would be to develop a management plan that directly addresses the specific needs and circumstances that exist in the sub-basin. The management plan should include long-range water supply planning and should attempt to identify existing and potential conflicts resulting from competing uses for the water in the sub-basin.

An essential first step in long-range water supply planning, and in analyzing competing uses, is the gathering and assessment of background information. Some examples of the background data necessary for useful sub-basin management plans could include:

- Identifying and evaluating alternative sources of water in the sub-basin region and establishing a system of priorities to meet future needs and options. This evaluation could include, among other things, appropriate water studies, safe yield estimates and arrangements for development and delivery of water.

- Developing projections of residential, commercial and industrial growth within the sub-basin which will provide the basis for projecting consumption and sub-basin needs and alternatives.

When the management plan has been developed by the coordinating committee it could be reviewed by interested groups. This would help ensure that the plan accurately reflects the conditions, problems and concerns of the sub-basin region. The completed management plan could then be submitted to the state agency for review and approval. Management plans should be updated on a regular basis as local circumstances change and more data becomes available.

D. Conservation

A water utility may have several reasons to implement a water conservation program. A successful water conservation effort can ease a community through a drought, save water during a supply contamination emergency, free up additional water for new growth or postpone, reduce or obviate the need for new source development or costly expansion of existing

facilities. A major motivation for implementing a water conservation program, then, is not only to increase the availability of water to new users, but also to have in place a program with the flexibility to deal with water shortage emergencies if and when they occur.

Under certain circumstances a water conservation program can mitigate water shortage problems. A water conservation program can reflect either supply side management or demand side management or a combination of both. In the following context, supply side management programs are controlled by the utility; demand side management programs are controlled by the customer.

1. Supply Side Management

   - Metering provides an accurate accounting of all water uses throughout the system, and therefore can be used in supply side management programs such as leak detection and repair as well as in certain demand management programs listed below.

   - Leak detection and repair involves the analysis of unaccounted-for water. Causes of unaccounted-for water include defective hydrants, unmetered water, inaccurately metered water, leaking meters, illegal hookups, unauthorized use of fire hydrants and leaks in mains and

services. The primary reason for unaccounted-for water is leakage.

- Pressure reduction is used in areas with excessively high pressure to reduce waste by simply reducing the amount of water passing through the pipes.

- Sub-basin management is used to protect water supplies against contamination and overpumping and, to maintain and increase water recharge flows to the source.

Advantages to Supply Side Conservation Programs	Disadvantages to Supply Side Water Conservation Programs
° Operating costs can be reduced	° Some programs are expensive
° Program not dependent on users	° Generally labor intensive
° Lost revenues can be reduced	° Long lead time needed for implementation
° Flexibility can be maintained in the system	° Limited in potential to achieve short-term, high percentage reduction, or peak use goals

2. Demand Side Management

- Changes in water price to encourage users to conserve in order to save water and money.

- Restricting the use of water, by type of use and quantity, encourages users to conserve to comply with the law (or suffer penalties). Legal restrictions pertaining to lawn sprinkling, irrigation and car washing are examples of regulated use.

- Education that is conducted by water utilities informs users of the need to conserve, emphasizing that conservation will help the community solve its problem and help the users to save money.

Advantages to Demand Side Conservation Programs

- They are versatile
- Some are inexpensive
- Some are not labor intensive
- Some can be implemented very quickly

Disadvantages to Demand Side Water Conservation Programs

- If a utility's revenues are based on metered water sales, revenue may drop
- Success will vary according to users' cooperation
- Positive results tend to diminish over time
- There may be user opposition to some programs

A summary of conservation measures currently in use in Maine is attached as Appendix E.

3. Water Saving Devices

The hardware or software available for reducing water use can be broken down into two general categories.

- Water saving fixtures are available to customers. These fixtures can be easily installed in any type building (new or old) and require no change in plumbing. There are about 60 basic types of water saving fixtures available. Shallow trap toilets, dual flush toilets, toilet tank inserts, flow restrictors, aerators, low flow showerheads, hose attachments, hypo-cleaning agents (for photographic film processing industries), shut-off nozzles, and pressure valves are the features most widely used. Plumbing codes could be changed to reflect these requirements in various communities for new construction or renovations.

- Reuse/Recycle technology will decrease consumption by using the same water more than once. This method is used primarily by heavy water-using industries, power plants and municipalities.

In conjunction with the installation of the devices and use of the technologies summarized above, significant reductions in water usage can

be achieved by encouraging changes in user habits. For instance, changes in habits regarding bathing and toilet flushing, which account for approximately 75% of all indoor residential water usage, can reduce water consumption dramatically.

4. Conclusion

The feasibility and potential success of alternative conservation programs will inevitabily vary depending on the circumstances in each sub-basin region. Accordingly, each sub-basin management plan should consider the various conservation alternatives realistically available in its region and include a cost-benefit analysis for the implementation of potential conservation programs.

V. CREATION OF A WATER RESOURCES TASK FORCE.

This study has reviewed the specific issues outlined by the Legislature in the Resolve which commissioned the study. In reviewing those issues, however, the study raises many important questions and options which are beyond its scope. Addressing these questions is the next logical step for the Legislature to take in its effort to prudently manage the waters of Maine.

This study recommends that if the Legislature believes that the type of state/local management mechanism explored in this study warrants further

development, the Legislature should establish a Task Force to conduct further review of this matter. The Task Force should be supported by staff and should be charged with responding to a variety of threshold questions:

- Which state agency should have the responsibility for managing the waters of the State? Should it be an existing agency? Should a new agency be formed; or should existing agency responsibility in this area be redefined to accomplish the statewide management function?

- What forum or mechanism should the state agency employ in resolving water related conflicts? What procedures should apply to the conflict resolution mechanism?

- What should be the content of statutes or rules promulgated to establish procedures for such things as the permitting and registration of large users and the implementation of mandatory conservation practices? How should concepts such as "stressed areas" and minimum water levels be defined?

- How should the sub-basin boundaries be drawn? How many sub-basin management units should there be?

- What guidelines should be given to the sub-basin management units for the drafting of sub-basin management plans?

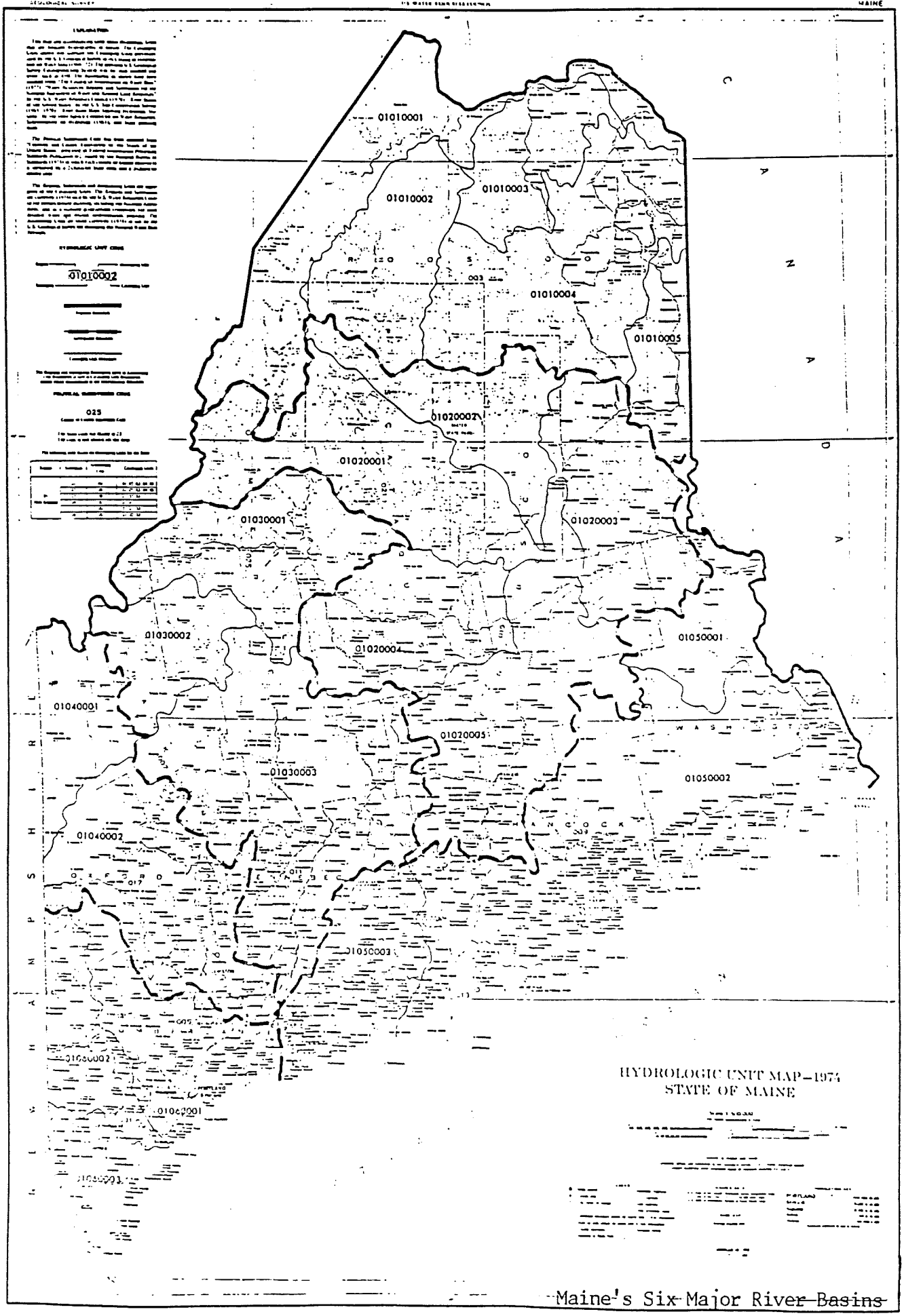
- What procedure should the state agency employ in reviewing and approving proposed sub-basin management plans?

- How should the sub-basin management units be funded? How should the state regulatory function be funded?

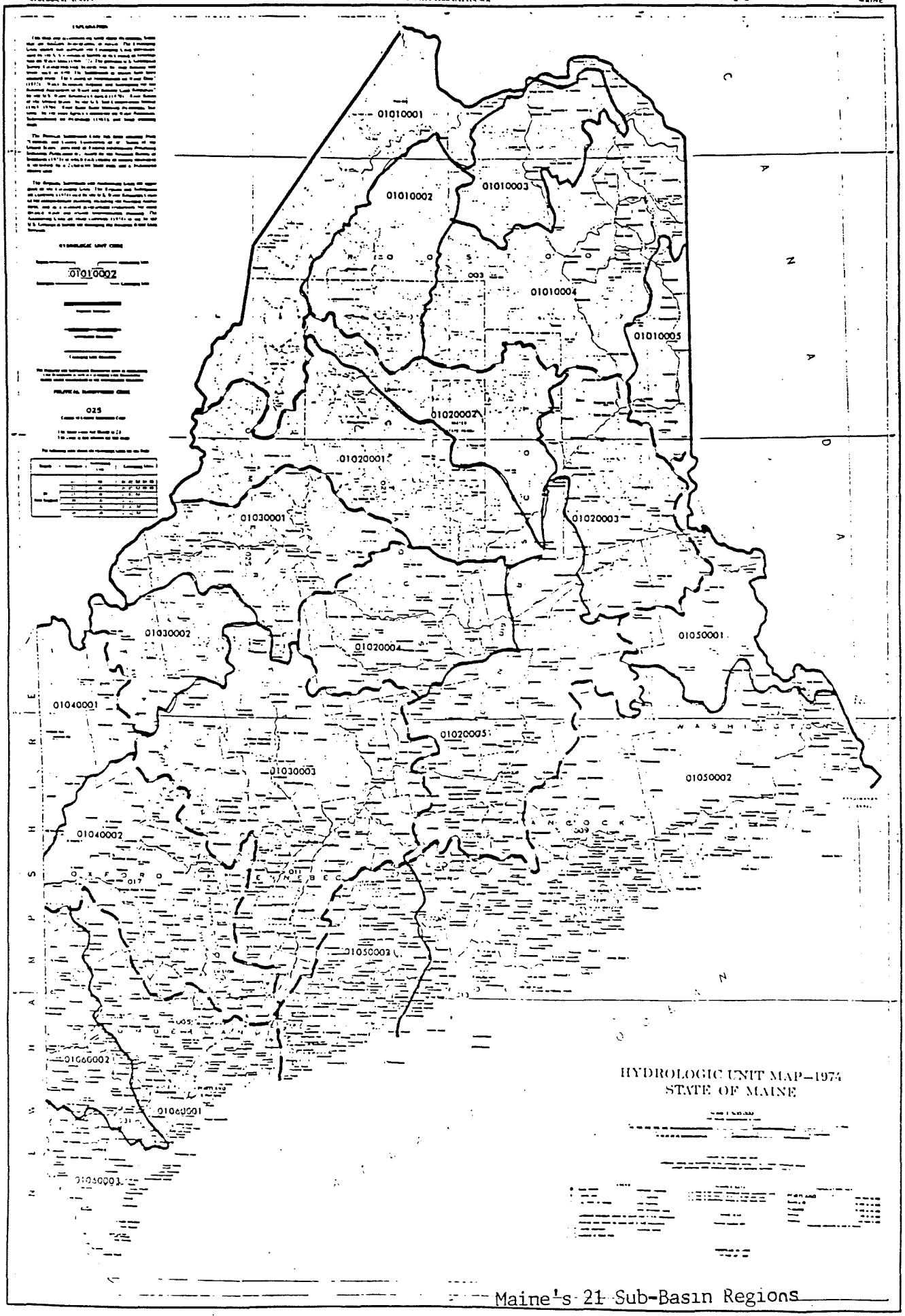
VI. CONCLUSION

The coordinated management mechanism explored in this study would have several positive effects on Maine's waters and the users of those water resources. First a statutory framework setting forth clearly how water is to be allocated and managed would remove some of the uncertainty surrounding current Maine water law. Second, piecemeal legislation addressing only one small aspect of water resource allocation, like the recently enacted water transport law, could be avoided. A statutory scheme that creates a comprehensive management mechanism would, hopefully, have the capacity to provide an answer to most water resource allocation problems in a manner that would reflect both local and statewide concerns. Finally, a comprehensive management approach to the waters of the State would ensure that intelligent and efficient decisions are made before the onset of a water related crisis. Crisis management should be avoided when the stakes are so high. Thoughtful planning would minimize waste of the resource and would channel conflicts to a forum which has the authority and capability to rationally resolve those conflicts.

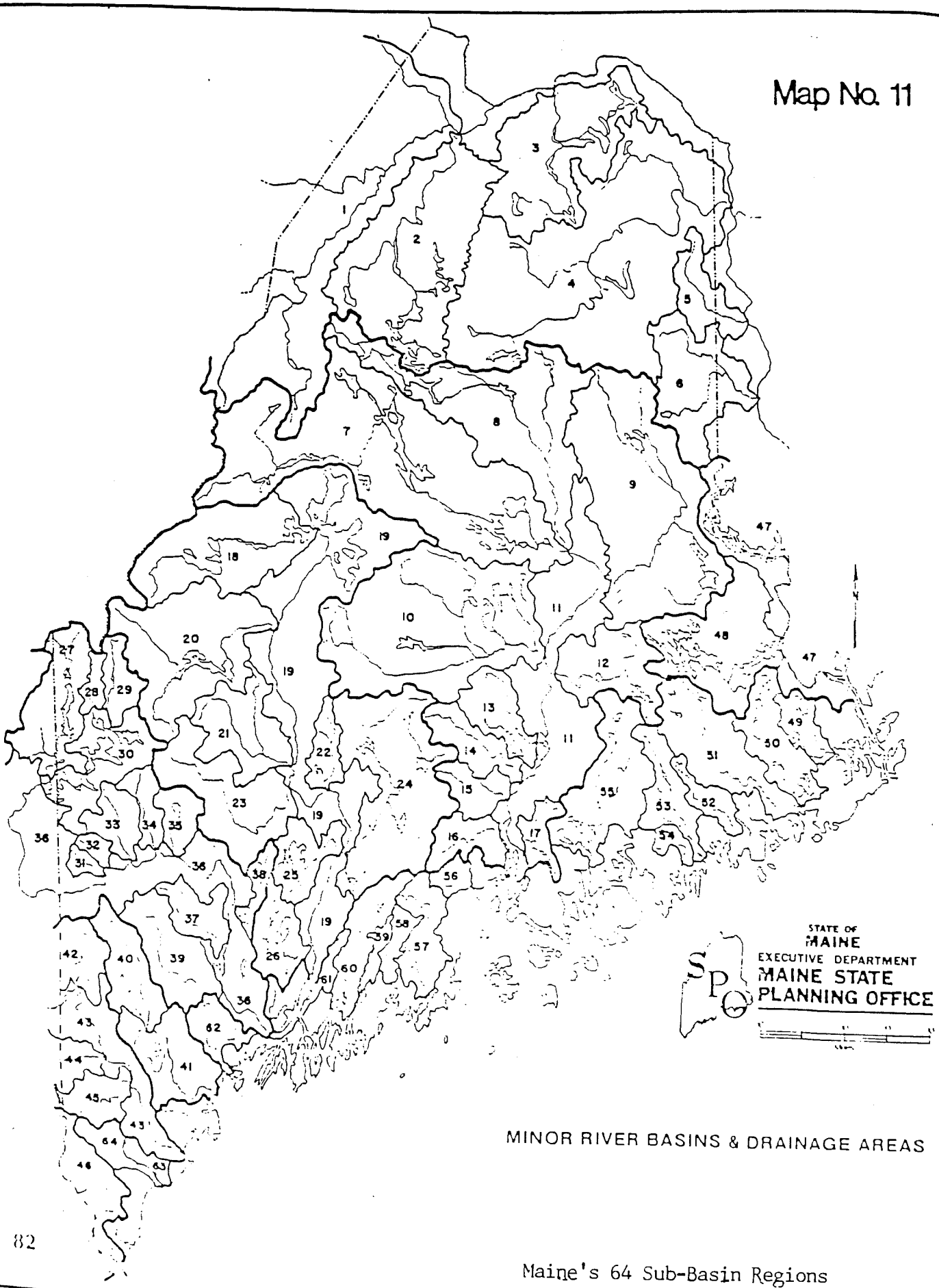
Appendix A



Maine's Six Major River Basins



Maine's 21 Sub-Basin Regions



Maine's 64 Sub-Basin Regions

APPENDIX D

State Agencies with Water Resources Responsibilities

Department of Environmental Protection: Protection Planning	Department of Human Services Protection Planning Public Water Supply Assistance	Department of Agriculture Pesticide Control
State Planning Office: State Groundwater Coordinator; Protection Planning Assistance; Coastal Zone Water Supply and Demand Maps	Department of Conservation: (Maine Geological Survey) Aquifer mapping: Interpretive Services	Public Utilities Commission: Regulates water utilities

Appendix E

Survey of Conservation Practices in Maine*

Maine Conservation

Measure Used	Number of Utilities
Neither Voluntary or Mandatory Used	14
Metering	7
Leak Detection	4
Educational Brochures	3
Teaching Materials & Guides	1
Water Level Control at the "reservoir"/Well	2
Capping All High-Altitude Mains	1
Water Storage Tank Construction	1
New Well Construction	1
Automatic Pump Control & Continuous Pressure Recording	1
Installation of Water Saving Equipment	1
Water Reuse	1
Restricted Fire Pump Use to Emergencies Only	2
Reduced Winter Bleeder Flows	1
Replaced Surface Main with Plastic Pipe	1
Monitors Billing to Show Increase Usage	1
One on One with Customers Who Uses More than Normal	1
Monthly Almanac Published Regarding Water Resource Situation	1
Local Restaurants not to Serve Water During Periods of Restriction	1
Monitors Rainfall & Reservoir Inflow	1
Sets Month End Pond Level Goals	1
Voluntary Restrictions (nonessential use)	1
Mandatory Restrictions (not used yet)	1**
Encourage Installation of Water Saving Devices	1

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* This sruvey is based on responses from 24 Maine utilities that responded to the information request sent out in conjunction with this study. The number of utilities responding represents 17% of all of Maine's water utilities. While this is a small response rate, there is no indication that the responses summarized in this survey are not representative of the conservation practices being employed throughout the State. In addition, Kennebunk, Kennebunkport and Wells Water District is in the process of completing comprehensive studies of numerous conservation measures pursuant to a Stipulation on file at the Public Utilities Commission.

** Camden and Rockland Water Company currently has a case pending before the Public Utilities Commission regarding this mandatory plan.

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