FINAL REPORT OF RECOMMENDATIONS
of
THE GROUND WATER REVIEW POLICY COMMITTEE
to
THE LAND AND WATER RESOURCES COUNCIL

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In 1981, the Legislature and the Governor incorporated into statute recommendations of the Ground Water Protection Commission, thus establishing Maine's efforts to characterize and protect ground water resources. Time has shown, however, that these initial steps were not enough; the resulting research has identified grave new concerns and serious contamination incidents continue to occur. The Maine Geological Survey estimates that about 10% of Maine's ground water is already contaminated. Leaking underground storage tanks, buried wastes, pesticides, road salt, and other contaminants threaten to degrade more of the resource.

There is a widespread perception within the State, and across the country, that our existing land use management system does not sufficiently protect ground water from sources of contamination. Yet the future vitality of Maine's people and our economy depends upon abundant and high quality sources of ground water for water supply. According to a recent State Planning Office report on drinking water supplies, ground water is currently used and relied upon as the sole source of water by about 96% of Maine's rural population, and provides about a one-fifth supplement to surface water for public supplies.

These facts prompted Governor Joseph Brennan, in December of 1983, to request a review of the State's ground water management and protection activities. Seeking recommendations for actions to further refine management programs, he asked the Land and Water Resources Council to:

"1. Evaluate the need to establish priorities among State ground water regulatory and management activities which address both the severity of public health risks and the cost effectiveness of the remedies;

2. Identify and make recommendations for eliminating any deficiencies in data concerning ground water contamination and public health risk that currently impede the establishment of priorities for State action to protect ground water resources;

3. Recommend an organization to manage our ground water resources in a manner that reflects how these systems work;

4. Assess the effectiveness of on-going coordination among the State's activities in both ground water protection and management."

In response, the Council established the Ground Water Review Policy Committee, under the chairmanship of DEP Commissioner Henry Warren, to compile necessary information and to report findings and recommendations to the full Council. An Advisory Committee representing a variety of interest groups was also established to provide input throughout the review process.

Since its formation, the Policy Committee has been gathering information, discussing findings, and evaluating options. This work has resulted in a background report, to be forwarded to the Council in February 1985, and in this Final Report of Recommendations.

The Committee found that the recommendations of the Ground Water Protection Commission have, for the most part, been fully implemented. The one area where the Commission's goals have not been met, due largely to budget and manpower constraints, is the swift completion of mapping the State's significant sand and gravel aquifers and their recharge areas. The Policy Committee reaffirms the mapping program, and other resource characterization activities, as vital to the effective management and protection of Maine's ground water resources.

Foremost, the Committee believes that the State must assert a ground water policy that will direct agency activities, provide successful long-term ground water quality and availibility, and assure the protection of public health. We recommend such a policy below, followed by recommendations of a series of legal, regulatory, and administrative actions to implement it. The actions presented are only those which the Committee believes to be immediately necessary. Failure to provide the resources needed to implement them will, in all likelihood, result in costly contamination of some ground water resources and increase hazards to public health; the State's ability to comprehensively manage and protect ground water will also be seriously compromised.

The Committee's action recommendations are organized into five distinct, yet inter-related, areas: resource characterization, resource protection, state-wide coordination, risk assessment, and resource management. Recommendations within the five areas are presented individually in the discussion which follows, with each recommendation preceeded by a statement and explanation of the problem, and followed by a resource requirement for implementation.

Although the Committee strongly endorses all recommendations, three highest priorities have been established. First, it is essential to speed up and expand data collection and management efforts as the necessary basis for the State's comprehensive management program. Secondly, a mechanism for ensuring the implementation of the policy must be established. Finally, the maps and data from the aquifer mapping effort must be evaluated, and specific measures designed to protect each important and sensitive aquifer.

The Committee's recommendations for funding reflect the State-federal partnership already established in other environmental and public health programs. Limited federal funds from the US Environmental Protection Agency (EPA) are available this fiscal year to initially implement some recommendations. However, the Committee believes that a similar State commitment is warranted, and recommends General Fund appropriations of $165,000 in FY86 and $195,000 in FY87. A complete budget summary is included as Appendix A.

STATEMENT OF POLICY

Issue: The absence of a clearly defined State policy, articulating how and to what degree Maine's ground water shall be protected and allocated, impedes the State from assuring that program staff, resources, and regulations are directed and coordinated toward highest priority needs and management goals.

Maine's ground water management policy has developed in a piecemeal fashion, under different statutory titles and at different times. Primary authority and responsibility for programs implementing ground water policy, both direct and indirect, has been established in laws administered by the Departments of Environmental Protection (DEP) and Human Services (DHS), with the former agency responsible for protecting the resource itself, and the latter agency protecting public health through the assurance of safe drinking water supplies.

The only direct statement of policy is found in 38 MRSA, Article 1-B, Ground Water Protection Program (section 401 et seq.). Here the Legislature has stated findings pertaining to the significance of the resource and its relationship to safe drinking water supplies, and has affirmed "that it is the policy of the State to protect, conserve and maintain ground water supplies in the State." At the same time, the Legislature took action to implement this policy: first, by recognizing the diversity of ground water-related programs and activities; second, by designating the DEP and the Maine Geological Survey (MGS) as the agencies responsible for coordinating protection programs and data collection and analysis programs, respectively; and, finally, by establishing the Significant Sand and Gravel Aquifer Mapping Program as a means to assess the quality of the resource and to develop the resource data base necessary "from which decisions can be made to protect the aquifers."

In this same Article, as well as in Title 22, Subchapter IV, Public Water Supplies (section 2641 et seq.), the Legislature has noted the interrelationship between ground water, water supplies, and land use practices, and has affirmed its indirect policy that public water supply is the pre-eminent use of ground water. The Legislature has assigned authority to municipalities to regulate land use as it relates to water supply protection, and both water utilities and municipalities have broad powers for protecting a public water supply.

Notwithstanding policy and provisions already in place, the Committee has identified several policy-related issues which have been inadequately addressed and which have direct bearing on the successful long-term management of Maine's ground water resources.

* Although some coordinating responsibility has been assigned, coordination of policy-related aspects of different ground water programs has been left unaddressed.
* Although State and local roles have been independently established, there is neither policy establishing the relationship between roles nor provision for fulfilling those roles.
* Although statute and regulation indicate an awareness of multiple uses of ground water and multiple types of ground water-bearing systems, this awareness has not been clearly incorporated into policy. No guidelines exist to ensure continuity and consistency in resolving management issues associated with increasing demand for the resource.

Objective: To provide a clear statement of the State's commitment to protect and manage ground water resources and to establish appropriate priorities, to serve as a basis for overall direction of State agency programs and for future ground water-related activities.

Recommendation: The Committee recommends that the Governor establish the following statement of policy immediately by Executive Order, and include it in a subsequent legislative proposal to implement the Council's recommendations for a ground water management system.

"It is the policy of the State of Maine to allocate, protect, and monitor Maine's ground water resources, through measures which protect public and environmental health, meet future water supply needs, and encourage a sound economy. Accordingly, the State shall:

1. Ensure that State ground water priorities are responsive to changing conditions and related health risks, and assure that State ground water programs are organized, coordinated, managed, and funded accordingly;

2. Ensure that waste disposal and other land use decisions are made after full consideration of their likely impacts on ground water;

3. When considering impacts, place greatest emphasis on protecting ground water resources from contamination, thereby maintaining their fullest use; further, give highest priority for protection to significant aquifers - both sand and gravel and bedrock - which are or may be especially vulnerable, of regional significance, or necessary for drinking water supply or environmental protection;

4. Assist municipalities and water suppliers in protecting locally important ground water supplies;

5. Foster greater public awareness of the importance of ground water and provide information and technical assistance toward this end; and

6. Ensure consistent and equitable decisions related to the allocation of ground water resources."

RESOURCE CHARACTERIZATION

Issue #1: The State's Significant Sand and Gravel Aquifers Mapping Program has resulted thus far in published information for the southern portion of the State and a reconnaissance level survey for the remainder; however, at current funding and staffing levels, progress is too slow to keep pace with requests for use of the information and with land use changes which could affect these aquifers. Progress in locating significant sand and gravel aquifers has revealed that many are especially vulnerable, are of regional significance, and are sources of public water supply, and that, in light of these findings, many are inadequately protected by State and local land use controls.

In 1981, the Legislature initiated a program to map the State's significant sand and gravel aquifers and their primary recharge areas. The program was designed to provide information on the location, potential yield, quality, recharge, and threats to these aquifers. In its first four years, the program has evaluated aquifers in the southern and central portions of the State and performed 20 to 30 site assessments each year for contamination sources.

The maps delineating aquifers and their recharge areas are an essential tool in administering the Site Location of Development Law to reduce the risk of ground water contamination. For example, the DEP uses the contamination site assessments which accompany these maps as a basis for determining relicensing, closure, and enforcement actions at existing sites. The maps are equally important to local officials and land use planners who may be required to make decisions concerning proposed activities which may impact ground water resources.

Staffing and funding levels under which the program was initiated in 1981 have proven inadequate for the purpose intended and for completion within an acceptable time-frame. At current reduced funding levels, the State's effort to map significant sand and gravel aquifers and to publish reports will not be completed until 1990. Furthermore, the delineation of primary recharge zones for sand and gravel aquifers is incomplete and based on superficial data.

Significant sand and gravel deposits cover only a portion of the State's surface, while bedrock aquifers serve as primary water supplies for much of Maine's rural population. Even when the sand and gravel mapping program is completed, State and local governments will be without sufficient resource information to protect bedrock ground water supplies, and therefore public health, in much of the State.

Recognizing this problem, and in accordance with its statutory responsibility, the MGS has been conducting methods research and pilot programs for mapping bedrock aquifers. The MGS and the University of Maine at Presque Isle, in cooperation with the Simplot Corporation and the potato industry, have developed a proposal for a cooperative research program involving government, industry, and the academic community. The program will assess Maine's significant bedrock aquifers on a state-wide basis, beginning in Aroostook County, and will provide information to improve bedrock aquifer protection efforts. The program will also provide the State and the potato industry with data needed to develop irrigation programs and to assess their potential impact on ground water supplies. Federal funding for a portion of the program is pending.

Objective: To accelerate and expand efforts to characterize ground water resources and to make information available in a timely manner.

Recommendation: The Committee recommends that the Governor direct the MGS to increase the pace of the Significant Sand and Gravel Aquifer Mapping Program, so that all maps and reports are completed by July 1st, 1988; further, that the MGS initiate a state-wide program to map significant bedrock aquifers, with priority given to aquifers serving as major water supplies.

Resources Required:

	FY86	FY87	Fund Source
Sr. Geologist	$ 30,000	$ 30,000	General Fund
All Other	110,000	110,000	Federal (pending)

Issue #2: The use of chemicals in agriculture has potential impact on the quality of ground water, and the nature and extent of this impact is largely unknown.

Certain common agricultural practices involve the use of chemicals and waste materials which have the potential for contaminating ground water resources: namely, pesticides, fertilizers, herbicides, and animal and industrial wastes used as soil amendments. Regulatory authority for each of these substances has been developed to varying degrees.

Pesticides and their use are regulated by the US EPA and the Maine Board of Pesticide Control (BPC). Prior to use, each pesticide must undergo testing and be registered by EPA. Research required in registering is concerned primarily with human health impacts and selected aspects of the environment. Control over the use of pesticides in Maine is generally accomplished through a process of certification and licensing of applicators. The BPC does have authority to further establish use restrictions as it deems necessary to protect public health and the environment. Once registered, however, there is no permitting system to allow for consideration of unique geographic factors.

Although the BPC has used a risk assessment process to gather information upon which to base restricted use decisions, additional data are needed to support further regulation. Data shortages exist in the following areas:

* There has been limited research of either background conditions or the extent of contamination associated with pesticide use in Maine;
* There is insufficient understanding of how selected pesticides move through the soil and into ground water supplies, of the synergistic effects of these substances, and of their persistence in ground water; and
* There has been limited monitoring of levels of contamination, either short or long-term.

The use of fertilizers and soil additives may also affect ground water. Except for sampling done by farmers to protect the health of their families, there is no systematic monitoring or regulatory control over the use of fertilizers. The DEP has a permit and monitoring program to regulate the use of industrial wastes in agriculture, but those regulations are just going into place.

Objective: To establish the nature and extent of the relationship between agricultural practices, including the use of agricultural chemicals, and ground water contamination, in order to devise a management system to prevent further degradation of ground water resources.

Recommendation: The Committee recommends that the MGS develop a three-year program to assess the impact of agricultural practices and chemicals on ground water quality in areas of prevalent agricultural use and in selected aquifers.

Resources Required:

	FY86	FY87	Fund Source
All Other	$ 30,000	$ 50,000	General Fund

Issue #3: There is a shortage of information pertaining to ground water quality trends and certain important sources of ground water data remain unavailable to resource planners and policy makers.

Successful resource management depends in part on sufficient and accurate technical information. This includes data concerning the quality, quantity, distribution, and behavior of the resource, both at present and over time. Lacking this information, it is difficult to anticipate major problems, to develop comprehensive protection programs, to prioritize resource use, and thus to make equitable and responsible use decisions.

Although the mapping programs already discussed do, and will continue to, provide valuable hydrogeologic data, their focus is on the delineation of the resource, with only preliminary assessment of current quality and quantity. Efforts in this latter direction focus, for the most part, on public water supplies, and even then data are more characteristic of the supply being delivered than of the resource itself. This produces data suitable for determining water quality trends for a very limited portion of the state-wide resource. Too often, awareness of declining quality comes too late for prompt recovery or prevention, with resulting contamination and loss of use.

Proper identification of ground water quality trends requires periodic sampling from predesignated monitoring wells. At present, the US Geological Survey maintains 14 wells for this purpose. Additional wells are drilled each year as part of the Significant Sand and Gravel Aquifer Mapping Program. There are no funds, however, to support regular sampling and analysis of these wells. Some private wells might also be suitable for the purpose of assessing water quality trends, as would be well data generated by the State Public Health Lab. There is no coordination of these activities at present.

Information concerning resource use and access is also potentially available through those who physically create the access: well drillers. Well logs and construction data are an invaluable source of ground water data; however, at present there is no requirement that drillers make this information accessible. The Maine Water Well Drillers Association and the MGS have cooperated informally, with State personnel occasionally visiting drillers to collect data, although budgetary constraints have limited this activity. There are ongoing discussions of a voluntary reporting system for high-yield wells, but no system is yet in place. There have also been several attempts to establish a driller registration program, with data access providing a major impetus. To date, these attempts have been unsuccessful, in part due to disagreement over registration prerequisites.

Objective: To expand the State's ground water monitoring capacity for background water quality trends and to broaden the data base for ground water resources overall.

Recommendation: The Commitee recommends that the MGS administer a program to establish a network of monitoring wells for the purpose of assessing state-wide, long-term, ground water quality. Such a network would be most readily developed by expanding existing well networks, supplemented with selected private wells and Public Health Lab data. The Committee further recommends legislation establishing a registration and reporting requirement to make ground water resource data produced by well drilling activities available to the State. A legislative proposal is included in Appendix B.

Resources Required:

	FY86	FY87	Fund Source
Monitoring network	$ 20,000	$ 20,000	General Fund

RESOURCE PROTECTION

Issue #1: In many instances, awareness and understanding of ground water resources - their location, importance, and characteristics - at regional and local levels is inadequate. This often limits local capacity to plan for water supplies and to protect local resources.

At the local level, the Ground Water Protection Act of 1979 authorized, but did not require, municipalities to enact ordinances to protect ground water under their police power. The Legislature did, however, require municipalities to consider ground water resources when promulgating subdivision regulations and reviewing subdivision applications. Nevertheless, until 1980, not more than a dozen communities had relied upon their general police powers to adopt specific language in their regulatory programs to protect aquifers. All of these communities are located in southern Maine where development pressure has been the greatest. Public awareness of the resource has been high in this region and local governments have actively applied the regulatory review process.

Elsewhere, aquifers are primarily protected by a lack of development pressure and a reliance upon more general local controls and State regulations to control the impacts of development. The extent and effectiveness of local controls and enforcement activities is highly variable. Many municipalities do not have sufficient understanding of the importance and characteristics of their ground water resources to enable them to develop and enforce local land use controls and long-range water supply plans. Further, they often do not have the financial and technical resources to secure independent hydrogeological reviews of subdivision proposals and other development activities which may be detrimental.

Similarly, not all municipalities and water utilities have taken full advantage of their broad authority to protect water supply sources through watershed protection plans. To implement these plans, the Legislature has empowered municipalities to adopt regulations governing land use on land overlaying ground water aquifers used as sources of public water supply. Statutes also specifically empower local health officers "to take reasonable steps to protect a public water source from pollution."

The DHS does not require a public water supply to have a written watershed protection plan and has no formal mechanism for monitoring the utilities' activities in this regard. The DHS has found utilities sincerely interested in instituting protection measures in general, but limited in their implementation powers by low public support both for land use controls and land acquisition programs.

Objective: To improve local capacity to assess impacts of development proposals on local ground water resources, to ensure adequate protection for sources of water supply, and to promote long-term water supply planning.

Recommendation: The Committee recommends expanded provision of technical assistance to local levels by: (1) establishing a technical assistance program in the DEP, staffed by a geologist position, to provide direct assistance to local decision-makers in matters requiring interpretation of hydrogeologic data and impact assessment; the program should also include funds for technical assistance grants to municipalities for situations warranting special assistance; (2) authorization of a geologist position (or an engineer with hydrogeological credentials) in the DHS Drinking Water Program to assist water utilities in the development and review of plans for source protection and long-term supply, and to provide technical assistance to utilities to protect the quality of surface and ground water sources of supply.

To guide and facilitate the implementation of these actions, the Committee further recommends that: (1) the Standing Committee on Ground Water prepare guidelines for setting priorities for the interagency distribution of technical assistance, on the basis of predetermined criteria, including potential for and impacts of contamination, expected growth in demand, supply capacity and vulnerability, and, in the case of utilities, administrative and financial capacity; (2) the PUC exercise its existing authority to consider, as allowable for rate-making purposes, reasonable costs related to developing the aforementioned plans, delineating recharge areas, collecting hydrologic data, and purchasing land needed for protection of a water supply source.

Resources Required:

	FY86	FY87	Fund Source
Development impacts			
Sr. Geologist	$ 33,000	$ 33,000	US EPA
Tech. Asst. Pgm.	20,000	30,000	General Fund
Supply protection			
Geologist	$ 30,000	$ 30,000	General Fund
All Other	5,000	5,000	General Fund

Issue #2: Hundreds of storage piles for road salt and sand/salt mixture are slowly polluting ground water resources, with resultant contamination of water supplies and damage to vegetation.

There are more than 500 salt and sand/salt storage facilities in Maine, including facilities operated by State agencies, municipalities, and private contractors. While most of the pure salt is stored in enclosed storage sheds which, when of proper design and in good repair, protect the salt from caking and becoming unusable, nearly every storage site has a mixed sand/salt pile which is unprotected year-round. The salt in these piles leaches to surface and ground water and has been found to be a significant source of contamination at most sites investigated.

As of May 1984, 135 wells were known to have been contaminated in Maine due to the storage of road salt. One of these was the Sabattus municipal well, which was replaced at a cost of $123,000. Maine Department of Transportation (MDOT) records indicate that, during the period 1968 to 1984 inclusive, road salt storage facilities contaminated over fifty wells to levels exceeding the drinking water standard for chloride of 250 mg/l. Municipal storage facilities in New Gloucester and York also affected ten and eighteen wells respectively.

Current regulation of salt and sand/salt storage lots is indirect and incomplete. Statutory provisions prohibiting discharge of pollutants to ground water come into effect only after contamination has occurred. Regulation of new storage facilities only occurs when the proposed location is over a mapped significant sand and gravel aquifer. Interestingly, of the contamination incidents listed in the previous paragraph, few would have come under this regulation, as most were not over restricted aquifers. This suggests that other types of aquifers may be even more vulnerable to contamination.

Compensation for damages from salt and sand/salt storage activities is available through the Well Claims Division of the DOT, but only when DOT-operated facilities are responsible. The program operates at an annual cost to the State of thousands of dollars. Court decision has also established precedent for private suits against municipally-owned facilities, but liability under those circumstances has not been established in statute.

Objective: To develop a regulatory approach for salt and sand/salt storage facilities which will eliminate uncontrolled discharges to ground water.

Recommendations: The Committee recommends that the DEP, in collaboration with the DOT, submit legislation to the First Regular Session of the 112th Legislature outlining a five-year plan of action to correct known contamination problems associated with salt and sand/salt storage facilities, and to establish improved siting procedures to control future contamination problems.

Resources Required: Legislative action (proposed bill included in Appendix B)

Issue #3: In spite of existing authority and programs, contamination episodes still occur, selected contaminants and use practices remain unregulated or unaddressed, and new ground water policy issues arise which require additonal protection measures.

Provisions for the protection of ground water in Maine have developed along two lines: (1) blanket provisions which apply to ground water, wherever it occurs, and (2) regulation of specific activities and practices, wherever they occur, with such regulation designed to afford protection to all aspects of the environment, including ground water. An example of the former is the provision in the Protection and Improvement of Waters Act which prohibits unlicensed discharges to ground water; the latter is exemplified by the Hazardous Waste, Septage, and Solid Waste Management Act.

In most cases, State authority and regulation parallel that at the federal level. The State has recognized gaps in the coverage afforded by federal programs, however, and has in several cases unilaterally established the necessary authority. Examples include the Site Location of Development Law and the Hazardous Waste Fund.

Although the State's authority to protect ground water is relatively complete, significant gaps are known to exist, leaving the resource vulnerable. In some cases, this is due to a shortage of resources and subsequent inability to address lower program priorities; in other cases, it may be due to the piecemeal or incomplete development of some programs.

For example, we can reasonably expect from knowlege of past disposal practices that more contamination episodes are awaiting discovery. Locating sites of potential contamination, however, has not been a high program priority. Similarly, emphasis in regulation of hazardous waste disposal has been on large volume generators, rather than on small amounts, including household wastes. Accumulation of small amounts from many sources in a central location (e.g., a municipal landfill) may in effect result in a substantial amount of material being handled in an environment not designed to receive it.

Because of the diversity of programs and regulations related to ground water, some question remains as to the thoroughness of protection authority. This is particularly true in light of recent legislation which expanded that authority over previously unregulated, or inadequately regulated, activities. Additional changes are necessary, especially in the area of emergency response to contamination from less exotic, but equally destructive, substances and the activities which generate them.

Objective: To identify and eliminate remaining gaps in the regulation of activities which potentially contaminate ground water, in order to provide more comprehensive protection and management of ground water resources.

Recommendation: The Committee recommends a series of actions to accomplish this objective, to be carried out primarily by DEP, in conjunction with other State agencies. The Committee recommends that the Governor issue the following directives:

a) That the DEP, with the cooperation of the MGS, consolidate and strengthen its efforts to locate and identify potentially harmful buried wastes;

b) That the DEP complete its ongoing review of the extent to which statute and regulation address all activities which may have a significant potential for contaminating ground water, with necessary changes to be submitted to either the Legislature or the Board of Environmental Protection, as appropriate, by January 1st, 1986;

c) That the DEP Hazardous Waste Program study various approaches (e.g., transfer stations and statewide "clean-sweep" programs) for the collection and disposal of small amounts of hazardous waste, including household waste, with a report of findings and recommendations to the Land and Water Resources Council Standing Committee on Ground Water by January 1st, 1986;

d) That the DEP, in collaboration with the Department of Agriculture, Food and Rural Resources, and other interested organizations, develop policy recommendations concerning irrigation practices as they affect ground water resources and their availability and suitability for other uses, such recommendations to be submitted to the Board of Environmental Protection;

e) That the DEP, with assistance from DHS and SPO, (1) review all existing emergency response authority related to ground water protection, clean-up, and cost recovery; (2) consider the need for expansion of that authority to include cases of contamination from, among others, agricultural chemicals, landfill leachate, salt, manure, and septage; and (3) report findings and recommendations to the Standing Committee on Ground Water by January 1st, 1986;

f) That the DEP formally include water utilities in the review process of any application for waste disposal or contaminant material storage on a primary recharge zone.

Resources Required:

	FY86	FY87	Fund Source
Hazardous Waste Pgm.	$10,000	---	US EPA (pending)

STATE-WIDE COORDINATION

Issue #1: There is neither State interagency nor State-regional-local capacity for implementing policy, reviewing and coordinating programs, and providing a focus for comprehensive ground water management.

At the time of the Ground Water Protection Act (1979), the need for interagency communication and coordination was most acute in the areas of protection and research. The Act directed responsibility for coordinating State efforts in those areas to the DEP and the MGS, respectively. Responsibility for coodinating discussion around management issues was not assigned.

Subsequently, while communication and coordination of the various State ground water-related programs and activities have improved in recent years, no formal mechanism currently exists for periodically evaluating priorities and coordinating management activities within and among State agencies. For example, there is no assurance that public health and the quality of the ground water resource are adequately protected in the most cost-effective manner, and that long-term water supply issues are addressed.

Objective: To establish a mechanism to assure implementation of the State's ground water policy and the recommendations in this report, to recommend further policies as needed, and to assure coordination of programs and activities among all levels of government.

Recommendation: The Committee recommends that the Governor, through Executive Order, direct the Land & Water Resources Council to establish a Standing Committee on Ground Water, with representation on the Committee from local, regional, environmental and other interest groups, and that a Senior Planner position at the State Planning Office be created to serve as its staff. The Committee shall:

a) improve communication and coordination among the various State agencies with ground water-related responsibilities and programs;

b) annually review progress toward State ground water policy objectives and recommendations, and assess priorities established within and among State agencies to assure the cost-effective allocation of funding and staffing resources;

c) provide a focus for communication and education efforts with local governments, regional planning agencies, and the public on ground water issues, and a consistent State voice in federal decision-making procedures;

d) assure that long-range water supply planning needs are reflected in State and local ground water management activities; and

e) provide information to the Council on the Committee's activities and findings for inclusion in the Council's annual report.

Resources Required:

	FY86	FY87	Fund Source
Sr. Planner	$30,000	$30,000	US EPA
All Other	5,000	5,000	US EPA

Issue #2: There is no comprehensive and coordinated interagency ground water data management system, leaving some data inaccessible or unknown to potential users.

Currently, data characterizing Maine's ground water resources is generated by federal agencies, State agencies, the academic community, regional planning organizations, numerous industries and private consultants, and local entities. The data collected include water quality measurements, hydrogeologic characteristics of specific deposits or wells, delineation of geologic deposits, and characteristics of contamination sites. The purposes for collecting the information also vary greatly, including baseline resource inventories, development permits, applied research in agriculture and engineering, and land use planning.

Together, these activities contribute invaluable information concerning all aspects of the resource. However, because most data collection is conducted for a specific application, or in response to a particular crisis, as opposed to being pieces of an integrated data collection program, data from various sources are seldom compatible. For example, differences occur in quality control requirements, in geographic referencing, and in well drilling and sampling techniques.

Perhaps most critical in terms of overall data usefulness are differences in the data management systems used to store, process, and manipulate the information gathered. There are at least four different major computerized systems currently available or in operation in Maine, yet data are not managed extensively in any of them, including that generated from various DEP-administered programs. Each of these systems was designed to fulfill a specific mandate or operational need. While they may be marginally useful to users with differing needs, they are generally not compatible with an overall ground water management process. There is no centralized master file structure to facilitate data interchange and/or storage. Data do not have a consistent geographical reference, and retrieval formats are limited. Finally, there is no lead agency or organization responsible for file design and implementation, and for coordination of other data-generating agencies.

Objective: To improve coordination and technical linkages between ground water data management systems, in order to provide more complete access to, and interpretation of, data on the State's ground water resources.

Recommendation: The Committee recommends that the Standing Data Management Subcommittee of the Land and Water Resources Council evaluate current ground water data collection programs, information needs, and available technology, and report back to the Council's Standing Committee on Ground Water with recommendations for accomplishing the objective by October 1, 1985, with particular attention to the feasibility of developing, over the long-term, a geographic-based data management system.

Resources Required: Existing.

RISK ASSESSMENT

Issue: The potential public health effects of some contaminants found in drinking water have not been adequately assessed; federal efforts in this area have been slow and have focused on national priorities, omitting some potential contaminants important in Maine.

Environmental regulations are designed to ensure that ground water is generally available for use as drinking water supplies. The protection of health through the assurance that drinking water supplies are safe for consumption (ultimate use) is the responsibility of the Department of Human Services. This responsibility is discharged through the Drinking Water Program and the establishment of public health standards for water quality.

The process for establishing public health standards (i.e., acceptable levels of contamination which will not endanger the health of the general public) has become an increasingly difficult and complex matter. With the advent of microprocessing and greater sophistication in analytical technology, contaminants in water are now detectable at increasingly lower concentrations. This enhanced ability to detect contaminants, especially organic chemicals, coupled with a greater awareness and anxiety on the part of the general public concerning the occurrence of these contaminants, has increased emphasis on the need for standards which will reduce the risk of illness to negligible levels.

The setting of standards for drinking water quality is not a new phenomenon. Since 1962, the DHS has been promulgating regulations for drinking water quality standards in public water supplies. With the passage of the Safe Drinking Water Act in 1974, the Department's authority, capacity, and analytical capability to set standards was significantly expanded. Although standards often change as knowledge of their health effects is updated, many of the inorganic chemical standards have not changed in over 20 years. Currently Maine has set standards for bacteria, turbidity, 11 inorganic chemicals, six pesticides, and certain radiological contaminants (not including radon).

Objective: To assess the relative risks associated with various contaminants found in drinking water in order to ensure the protection of public health.

Recommendation: The Committee recommends that the Governor direct the DHS Environmental Health Unit (EHU) to investigate the feasibility of using short-term studies (e.g., the Ames/Salmonella test), in order to develop hazard indices for exposure to synergistic contaminants. The Committee further recommends that the EHU be directed to assess health risks associated with a prioritized list of contaminants, in order to develop exposure guidelines. The list shall give priority to contaminants which pose the greatest threat to the health of the people of Maine and are not being addressed at the federal level. A progress report shall be submitted to the Standing Committee on Ground Water by January 1st, 1986, with recommendations for further action.

Resources Required:

	FY86	FY87	Fund Source
Short-term studies	Existing Resources		
Exposure guidelines			
Technician	$ 25,000	$ 25,000	General Fund
All Other	5,000	5,000	General Fund

RESOURCE MANAGEMENT

Issue #1: Many local ground water resources which are vulnerable and critical are inadequately protected by either State or local land use controls; further, when conflicting land and water uses arise in association with those resources, there are no guidelines for making policy decisions at State, regional, or local levels.

Within the framework of existing ground water law and policy, special protection is afforded at the State level to two types of ground water resources: directly, to significant sand and gravel aquifers and, indirectly, to sources of public water supply. Experience has shown, however, that other types of aquifers may be even more vulnerable, with equivalent hardship to citizens dependent upon them if they are contaminated.

From a broader ecological perspective, ground water resources may be especially important to other components in the environment, such as plants and animals, through hydraulic connections to surface waters and wetlands. In such cases, contamination of ground water may indeed have far-reaching impacts. There is presently no special protection afforded under these circumstances, unless it is incidental to protecting one of the two types of resource noted previously, or as part of the protection of another resources, such as through Shoreland Zoning.

In spite of provisions and authority to encourage protection of public water supplies, many existing supplies remain under-protected. In contrast, future supplies often remain unidentified locally and receive only incidental protection through State-administered programs. Incidental protection is almost exclusively the case for private supplies.

For all supplies - public and private, existing and future - there are inadequate policy guidelines for resolving conflicts over use. As demand for the resource increases, especially in those portions of the State under heavy development pressure or with limited water supplies, conflicts between land and water uses will also increase and resource management issues will assume greater significance. Policy guidelines are needed to ensure a consistent and equitable decision-making process around such issues as:

* prioritizing uses for a specific aquifer, especially if the proposed uses conflict or the aquifer crosses municipal boundaries;
* cost considerations of ensuring adequate supply for all users;
* establishing acceptable (or unacceptable) health risks associated with particular uses;
* evaluating aquifer recovery costs versus accepting reduced use;
* resource ownership and right to use; and
* establishing levels of treatment versus degradation.

Objective: To protect sensitive and critical ground water resources from degradation, while establishing best and most equitable use practices for local ground water resources.

Recommendation: The Committee recommends that the Governor direct the Council's Standing Committee on Ground Water to develop a management goal-based ground water classification and land use control system, and to report to the Council by January 1, 1986 with recommendations for further action. The system should initially be designed and developed at a pilot scale, using existing hydrogeologic and land use information, and applied to specific areas of the State for which such data are available. Among the issues which the system should address are:

a) an evaluation of specific ground water resources in order to identify categories of aquifers requiring different levels or types of protection;

b) the identification of management approaches necessary to provide adequate protection (e.g., more stringent State waste discharge controls and mandatory local land use control ordinances);

c) the development of a comprehensive resource use policy which (1) considers competing demands for ground water assimilative capacity, (2) allows for non-drinking water uses, (3) provides guidelines for managing contaminated resources in a manner consistent with long-term management goals and water quality standards, (4) correlates local/regional growth policies with available water supplies, and (5) ensures allocation of supply consistent with competing demands, growth policies, and rights of ownership;

d) the need for additional data which may be required to implement the system; and

e) the identification of appropriate State and sub-state agencies to develop and implement various aspects of the system.

Resources Required: Existing or proposed elsewhere.

Issue #2: Maine law currently does not establish clear provisions for protecting the individual's right to an adequate water supply.

Ground water is currently relied upon as the sole source of water supply by about 96 percent of Maine's rural population, and provides about a one-fifth supplement to surface water for public supplies. There is no large-scale irrigation or intense use of ground water by industry, and population pressure with corresponding demand for water supplies is limited to the southern part of the State. As a result of this use pattern, and due to the fact that natural recharge from precipitation exceeds overall extraction, Maine has not yet experienced extensive resource depletion problems such as those already occurring in other parts of the country, including portions of the humid east.

In spite of this abundance, which seems often to be complacently assumed, supply and use conflicts have already occurred in Maine. As demand for the resource increases, in all probability conflicts will also increase. For example, a recent proposal by potato processing interests advocating the widespread use of irrigation raises the possibility of water use conflict in Aroostook County.

Conflicts experienced in Maine to date have been primarily of two types: (1) those associated with dewatering practices, which draw down the water table and cause wells to go dry, and (2) those associated with well interference, which often leads to salt water intrusion. Dewatering problems have occurred most often in southern Maine, where development has taken place around sand and gravel deposits. Pit operators, in order to make the most complete use of the resource, often extract materials from below the water table and need to dewater to facilitate the operation. Neighboring dug or jetted wells may then need to be deepened in order to maintain production. While many pit operators agree to deepen affected wells, they are under no legal obligation to do so.

Well interference is most often a problem on coastal promontories, where there is a limited supply of fresh ground water. Development of either domestic or high capacity wells may deplete the layer of fresh water, permitting upconing of underlying salt water, and resulting in deterioration of water quality in existing wells. A 1978 SPO survey found that one-fourth of Maine's coastal towns had existing salt water intrusion problems leading to well abandonment and a search for alternative supplies.

The Committee's review of the ground water supply and use conditions in Maine clearly identified the need for a policy to guide decisions related to use conflicts and a legal basis to resolve conflicts between individuals over rights related to supply. The policy issue has been addressed in the previous recommendation; the issue of legal basis remains.

In spite of the dependence upon ground water resources already noted, especially by Maine's rural population, current law does not adequately protect the individual's right to water supply. Current law governing ground water withdrawal has a common law basis, and does not explicitly hold landowners liable for detrimental impacts of withdrawal on the availibility of neighboring water supplies, either ground or surface. The exception is for situations of impact which involve DOT activities, which are covered by DOT statutes. Legal precedence also exists for suit against a municipally-owned facility or activity which has detrimental impact. There is no provision, however, for cases between individuals.

Objective: To establish a positive, rational legal basis for settling ground water use and withdrawal conflicts.

Recommendation: The Committee recommends that the Governor direct the DOC, in consultation with the DEP and the Office of the Attorney General, to prepare legislation which establishes liability for interference with an individual's right to ground water and which provides recourse through the courts when that right is abridged. The Committee recognizes that such a law creates potential risk for individuals who extract large volumes of ground water. Therefore, we further recommend that the Governor direct the Council, through the Standing Committee, to review current and foreseeable ground water use programs and practices in Maine, along with related information, and determine the necessity and feasibility of an allocation system. The Committee should report its findings to the Council, with recommendations for further action, by January 1, 1986.

Resources Required: Existing

APPENDIX A

Land and Water Resources Council
Ground Water Review Policy Committee
Budget Summary

Agency	Gen'l Fund Priority	Resources Required	FY86	FY87	Fund Source
SPO		Senior Planner	30,000	30,000	U.S. EPA
		All Other	5,000	5,000	U.S. EPA
		SUB TOTAL	35,000	35,000	
DOC-Me Geo Survey	# 1 ----	Geologist	30,000	30,000	General Fund
		Bedrock aquifers	110,000	110,000	U.S. Depts of Agri. & Def.
	# 2 ----	Agricultural impact	30,000	50,000	General Fund
		Monitoring network	20,000	20,000	General Fund
		SUB TOTAL	190,000	210,000	
DEP		Geologist	33,000	33,000	U.S. EPA
	# 4 ----	Technical Assistance	20,000	30,000	General Fund
		Hazardous Wastes	10,000	-	U.S. EPA
		SUB TOTAL	63,000	63,000	
DHS-Drink Water		Geologist	30,000	30,000	General Fund
		All Other	5,000	5,000	General Fund
	# 3 ----	SUB TOTAL	35,000	35,000	
DHS-Envir Health		Technician	25,000	25,000	General Fund
		All Other	5,000	5,000	General Fund
		SUB TOTAL	30,000	30,000	
		TOTAL	188,000	178,000	Federal
		(by fund source)	165,000	195,000	General Fund
		GRAND TOTALS	353,000	373,000	

APPENDIX B

LEGISLATIVE PROPOSALS

AN ACT to Implement the Recommendations of the Land and Water Resources Council Ground Water Review Policy Committee

The Water Well Information Act

DEP-1
Date: January 7, 1985

AN ACT to Implement the Recommendations of the Land and Water Resources Council Ground Water Review Policy Committee

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 22 MRSA §2642, sub-§1, first paragraph, as amended by PL1979, c. 472, is amended to read:

1. Municipal regulations authorized. The municipal officers of each municipality shall have the authority, after notice and public hearing, to 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.

Sec. 2. 38 MRSA §361-A, sub-§2, is amended to read:

2. Fresh surface waters. "Fresh surface waters" means all waters of the State other than ground water and tidal waters.

Sec. 3. 38 MRSA §361-A, sub-§4-A-2, is enacted to read:

4-A-2. Road salt and sand/salt storage area. "Road salt and sand/salt storage area" means a facility that is used for the storage and handling of highway deicing materials.

Sec. 4. 38 MRSA §413, sub-§2-D, is enacted to read:

2-D. Exemptions; road salt or sand/salt storage piles. The Board of Environmental Protection may exempt any road salt or sand/salt storage area from the need to obtain a license under this section when it finds that the exempted activity would not have a significant adverse effect on the quality or classifications of the waters of the State. In making its finding, the Board's review shall include, but not be limited to, the location, structure, and operation of the storage area.

For any road salt or sand/salt storage area, final plans for compliance with the provisions of this subsection must be reviewed and approved by the Department of Environmental Protection prior to any construction or operation. For storage areas in existence prior to the effective date of this act, plans must be submitted by January 1st, 1987 and implemented as soon as possible after approval, but in no case later than January 1st, 1991. Any storage area not operating in accordance with its approved plan shall be deemed to be in violation of this section.

Sec. 5. 38 MRSA §482, sub-§2-C, as amended by PL1983, c.500, is amended to read:

C. Oil, as defined in section 542~~; or~~.

~~D. Quantities of road salt in excess of one ton per year.~~

Jan. 11, 1985

Legislative Document

Water Well Information Act

Be it enacted by the people of the State of Maine:
32 MRSA Chapter 97 is enacted as follows:

Chapter 97
Water Well Drillers

§9701. Legislative Intent

The Legislature finds that since more than 90% of Maine's rural population depends on ground water for drinking water, and since more than 10,000 new wells are constructed annually in the state, a record of the geologic materials encountered during drilling would be of benefit to the Maine Geological Survey DOC(MGS) in its mission of identification and mapping of water and mineral resources.

§9702. Definitions

1. Well. "Well" means any hole drilled by any method for the purpose of extracting water from below the ground.

2. Well Drilling Contractor. "Well Drilling Contractor" means any person, company, firm, partnership or corporation engaged in the business of drilled water well construction.

§9703. Exclusions

1. Wells other than for water supply. Well drilling contractors engaged solely in the drilling of wells used exclusively for the relief of artesian pressure at hydroelectric projects, or used temporarily for dewatering purposes during construction, or for use associated with the drilling of oil, gas or brine wells, are exempt from the registration provisions of Section 9704, Subsection 1 and 2.

2. Private wells. Nothing in this chapter shall prevent a person from constructing, enlarging, deepening or otherwise altering a well on property which such a person owns or leases.

STATEMENT OF FACT

This bill proposes changes in several regulations which address ground water protection. The changes are the recommendations of the Land and Water Resources Council Ground Water Review Policy Committee.

Section 1 of this bill extends authority to protect public water supplies by including ground water aquifer recharge areas under the jurisdiction of municipal land use regulatory powers.

Section 2 corrects confusion which arises from existing definitions.

Sections 3, 4, and 5 propose a regulatory approach to the wide-spread ground water contamination problems associated with road salt and sand/salt storage piles. The approach is a cooperative effort of the DEP and DOT. Section 3 defines the activity, Section 4 presents the regulatory provisions, and Section 5 removes road salt from the jurisdiction of the Site Location of Development Law in order to avoid conflicting regulatory requirements.