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MINNESOTA  
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# ISSUES

GROUND WATER MANAGEMENT STRATEGY

ISSUE TEAM REPORT

February 27, 1985

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## GROUND WATER MANAGEMENT STRATEGY TEAM

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Energy/Environment/Resources Subcabinet

The purpose of this report is to outline a comprehensive ground water management strategy for the State of Minnesota which incorporates existing plans and strategies from ground water programs. As a part of this process, the team also looked at program development in anticipation of emerging issues in ground water quality and quantity.

### EXECUTIVE SUMMARY

1. Both the quantity and quality of ground water must be considered in order to effectively manage this resource. Accurate baseline information describing both quality and quantity is lacking in many areas of Minnesota and will hinder the development of any ground water strategy until this situation is corrected.
2. The present law and policy setting, although assigned to several agencies, is a workable scheme that requires no all-encompassing singular policy or law, nor a superagency to consolidate the various ground water management functions of these departments. Management of ground water is closely tied to the management of other natural resources, such as peat, minerals, and surface waters, as well as management of environmental impacts such as water supply needs, waste management needs, and related land use, and, therefore, requires a comprehensive management approach to protect water quality and promote wise use and development of water quantity.
3. The comprehensive characteristics of ground water resources availability, distribution, use and the impacts of human development on the health, welfare, and utility of this vital resource requires a great deal of interdisciplinary involvement to draw on the considerable in-house expertise available in the state agencies.

There is a need for a well coordinated effort to increase ground water management effectiveness and to insure unified cooperative efforts by the agencies having major responsibilities involving ground water. This can be best accomplished through the following actions:

a. A true policy level coordinating body with membership of top line (decision-making) managers should be established as a forum to address ground water issues and to seek resolution of ground water problems and issues. To be effective, this policy body should be provided the authority to:

(1) Establish policies governing ground water quality and quantity issues consistent with state laws and rules.

(2) Establish priorities for addressing ground water quality and quantity issues, programs, and projects utilizing state appropriated funds.

(3) Review individual agency programs and projects to insure consistency with coordinated policies, programs, and priorities.

In order to function properly, involved agencies would need to also develop interagency operational agreements relating to sharing of staff and funds, development of coordinated work plans, and establishment of common goals and objectives.

b. Improved coordination among the agencies and continued cooperation must occur at a technical and operational level as well as at a policy level. A mid-management technical group should be identified to meet frequently to review, discuss, and exchange information and ideas on relationships, problems, concerns, and opportunities relating to operational aspects of agency ground water quality and quantity programs. It would be highly desirable for the same staff persons to participate consistently in these meetings. The first tasks assigned to this group would be to address the topics enumerated in this report as emerging issues and to generate an annual list of issues for resolution.

c. Agencies involved in ground water management should avail themselves of the best possible technical expertise available. This expertise could be provided through establishment of an interagency technical expert team to provide advice to an individual agency confronted with major technical issues affecting several agencies.

Another alternative would be the establishment of a Technical Expert Advisory Committee to provide expert advice from experts outside of state service.

d. Because of the importance of ground water management to the people of the state and the need to keep the Governor and top level executive staff informed of ground water issues and initiatives, the Ground Water Management Strategy team strongly endorses the practice of holding an annual briefing on ground water for the Governor and executive staff.

4. Ground water is an invaluable state resource and therefore its overall management should be at the state rather than the local level. The implementation of this ground water management strategy would be enhanced by the promotion of a strong county and state partnership. State agencies should work with local units of government in the exchange of ground water information, in the development of compatible data management systems, and in providing technical assistance. The team has a concern that, at their present level, the state resources available for technical assistance may not be adequate.

5. Ground water supply and quality continue to generate much public interest. With each new contamination site, new well drilled, or water sampling test, new interest is generated in the subject and the need for educational materials increases. Realizing that the "public" is made up of many specific groups, a statewide ground water education effort must be well-focused and comprehensive to meet the demand for basic ground water information.

6. The state's ground water programs need a substantial base of funding for data collection and analysis activities. Difficulty has been encountered in shifting some programs started under LCMR funding to the agencies' line budgets. Additionally, many basic data collection programs were cut during budget crisis years and funding levels have not been restored. Efforts to seek legislative approval for increased staffing and funding to agencies involved in ground water quality and quantity management should be based on recommendations from the policy level coordinating body and middle management technical group.

Examples of specific programs needing improved or consistent funding include:

- a. well log data base
- b. county-scale geologic and hydrologic studies
- c. ambient ground water quality network
- d. aquifer delineation and characterization studies
- e. public water supply data.

7. In order to insure uniformity in the analysis and development of a coordinated computerized ground water data system, the following measures should be implemented:

a. An increased level of funding to the Land Management Information Center (LMIC) for development of a more adequate standardized, comprehensive data base.

b. Agencies formally adopt the minimal standards for identifying and locating water well information as specified by the Systems for Water Information Management (SWIM) User's Committee. No state funding should be awarded to agency requests involving ground water data acquisition if these minimal standards cannot be met. The SWIM User's Committee should formally review all such funding requests and should be informed of work program results.

c. A lead agency should be designated to develop a comprehensive ground water quality data base for SWIM. Priorities need to be assigned to the types and amounts of data that should be collected for this program. Also, data that are necessary for this effort, but which are not currently being collected, should be identified.

d. Agencies adopt compatible computer hardware whenever possible and inform the SWIM User's Committee of significant changes in the structure of existing ground water data bases and in plans to establish new ones whenever possible.

8. The development of new technologies and methodologies for investigating, analyzing, and processing information on ground water resources is increasing at a dynamic rate. Training of state technical staff through ground water related short courses or seminars taught by practicing professionals is essential. By not staying current, the state will become a deterrent to the application of new technologies and the effective management of the resource.

9. There are a number of actions which should be given immediate consideration with respect to formal interagency agreements, as follow:

a. DNR and MGS should consider formal agreements or memoranda of understanding in the following areas:

- \* test drilling related to the development of a network of observation wells;
- \* acquisition of water well data;
- \* geophysical investigation of aquifers;
- \* county geologic studies.

b. PCA and MGS should consider formal agreements in the following areas:

- \* exchange of geologic and hydrologic data;
- \* exchange of ground water quality data not entered into STORET.

c. MDH and DNR should develop a joint strategy for assisting municipalities in the exploration and development of municipal water supplies. This effort should include a two-phase process involving criteria and standards for exploring for sources of ground water supply as a prerequisite to an application for an appropriation permit.

Consideration could be given to development of appropriate legislation to govern "a permit for exploration for municipal supplies" if the agencies cannot develop a workable program administratively.

d. DNR, PCA, and MDH staff should cooperatively develop standards and/or criteria governing the development and use of alternative water supplies for communities with contaminated ground water supplies. This should address ground water quantity and quality issues and provide for an integrated mutually agreeable process for addressing and solving contamination and new supply problems.

e. MDH, DOA, and DNR all have water quality laboratory facilities which are utilized for specific analytical purposes related to each agency's programs. To the extent practical, feasible, and applicable to ground water analyses, the agencies' laboratory facilities should be operated to provide a uniform system for analysis of water quality data. Where more than one laboratory can perform a given analysis, some mechanism should be established to allow assignment of priority samples to the laboratory whose current workload would permit the fastest analytical turnaround. State certification of laboratories for more than just bacteriological analysis should be studied with the understanding that although state certification could be partially financed by fees, state funds would be both necessary and appropriate in that the state would be assured of receiving reliable, high-quality data from the private sector. A mechanism to facilitate transfer of funds between agencies needs to be established to allow payment for services received from a sister agency.

GROUND WATER TEAM

Linda Bruemmer	State Planning Agency
Patricia Bloomgren	Department of Natural Resources
John Holck	Pollution Control Agency
Paul Burns, Bill Bulger	Department of Agriculture
Memos Katsoulis, Bruce Hanson	Waste Management Board
Bruce Olsen	Minnesota Geological Survey
Gary Englund	Minnesota Department of Health

## Background

Ground water is an invaluable state resource which is increasingly threatened by a variety of contamination sources and competing uses. Presently, there is no comprehensive, singular statewide ground water management law or policy. The laws and their administration are primarily assigned to the Department of Natural Resources (DNR), the Pollution Control Agency (PCA), and the Department of Health (MDH).

The ground water programs have been coordinated on an informal basis through the Water Planning Board (WPB) ground water task group (1979-82) and the PCA's ground water protection strategy work group (1982-83). In June 1983, the PCA published the "Ground Water Protection Strategy Framework for Minnesota," as the lead agency in the development of water quality management programs under Section 208 of the Clean Water Act (PL 92-500). Following completion of that task, the ground water task group served as an advisory committee to review outlines and drafts of the PCA/WPB report, Ground Water in Minnesota, A User's Guide to Understanding Minnesota's Ground Water Resource. In July 1983, the WPB staff and water planning responsibilities were transferred to the State Planning Agency (SPA).

On the state level, ground water project proposals have been coordinated through WPB/SPA staff in 1982 and 1984 for the Legislative Commission on Minnesota Resources (LCMR). At the Commissions' Issues Seminar in April 1982, 16 of the 43 organizations which submitted issues for consideration included ground water resource management. The Commission has supported new projects and accelerated work aimed at minimizing ground water supply and contamination problems, improving methods to aid site investigation, and insuring evaluation of monitoring data. While the LCMR has funded important steps in developing essential ground water information for use in management programs, controlling the development of the state's ground water supplies and threats to the quality and quantity requires a dynamic, ongoing effort.

On October 24, 1984, the Energy/Environment/Resources subcabinet, chaired by Ray Bohn, approved the charge to the ground water management strategy team, "to outline a comprehensive ground water management strategy for the State of Minnesota which incorporates existing framework plans and management strategies which are currently being used by various state agencies' ground water programs. The team would also set up a long-range implementation schedule for program development in anticipation of emerging issues in the realm of ground water quality and quantity."

To accomplish this charge, the ground water team reviewed existing strategies, plans being developed by the agencies, and legislative initiatives to be taken during the 1985 session. The details of the review of these plans are attached as an appendix to this report. The list of representatives serving on the ground water team precedes this section. Team members also exchanged organizational charts and tracked staff contacts within ground water programs to determine if a focus for information exchanged could be identified. Also, in the midst of the bi-weekly team meetings, staff assembled information for a briefing on water issues for the Governor.

## Findings

The findings of the team generally fall into two categories, the long-range management strategy elements and the shorter term emerging issues. The management strategy elements are the common ground which is embraced within the different programs, regardless of location within agencies. The management strategy is based on overall, statewide policy and the statutory charges which are carried out through the state's ground water quality and quantity programs.

It is impossible to effectively manage our ground water resources without recognizing that its quantity and quality are inter-related. The primary policy goal which directs Minnesota's ground water programs is one of nondegradation of the resource for both quality and quantity. Management options in the past have been hindered because: 1) quality and quantity issues have not been recognized as being inter-related; 2) an effective mechanism has not been implemented to coordinate quality and quantity concerns as they pertain to specific issues or problems; 3) the lack of a comprehensive ground water strategy has resulted in a fragmentary and reactive approach to addressing specific issues or problems; and 4) integrating quantity and quality management of the resource has usually not incorporated the interaction between ground water and surface water.

The state's ability to protect its ground water resource is based on the core or baseline knowledge of the geologic system. Early data collection efforts concentrated on mapping the rocks and sediments that are present on the surface. Much work needs to be done on the subsurface geology of the State. Geologic mapping defines the "container" that holds our ground water. Without generalized knowledge of the dimensions and characteristics of the container, efforts to quantify ground water availability and quality are meaningless. The fundamental need in any ground water management program is, therefore, basic data and skillful analysis of that data.

Conflicts in programs do arise because of the different charges to the different agencies. The PCA has as its primary concern the charge to resolve pollution problems, balanced by the MDH's charge to protect public health, and the DNR's regard for promotion of the wise use of the resource. It is at this level of policy implementation that conflicts which need resolution among the agencies can occur.

Water quantity/quality questions which must be resolved are how much additional appropriation of specific aquifers in the state can be tolerated and what impact are new uses of ground water going to have on the resource. Again, it is possible to arrive at a reasonable short-term answer to these questions, but the preferred route is to resolve these management questions within an authoritative policy forum that will be effective on a long-term basis.

The implementation of this ground water management strategy would be enhanced by the promotion of the county and state partnership. Local units of government are in a position to contribute significantly to management of the ground water resource through their surveillance activities and land use management authorities and practices.

The short-term issues require a method for dealing with them through an interdisciplinary approach. Team members listed topics which they felt need resolution in the near future. These issues include: achieving a basic understanding of the occurrence and availability of Minnesota's ground water resources; agricultural practices and water quality and quantity relationships; private well sampling; well abandonment; agency data management and accessibility of data; ground water education and technical training programs; quantity and quality impacts of ground water clean-up activities; etc.

The general assessment of the ground water programs is that the statutory programs are adequate and that staff members are doing the best they can with existing funding but the activities are being directed more at taking care of crises than working toward responsible resource management. It is difficult to continue a statewide assessment of the resource when the majority of data now comes from contamination sites and, by comparison, little effort is being expended to develop baseline information elsewhere.

### Recommendations

1. Both the quantity and quality of ground water must be considered in order to effectively manage this resource. Accurate baseline information describing both quality and quantity is lacking in many areas of Minnesota and will hinder the development of any ground water strategy until this situation is corrected.
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## Fiscal Impacts

Within the time frame that the ground water team met, specific budget implications of the recommended programs were not outlined. Obviously, full implementation of the recommendations would have an impact on both agency budgets and staff work loads. A number of new ground water projects were presented and are included in the budget of the Legislative Commission on Minnesota Resources. The team recommends support of the LCMR-recommended ground water projects, but feels that budget implications are much more far reaching than that specific package of proposals.

## APPENDIX A.

### I. Examination of Existing Plans

#### A. Agriculture

1. A 3-year plan has been developed for the Department. The goals include:

- a. expansion of the laboratory capabilities; and
- b. development of a comprehensive environmental program.

2. A 2-year start-up program of ground water monitoring for pesticides has been endorsed by the Commissioner and recommended for funding by the Legislative Commission on Minnesota Resources.

3. Laboratory facility expansion to accommodate water samples is being coordinated with the State Health Department.

4. USGS cooperation has been enlisted for the ground water sampling protocol.

#### B. Health

1. The Environmental Health Division's work in ground water programs is largely dictated by regulations which are in place, i.e., the Safe Drinking Water Act and Water Well Construction Code.

2. An effort is being made to build local water well programs.

3. MDH is broadening its public water supply surveillance in the area of contaminants such as volatile organic compounds (VOC's) and pesticides.

4. Coordination with the PCA is on both a formal and an informal basis with mutual agreement regarding work responsibilities. Formal agreements exist for laboratory services, on-site sewage, and health risk assessment.

5. Coordination with the DNR on water appropriation permits and water supply system plan approval requires realignment if we are truly managing the resource. Water wells are constructed before an appropriation permit is granted.

C. Pollution Control Agency

1. The Agency, with input from a formally created Work Group, developed the "Ground Water Protection Strategy Framework for Minnesota" (June, 1983). The Strategy evaluates ground water quality program needs largely at the PCA and is the most comprehensive strategy or work plan of any of the agencies.

2. Staff from PCA and MDH concurred that there are advantages to having their programs separate; there is more credibility in health risk and water analysis results coming from a health agency rather than from within PCA.

D. Waste Management Board

1. Ground water activities are chiefly part of the hazardous waste disposal siting program. The WMB has a sunset so it does not have long-range work plans.

2. WMB relies heavily on cooperating agencies such as MGS, DNR, PCA, and USGS, often by contract.

E. Natural Resources

1. An internal long-range work plan with 2, 5, and 10-year options has been developed by the Division of Waters staff. Efforts are being made to fund implementation. In many cases, the work elements merely represent restoration of funding levels to 1977 levels.

2. Basic data collection has suffered as a program in contrast to development of more visible site investigation of contamination.

F. Minnesota Geological Survey

1. Although MGS does not have a formal plan, there is a strategy for improved information delivery to the agencies and local units of government.

2. Other agencies rely heavily on MGS for critical background geologic information. MGS is very credible as a research-type group and has the confidence of the industry.

3. A plan to do county geologic atlases where possible has been outlined for the Legislature. A part of this effort would be to set up data programs for use at the local (county) level as well as training local staff in using this information.

G. U. S. Geological Survey

1. USGS works on the federal fiscal calendar. Biennial work plans from the state and USGS cooperative match program planning are often not synchronized.

2. USGS is relied on for hydrogeologic work but state agencies have had problems with USGS not meeting contract deadlines and meeting necessary short turn-around time for information.

3. USGS does assist the state by making their monitoring wells available for sampling, but, in the bigger picture, has changed their direction from small projects to very large comprehensive ones. This may be a conflict between national and regional policy