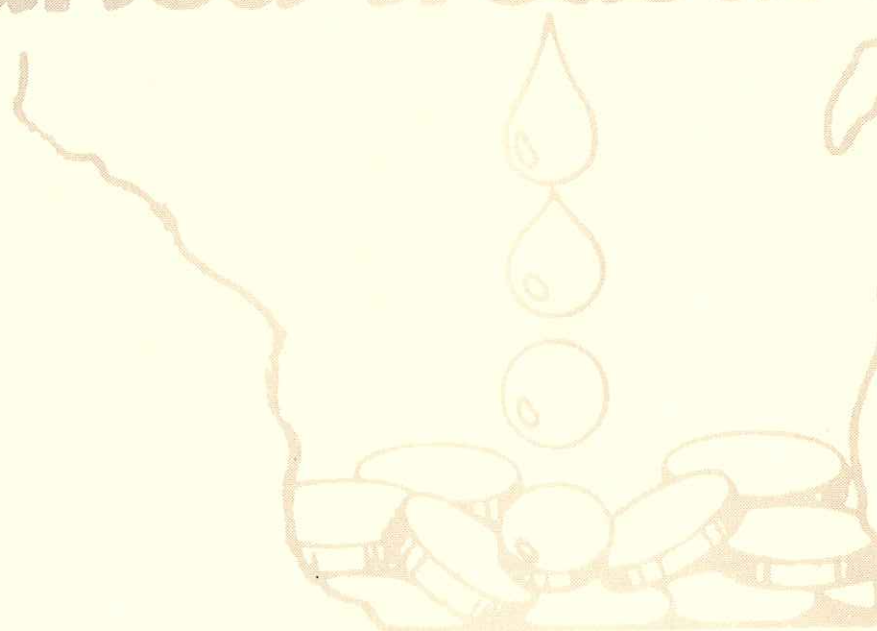

WISCONSIN GROUNDWATER COORDINATING COUNCIL



Wisconsin's buried treasure



REPORT TO THE LEGISLATURE

AUGUST 1988

GROUNDWATER COORDINATING COUNCIL MEMBERS

Department of Natural Resources - Lyman Wible (Chair)
Department of Health and Social Services - William Schmidt
Department of Agriculture, Trade and Consumer Protection - Orlo R. Ehart
Department of Transportation - Theodore Stephenson
University of Wisconsin - Dallas Peterson
Department of Industry, Labor and Human Relations - William Norem
Geological and Natural History Survey (State Geologist) - Meredith Ostrom
Governor's Representative - John Metcalf

Subcommittee Appointees

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Geological and Natural History Survey (State Geologist) -
Ron Hennings (Chair)
Department of Natural Resources - Michael Schmoller and David Lindorff
University of Wisconsin - Dennis Keeney and William Fetter
Department of Agriculture, Trade and Consumer Protection - Frank Jones and
Jeff Postle
Department of Health and Social Services - Sam Sinha and David Belluck
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Geological and Natural History Survey (State Geologist) - Ron Hennings
Department of Agriculture, Trade and Consumer Protection - Frank Jones and
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Department of Industry, Labor and Human Relations - Jim Wilson
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University of Wisconsin - Steve Born
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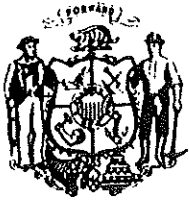
Education

University of Wisconsin - Gary Jackson (Chair); Al Beaver
Department of Natural Resources - Rudy Teschan
Geological and Natural History Survey (State Geologist) - Ron Hennings
Governor's Office - John Metcalf
Department of Public Instruction - Dave Engleson
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Approved by the Groundwater Coordinating Council

BY: 
Lyman F. Wible, Chair


Date



State of Wisconsin

DEPARTMENT OF NATURAL RESOURCES

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IN REPLY REFER TO: 3230

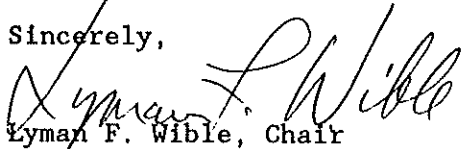
The Honorable Governor Tommy G. Thompson
Senate Urban Affairs, Energy, Environmental Resources and Elections Committee
Senate Transportation, Tourism and Conservation Committee
Assembly Environmental Resources and Utilities Committee
Assembly Natural Resources Committee
Secretary Ronald R. Fiedler - Department of Transportation
Secretary John T. Coughlin - Department of Industry, Labor and Human Relations
Secretary Howard C. Richards - Department of Agriculture, Trade and Consumer Protection
Acting Secretary Patricia Goodrich - Department of Health and Social Services
Secretary Carroll D. Besadny - Department of Natural Resources
President Kenneth A. Shaw - University of Wisconsin
State Geologist Meredith Ostrom - Wisconsin Geologic and Natural History Survey

Enclosed is the 1988 Groundwater Coordinating Council Report to the Legislature as required by state law. The Council was formed to help state agencies coordinate their groundwater related activities, and serves as a groundwater information - exchange forum.

Much of the focus of the Groundwater Coordinating Council's recent activities has been on the development of a groundwater research program at the University of Wisconsin (UW) to meet the needs of state agencies. After much discussion and effort, the UW established a Groundwater Research Advisory Council (GRAC) in early 1988 to assist in an examination of groundwater research needs and priorities. The GRAC includes representatives from the UW system, appropriate state agencies and the private sector and is designed to advise the UW in the development of a groundwater research Decision Item Narrative (DIN) and a long-range research plan. The Groundwater Coordinating Council has endorsed the DIN and is of the opinion that additional resources must be devoted to this area to provide the information needed by state agencies to protect our valuable groundwater resources.

Additional copies of this report are available from the Department of Natural Resources, Bureau of Water Resources Management, Second Floor, State Natural Resources Building (State Mail) or P.O. Box 7921, Madison, Wisconsin 53707 (U.S Mail). We hope you, your staff, and the public will find the Report useful in protecting groundwater: Wisconsin's Buried Treasure.

Sincerely,


Lyman F. Wible, Chair
Groundwater Coordinating Council

**WISCONSIN GROUNDWATER
COORDINATING COUNCIL
REPORT TO THE
LEGISLATURE**

AUGUST 1988

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EXECUTIVE SUMMARY

This is the Report to the Legislature by the Groundwater Coordinating Council as required by s. 15.347, Wis. Stats. The report describes the condition of the groundwater resource and its management and summarizes the Council's activity from January, 1987 through August, 1988.

In 1984, the Legislature enacted Wisconsin Act 410 with the intention of improving the management of the state's groundwater. The Council is directed by ch. 160.50, Wis. Stats., to "serve as a means of increasing the efficiency and facilitating the effective functioning of state agencies in activities related to groundwater management. The Groundwater Coordinating Council shall advise and assist state agencies in the coordination of nonregulatory programs and the exchange of information related to groundwater, including, but not limited to, agency budgets for groundwater programs, groundwater monitoring, data management, public information and education, laboratory analysis and facilities, research activities and the appropriation and allocation of state funds for research."

Membership of the Groundwater Coordinating Council includes the Secretaries of the Departments of Natural Resources; Industry, Labor and Human Relations; Agriculture, Trade and Consumer Protection; Health and Social Services; Transportation; the President of the University of Wisconsin System; the State Geologist; and a representative of the Governor. Members are listed on the inside of the cover page.

Since its last report, the Groundwater Coordinating Council has taken the following major actions:

1. The Council worked with the University of Wisconsin (UW) System to evaluate budgetary needs and to establish priorities for groundwater research. The UW appointed a Groundwater Research Advisory Council (GRAC) to assist in this effort. The GRAC prepared a Groundwater Research Decision Item Narrative (DIN) which was endorsed by the Coordinating Council for consideration for the biennial budget.
2. The Council endorsed a series of meetings held early in 1988 between the Council, state agencies and local officials to promote better communication between the various levels of government on groundwater issues.
3. The Council sponsored the 1987 Midwest Groundwater Conference in Madison. The conference, held October 28-30, 1987, drew 250 groundwater professionals from the Midwest to discuss common issues and problems.

SUMMARY OF AGENCY ACTIVITIES

The following summary describes the groundwater management efforts undertaken by the member agencies of the Groundwater Coordinating Council. As these summaries show, Wisconsin continues to have a strong commitment to resource protection.

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Through its solid waste and wastewater management program the Department continuously protects the quality of the groundwater resource. Solid waste and wastewater used the groundwater standards and other requirements of NR 140, Wis. Adm. Code, including setting PALs for indicator parameters. In addition to these day to day functions the Department also carries out standard setting and monitoring responsibilities.

In February, 1987, the Department held public hearings on proposed amendments to add standards for 14 substances to NR 140. The majority of the proposed standards were noncontroversial. However, the proposed standards for the pesticides, particularly alachlor and atrazine, generated extensive comment. DNR proposed changes to some of the pesticide standards based on new information from the EPA and on recommendations from DHSS. DNR received final approval of the standards from the Natural Resources Board at its June, 1988 meeting.

The Department continued its groundwater monitoring program which includes problem assessment monitoring, at-risk well monitoring, management practice monitoring and regulatory monitoring. During fiscal year 1989, approximately \$360,000 was awarded to 21 projects for the management practice monitoring program.

In conjunction with the Wisconsin Geological and Natural History Survey, the Department published the Groundwater Susceptibility Map and a companion report, Report No. 5 of the Wisconsin's Groundwater Management Plan.

The Department also coordinated the activities of other Council and Federal agencies in hosting the 1987 Midwest Groundwater Conference held in Madison October 28-30, 1987. Approximately 250 students and groundwater professionals attended the conference.

UNIVERSITY OF WISCONSIN SYSTEM

At the request of the Council, the UW established a Groundwater Research Advisory Council (GRAC) of university and state agency representatives to coordinate the development of groundwater research priorities. The UW also identified the Water Resources Center as the central coordinating body for UW groundwater research activities. The Water Resources Center, in conjunction with GRAC, prepared a Groundwater Research Decision Item Narrative (DIN) for possible inclusion in its biennial budget request. The DIN contains a long-range groundwater research plan for Wisconsin. The Council endorsed the DIN at its August 26, 1988 meeting.

UW-Extension staff published the report, Agricultural Management Practices to Minimize Groundwater Contamination. This report contains a comprehensive summary of the practices currently available to reduce agricultural chemical loadings to groundwater.

The University of Wisconsin-Extension Service Agricultural Management/Water Quality Task Force developed a report entitled "A New Water Quality Education Strategy for UW-Extension." The report summarizes existing research and Extension activities related to water quality education and proposes a new strategy to coordinate research and education activities to address water quality related needs. The strategy identifies resources needed at county, area, and state levels to carry out an effective education program which will facilitate improved management of agri-chemicals so that groundwater pollution from their use will be avoided.

The UW coordinated a series of public meetings in early 1988 to improve communication between state and local officials. A total of six local meetings were held at which UW and state agency representatives described their groundwater responsibilities and solicited feedback from local officials.

WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY

The Wisconsin Geological and Natural History Survey continued to provide basic information, technical assistance, and applied research to aid in the implementation of Wisconsin's groundwater management plan.

Groundwater monitoring projects in cooperation with the DNR included:

- the use of ground-penetrating radar to locate the water table and to map shallow aquifers;
- a detailed water-quality study of a small basin in Door County;
- an examination of the occurrence and movement of groundwater in fractured rock in central Wisconsin;
- mapping of the Wausau aquifer in Marathon County;
- a study of the effects of drainage ditches on groundwater flow in Portage County; and
- the correlation of hydrogeologic parameters with surficial materials in parts of central and southeast Wisconsin.

A research study of pesticides conducted in cooperation with the Department of Agriculture, Trade and Consumer Protection required the installation of 45 monitoring wells by Survey personnel.

The survey cooperated with DILHR in its efforts to include measured groundwater levels and historical water-table measurements when evaluating the permitting process for private sewage systems.

Groundwater-related publications include the following:

- Groundwater Quality Investigation of Dunn and Chippewa Counties, Wisconsin (seven maps for each county, scale 1:100,000)
- Hydrogeology and Groundwater Use and Quality, Brown County, Wisconsin
- Groundwater Quality of Barron County (report and brochure)
- Soils and Their Ability to Attenuate Contaminants for Adams, Barron, Chippewa, Dunn, Portage, and Wood Counties (six maps, scale 1:100,000)
- Groundwater Levels in Wisconsin: Annual Summary
- Pleistocene Geology of Florence, Langlade, and Portage Counties (three reports; each with color maps, scale 1:100,000)

The Geological and Natural History Survey's groundwater program is complemented by geology and soils programs that provide basic information and maps essential to understanding the character, distribution, and movement of groundwater. Survey personnel are presently conducting detailed studies and maps (scale 1:100,000) in Clark, Juneau, Marathon, Ozaukee, Pierce, St. Croix, Taylor, Washington, and Wood Counties; research topics include water resources, soil attenuation, bedrock geology, and glacial geology. Reports and maps of the glacial geology of Adams, Barron, and Forest Counties were published.

WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE, AND CONSUMER PROTECTION

DATCP continued and expanded the groundwater monitoring project for pesticides. Monitoring wells have now been installed at approximately forty sites to determine the effects of field applications of certain pesticides on groundwater. Seven pesticides have been identified in groundwater as a result of normal agricultural use. All samples are now being analyzed for nitrate, alkalinity, pH, and conductance in addition to pesticides. Recently the study has been expanded to include areas of intermediate susceptibility to groundwater contamination.

The DATCP committee studying the regulation of pesticides and nitrates met five times in 1987 and submitted its recommendations to the Secretary of Agriculture by December 31, 1987. The committee, composed of representatives from state agencies, environmental groups, the university, the farm community and industry, developed recommendations on approaches for regulating agricultural chemicals in groundwater.

DATCP was involved in regulatory activity concerning aldicarb during 1987 and 1988. Groundwater monitoring had shown that the existing aldicarb rule was not adequately minimizing the occurrence of aldicarb residues in groundwater, so the department developed an emergency rule for the 1987 planting and growing season that would comply with the groundwater law. This rule involved evaluating each site of intended aldicarb use for susceptibility to groundwater contamination and regulating use accordingly. Rhone Poulenc

(formerly Union Carbide) agreed not to distribute aldicarb in Wisconsin in 1987 or 1988 pending the results of further health studies, but limited use did occur with existing stocks or with product obtained in other states. In August, 1987 DATCP proposed and went to public hearings with a permanent rule that is essentially identical to the 1987 emergency rule. It was in effect for the 1988 growing season.

DATCP conducted approximately 10 investigations at pesticide storage and handling facilities. These cases were initiated on findings of contaminated soil and/or groundwater. Six cases are being resolved by consent orders which stipulate remedial actions including improved pesticide handling practices and environmental cleanup.

Fertilizer and pesticide bulk storage rules that were developed by DATCP in 1985 became fully effective on January 1, 1988. During 1987, over 200 facility inspections were conducted. Construction at most of the regulated manufactures and distributors is complete.

Changes in the Pesticide Law during 1987 modified the fee structure for pesticide manufacturers and labelers. Under the current law, it is estimated that over \$425,000 will be collected for the groundwater fund and over \$360,000 for the environmental repair fund.

WISCONSIN DEPARTMENT OF HEALTH AND SOCIAL SERVICES

The following summarizes DHSS groundwater management activities.

- *DHSS transmittal to DNR of 14 Recommended Groundwater Standards. Toxicology reviews and risk assessment for 8 organics and 6 pesticides (1986 Recommended Groundwater Standards Review Document).

- *Preparation for transmittal to DNR of 12 Recommended Groundwater Standards. Toxicology reviews and risk assessments for 6 organics and 6 pesticides (1987 Recommended Groundwater Standards Review Document).

- *Attendance at 1987 Groundwater Standards hearings held by DNR in Stevens Point and Madison.

- *Groundwater staff present numerous invited talks on groundwater toxicology and the standards recommendation process at Wisconsin Universities, business associations and town meetings.

- *Groundwater staff present invited talks on Wisconsin's groundwater standards setting process at regional and national meetings.

- *Groundwater staff actively participate in United States Environmental Protection Agency-Office of Drinking Water (USEPA-ODW) sponsored organization known as FSTRAC (Federal-State Technical Risk Assessment Committee) and chair the Risk Assessment Sub-Committee. This organization provides USEPA-ODW with input and advice on the technical aspects of drinking water contaminant toxicology.

*Provide hazard evaluations and risk assessments to small Wisconsin farming communities concerning the risks associated with human exposure to contaminated groundwater from their sole source aquifer. The aquifers, in many cases, were contaminated by misuse or accidental spills from bulk pesticide storage/mixing facilities in their community.

*Sponsored meeting between USEPA-ODW staff, 11 pesticide company representatives, and state agency personnel to discuss hazard evaluation and risk assessment strategies for quantitatively defining risks from Domestic Use Exposure Scenarios (potential human health risks from exposure to pesticides in contaminated groundwater from all routes other than drinking).

Greatest Unmet Need:

*DHSS has no independent funding source to perform health effects toxicology research to support its risk assessment activities as described in the Groundwater Law. Without segregated funds to perform toxicology/epidemiology research, DHSS will have to employ additional uncertainty factors to appropriately take into account identified data gaps.

WISCONSIN DEPARTMENT OF TRANSPORTATION

Groundwater Protection

On May 1, 1986, TRANS 277 became effective. The Administrative Rule presents standards for storage of highway salt which will protect the waters of the state from contamination by dissolved chlorides. The staggered effective date provisions of the rule allowed about 1.5 years for complete compliance of highway salt storage facilities. The target program development dates follow.

1. May 31, 1986 --- all owners of highway salt storage facilities must report their storage to the DOT. Presently 897 sites have been reported.
2. October 1, 1986 --- all salt storage must be covered with an impermeable cover and required recordkeeping must begin. DOT site inspections begin. During the first year, 854 sites were inspected by the DOT.
3. October 1, 1987 --- all salt storage must have an impermeable base with adequate drainage facilities as well as an impermeable cover. The second annual cycle of DOT inspections begin with enforcement, under s. 85.17 Stats., using compliance directives and special orders as necessary.

County Highway Department Salt Storage Facilities

The Wisconsin Department of Transportation (DOT) is unique among the nation's 50 states because it contracts with county government to maintain the state trunk highways. Because of this unique relationship, the DOT owns no highway salt storage facilities. Rather, County government owns the storage facilities and the DOT pays for placement and storage of highway salt on an actual cost basis. The DOT reimburses the counties for storage based on actual costs and a depreciation schedule for facilities constructed.

During August 1986, the DOT established an objective to have all state furnished highway salt storage in compliance with TRANS 277 before October 1, 1987. A second objective was established to have the counties provide highway salt storage capacity for 100% of an average winter's salt needs on the state trunk highway system.

To achieve these objectives, the DOT offered to the counties a before the fact financing program as an alternative to the after the fact (depreciation schedule) method.

All county owned highway salt storage facilities that provide storage for state purchased highway salt are in compliance with the requirements of TRANS 277 as of October 1, 1987. This before the fact financing program required expenditures of \$ 7,668,091 by the DOT in the state FY 1987.

Research on Alternative Ice Control Chemicals

The Wisconsin Department of Transportation is conducting research on alternative chemicals to the sodium and calcium chlorides historically used for ice control on streets and highways. The research is being conducted using Calcium Magnesium Acetate (CMA). CMA is a noncorrosive chemical manufactured from dolomitic limestone and a mild acid.

In May 1986, the Federal Highway Administration chose Wisconsin and Michigan to receive 100 tons of Calcium Magnesium Acetate (CMA) each, plus 100 tons of CMA coated sand. In addition, Wisconsin purchased 100 tons of CMA. The objective of this research was to evaluate and compare the CMA and NaCl as ice control chemicals throughout an entire winter on a 6.5 mile stretch of a four lane divided highway, names USH 14, Dane County, Wisconsin. The following findings are considered significant.

- ° CMA is an effective ice control chemical though somewhat slower acting than salt. There was no opportunity to test CMA in a cold temperature situation.
- ° CMA is very light and subject to blowing off the trucks unless covered.
- ° CMA as produced is round and bounces around the pavement. The final resting place is frequently at the pavement edge. Consideration should be made to produce the CMA product less round and more angular to improve its ice control potential.
- ° All solid chemicals require water and traffic to create a brine for effective ice control. The test site selected favored salt with morning snowfalls (14 of 19) and high commuter traffic. A better test site would be one with uniform traffic regardless of the time of day.
- ° The application of CMA definitely produced a residue probably the magnesium, which made the pavement darker.
- ° Because of the magnesium acetate component, high concentrations of CMA in water forms a viscous gel. It was found that an adherent coating of the CMA on windshields of cars and elsewhere is more difficult to remove than

salt. It may be important to return to the 1:1 ratio of calcium acetate to magnesium acetate and sacrifice some of CMA's ice control effectiveness.

- ° The hardware for the winter weather computer system produced accurate results. Much experience was gained in the knowledge of pavement temperatures verses air temperatures. Due to the lack of experience by the operators, much historical winter weather data was lost.
- ° The longitudinal thermography using infrared scans of the pavement temperature produced the facts requested. The pavement temperatures over the 6.5 mile stretch only varied by 2-3 degrees, except for bridges. This data provided improved knowledge of pavement temperatures verses air temperature.
- ° Because of the light snowfall and mild temperatures, the analysis of the samples of plants, soil, and runoff and subsurface water did not produce significant results.

WISCONSIN DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS

One of the major accomplishments DILHR made was to assess and reorganize the division's groundwater programs and efforts. The division was reorganized in response to the public's requests to improve the division's service and accountability. The fragmented groundwater developmental responsibilities was consolidated with code operations in the Office of Division Codes and Application in order to provide better management control over groundwater protection efforts. Product approval, including approval of water treatment devices, was also consolidated in code operations along with platting and the private sewage program in an effort to give those programs a new direction and improve the protection of the state's groundwaters. Some of the major accomplishments are as follows:

Platting Program

A recommendation by program managers to abolish the plat program, which regulates the subdivision of land not served by public sewers, was evaluated, rejected, and restored to ensure that subdivided land may be serviced by private sewage system.

Cross Connection

The cross-connection program that prevents the backflow of contaminated water into a well was refined and expanded.

Underground Storage Tanks

The division continued to inventory underground storage tanks and has records on over 130,000 tanks. DILHR continued refinement on the rules in light of pending federal rules.

Subsequent to the publication of the proposed federal regulations by the U.S. Environmental Protection Agency on April 17, 1987, and in response to a

request from a Wisconsin legislator, the Department amended the proposed chapter ILHR 10 to incorporate the proposed federal regulations.

The amended version of chapter ILHR 10 was forwarded to the legislative committees for review and approval in May, 1987. The rules were assigned to the Assembly of Natural Resources Committee and the Senate Labor, Business Insurance, Veteran's and Military Affairs Committee. During the legislative committee review period, the Department received a letter from the Senate Labor Committee requesting that the agency withdraw the rules until such time as the proposed federal regulations are finalized. In response to that recommendation, the proposed chapter ILHR 10 rules were withdrawn.

The Division of Safety and Buildings continues to monitor and work with the U.S. Environmental Protection Agency in the finalization of the proposed federal regulations. Once the federal rules are finalized and printed, chapter ILHR 10 will be updated to reflect those requirements and new agency public hearings will be scheduled. The target deadline for the federal regulations being in effect is October 1, 1988.

Private Sewage Programs

Approximately 15,000 sanitary permits were approved for new and replacement systems, thus protecting the groundwater.

Sanitary Sewer Districts

The division conducted approximately 600 on-site inspections this year for sanitary districts in an effort to help the districts identify the quality of private sewage systems and help them delineate a comprehensive management plan for disposing of wastewater.

CONDITION OF THE GROUNDWATER RESOURCE

INTRODUCTION

State supported monitoring efforts have continued to redefine the condition of Wisconsin's groundwater. As a result, we are finding an ever increasing amount of groundwater contaminated by both man-made and naturally occurring pollutants. Volatile organic chemicals (VOCs) continue to be contaminants of great concern. Originating from numerous sources, including landfills, chemical storage facilities and industrial and commercial operations, VOCs are responsible for contaminating numerous public and private water supplies. In addition to VOCs, pesticide residues continue to be found in both monitoring and drinking water wells. Recent testing has focused on potential problems related to pesticide storage and handling facilities. However, results of new studies around selected agricultural fields are showing some potentially serious groundwater impacts. Lastly, naturally occurring radionuclides appear to be an expanding water quality problem. Sampling programs taking place in the granitic bedrock of northern and central Wisconsin and the sandstone in southeast Wisconsin are turning up additional contaminated water supplies.

The following paragraphs summarize what we know about natural groundwater quality and sources of groundwater contamination.

NATURAL GROUNDWATER QUALITY

The natural groundwater quality varies greatly in Wisconsin and depends upon the rocks and minerals with which the water is in contact. Often, the groundwater derived from deeper aquifers has higher mineral concentrations, because the water has been in contact with minerals longer. The problem constituents most common in Wisconsin groundwater are radium, radon gas, hardness, iron, manganese, total dissolved solids and sulfate. The problem with many natural constituents such as iron, sulfate, or manganese is not safety, but aesthetics. For example, high levels of iron can stain plumbing fixtures and laundry and give drinking water an unpleasant taste and odor. High levels of iron in drinking water have been found in hundreds of places statewide. Occasional high levels of fluorides, manganese, total dissolved solids and sulfates are less common and more localized. Sulfides can give drinking water a rotten egg odor. In addition, Wisconsin's groundwater varies in its corrosive nature. Some groundwater can aggressivity attack metallic plumbing releasing lead, copper and other metals.

Naturally occurring radioactivity has become a concern in Wisconsin, since some water systems have drinking water that exceeds the radium standard. The health concern associated with radium is the risk of bone cancer, because like calcium, ingested radium is incorporated into the bones. In addition to radium, radon gas present in host rocks released to the air through showering can cause radon gas to accumulate in dwellings. Inhaling radon gas can increase the risk of lung cancer.

Over the past several years, the state has initiated programs to test the groundwater for radioactivity. The drinking water in all the state's community water systems and in selected public and private wells in 20 counties have been sampled. A DNR Bureau of Water Supply Report entitled "Radium in Wisconsin Groundwater and Removal Methods for Community Water Systems" explains these sample results.

SOURCES OF CONTAMINATION AND ASSOCIATED CONTAMINATING SUBSTANCES

Table 1 is a relative priority listing of the major sources of contamination in Wisconsin. The table identifies the sources of groundwater contamination that are of concern in Wisconsin and ranks the top five. The ranking is based on the number of wells impacted and the toxicity of the chemicals contaminating the groundwater. The ranking was developed by factoring nitrate contamination into the data available on the sources of contamination associated with potable wells eligible for compensation under the well compensation program.

Following is a discussion of the top five ranked groundwater contamination sources in Wisconsin:

- 1) **Agricultural Activities** - The application, storage and handling of nitrogen-based chemical fertilizers and animal wastes has resulted in widespread nitrate contamination in Wisconsin. Nitrate is the contaminant most often found to exceed Wisconsin groundwater quality standards.

A 1979-1980 DNR study of 11,396 noncommunity public water wells (wells serving schools, churches, motels, service stations, campgrounds, and the like) found that 311 - about 1 in 40 (2.7%) - exceed the standard of ten mg/l of nitrate - nitrogen. More than one in three (33%) had detectable levels (i.e. greater than 0.5 mg/l).

Private water supply wells are more vulnerable to groundwater contamination than noncommunity wells. Groundwater quality assessments in which private wells have been sampled for nitrates have been conducted in Chippewa and Dunn Counties. The percentage of wells exceeding the

Table 1. Sources of Groundwater Contamination

Source	Check	Relative Priority
Septic tanks	X	
Municipal landfills	X	2
On-site industrial landfills	X	
Other landfills	X	
Surface impoundments (excluding oil and gas brine pits)	X	
Oil and gas brine pits		
Underground storage tanks	X	3
Injection wells (including Class V)		
Abandoned hazardous waste sites	X	4
Regulated hazardous waste sites	X	
Salt water intrusion		
Land application/treatment	X	
Agricultural activities	X	1
Road Salting	X	
Spill Incidents	X	5

standard of ten mg/l of nitrate - nitrogen was 11.8 % and 9.0 % respectively for these two counties (Personal communication from Irene Lippelt, WGNHS). Private well sampling in Portage County has found that approximately 20 % of the wells sampled exceed the standard of ten mg/l of nitrate - nitrogen. Based on this information, it is estimated that 10% or 70,000 of Wisconsin's 700,000 wells exceed the standard of ten mg/l of nitrate - nitrogen.

Agricultural activities are the most significant sources of nitrates in the state. The total nitrogen loading from fertilizer, animal waste and human waste for each county are estimated in Table 2. Contributions from fertilizer and animal wastes are comparable while the contribution from human waste is an order of magnitude less. Nitrogen loading from symbiotic N fixation and inorganic nitrogen in precipitation were not factored into this analysis nor were localized sources of nitrates such as industrial wastewater and sludge disposal and refuse disposal areas. This is an estimate of N applied to the land surface. The amount of N reaching groundwater from these sources is less than the total amount applied due to crop uptake, volatilization and denitification that occurs in the soil.

Agricultural activities also cause pesticide contamination in Wisconsin. In 1980, aldicarb was first detected in the groundwater of the central sands portion of Wisconsin. Aldicarb is a systemic insecticide which except for greenhouses is used only on potatoe crops in Wisconsin. As of January, 1988, 1,007 wells have been sampled with 228 samples showing detectable levels of aldicarb. Eighty-six well samples have been above the enforcement standard of 10 parts per billion (ppb) aldicarb; of those, approximately 15 wells have been abandoned or deepened at the owner's initiative to access less contaminated water.

Beginning in 1983, as a result of the aldicarb findings, the pesticide sampling program was expanded to sample for a variety pesticides used in Wisconsin. For each of the first two years of this sampling program, three hundred wells were sampled for pesticides used near the well site. The pesticides that have been tested for and detected in the groundwater since 1983 are identified in Table 3. The two most extensively used of these pesticides in Wisconsin are atrazine and alachlor. The amounts of these two chemicals used in each of the counties in Wisconsin are estimated in Table 4.

A major problem identified through the pesticide sampling program is the handling and storage of pesticides. For the

Table 2.
NITROGEN LOADING (LBS./ACRE)

COUNTY	HUMAN LB.N/ACRE	FERTILIZER LB.N/ACRE	ANIMAL LB.N/ACRE	TOTAL N LB.N/ACRE
Jefferson	1.11	35.07	64.10	100.28
Lafayette	0.26	43.40	35.24	78.90
Green	0.49	37.00	38.23	75.72
Grant	0.42	33.10	39.50	73.03
Dane	2.63	39.62	30.72	72.97
Outagamie	1.98	38.15	30.48	70.61
Dodge	0.82	37.93	30.55	69.30
Rock	1.83	47.84	19.02	68.68
Walworth	1.22	41.29	26.04	68.55
Calumet	0.99	32.02	33.86	66.86
Fond du Lac	1.17	34.70	29.38	65.25
Columbia	0.54	38.96	24.28	63.78
Sauk	0.52	26.46	33.71	60.69
Manitowoc	1.34	29.34	29.92	60.60
Kewaunee	0.57	27.20	32.09	59.86
Winnebago	2.83	32.71	22.77	58.31
Sheboygan	0.69	32.78	22.69	56.16
Brown	3.31	26.38	25.54	55.23
Iowa	0.25	25.94	28.59	54.77
Pierce	0.51	32.18	21.48	54.17
Green Lake	0.50	31.59	19.10	51.19
Racine	4.73	30.93	15.21	50.87
Kenosha	4.22	34.36	11.48	50.06
St. Croix	1.31	27.42	19.73	48.46
Washington	1.89	21.79	22.66	46.33
Trempealeau	0.34	21.94	23.53	45.81
Ozaukee	2.70	24.20	18.44	45.34
Dunn	0.39	22.11	21.07	43.57
Pepin	0.30	24.07	18.21	42.57
La Crosse	1.92	18.20	19.69	39.82
Milwaukee	36.76	1.81	1.05	39.62
Waupaca	0.56	20.39	17.60	38.55
Barron	0.44	18.87	18.63	37.95
Buffalo	0.19	16.26	20.74	37.19
Vernon	0.30	16.09	20.61	37.00
Shawano	0.14	18.39	18.39	36.92
Chippewa	0.51	17.47	18.78	36.76
Clark	0.26	17.81	18.57	36.64
Richland	0.28	17.33	18.48	36.09
Polk	0.42	18.46	15.43	34.31
Portage	0.71	24.05	9.50	34.25
Crawford	0.27	16.17	16.50	32.93
Marathon	0.67	14.76	17.15	32.58
Waukesha	4.79	19.80	7.92	32.51
Monroe	0.40	13.70	15.62	29.72
Eau Claire	1.21	14.32	11.17	26.70
Marquette	0.26	14.63	10.95	25.84

Table 2. (Cont'd.)
NITROGEN LOADING (LBS./ACRE)

COUNTY	HUMAN LB.N/ACRE	FERTILIZER LB.N/ACRE	ANIMAL LB.N/ACRE	TOTAL N LB.N/ACRE
-----	-----	-----	-----	-----
Waushara	0.30	17.79	6.54	24.64
Wood	0.88	12.22	11.47	24.57
Oconto	0.28	13.94	10.13	24.36
Juneau	0.27	13.69	9.48	23.44
Door	0.47	11.33	10.63	22.44
Jackson	0.16	9.28	8.53	17.97
Adams	0.21	12.07	4.33	16.61
Taylor	0.19	6.45	9.74	16.38
Langlade	0.23	8.14	4.86	13.23
Rusk	0.17	4.65	6.65	11.47
Marinette	0.27	4.57	3.94	8.78
Burnett	0.15	4.02	3.46	7.63
Lincoln	0.28	2.31	4.61	7.20
Washburn	0.16	3.13	3.40	6.70
Price	0.12	1.17	2.28	3.57
Sawyer	0.34	0.91	1.11	2.36
Ashland	0.16	0.64	1.49	2.29
Bayfield	0.09	0.44	1.56	2.09
Douglas	0.31	0.14	1.43	1.88
Florence	0.08	0.75	0.96	1.78
Oneida	0.28	0.83	0.18	1.29
Forest	0.09	0.25	0.75	1.08
Iron	0.08	0.22	0.25	0.56
Vilas	0.19	0.07	0.12	0.38
-----	-----	-----	-----	-----
WISCONSIN	0.83	17.02	15.18	33.04

Assumptions and References for Nitrate Loading Calculation:

Fertilizer - Corn, potatoes, wheat and oats were the crops analyzed. Corn, and potatoes were assumed to receive an equivalent loading of fertilizer while wheat and oats were assumed to receive 1/2 the loading per of corn, and potatoes (1). The total fertilizer sales for 1985 (282,000 tons(7)) was divided by the weighted total acreage which provided a loading of 118 #/acre/yr for the first three and 59 #/acre/yr for the last two. Due to the higher application rates applied to potatoes, 200 lbs. N/acre/yr. was used in the calculation for potatoes. The total loading for each county was then calculated (2) and divided by the total number of acres in the county (3) to obtain the average loading per acre in the county.

Animal Waste - The total loading from cows, beef cattle, swine, sheep and poultry was calculated for each county (2), (4), (5) and divided by the total acreage for that county.

Human Waste - The total loading from human waste was calculated by multiplying the population (3) by 6 # N/person/yr (6) and divided by the total acreage for that county. For the initial calculation, it was assumed that the entire population of each county was unsewered. For an estimate, this was felt to be adequate since people in sewerred areas generate a sludge that is generally land spread. Due to the relatively small contribution from this component, no further breakdown was deemed necessary. It should be noted that this assumption makes the Milwaukee County calculation erroneous.

- (1) Wisconsin Soil Testing Lab
- (2) Agricultural Statistics - Wisconsin 1986 - Published by WDATCP
- (3) Wisconsin Blue Book
- (4) Table 3. Typical production and composition of animal waste. USDA-SCS-Wisconsin, Section IV, Technical Guide, Standard 633.
- (5) Table 2. Animal Equivalency Factors. p. 194-5, NR 243, Wis. Administrative Code.
- (6) Dudley, J.G. and D.A. Stephenson, 1973, Nutrient enrichment of groundwater from septic tank disposal systems: Upper Great Lakes Regional Commission, 131 p.
- (7) Oberle, S.L., Keeney, D.R., Bundy, L.G., Klemme, R.M. and Kelling, K.A., 1987, Development of a nitrogen management model for corn in Wisconsin, 19 p.

purpose of this document, these incidents are classified as spills and are discussed in that section of the document.

- 2) **Municipal landfills** - Wisconsin has 1122 licensed municipal landfills of which 350 are required to monitor groundwater. A two-year study of volatile organic compound (VOC) contamination at 26 Wisconsin landfills found VOC contamination at older sites not engineered to present design standards. VOCs were detected at 12 of the 26 landfills with 1,1 dichloroethane being found most often. A DNR Bureau of Solid Waste Management Report entitled "Volatile Organic Compounds in Groundwater and Leachate at Wisconsin Landfills" summarizes these sample results.
- 3) **Abandoned waste sites** - In 1983 the Wisconsin Legislature directed the Wisconsin Department of Natural Resources (WDNR) to develop a list of abandoned landfills and prepare a plan for field inspections, site evaluations and remedial actions at the sites identified. The initial list identified 2,717 waste sites that could be a potential source of groundwater contamination. Prior to completion of the initial abandoned landfill work, the legislature passed Wisconsin Act 410, "the Groundwater Law". That legislation required the department to prepare a comprehensive environmental repair plan to address all types of contamination cases. The environmental repair plan is contained in Chapter NR 550, Wisc. Administrative Code. The statute and plan direct WDNR to develop an inventory of sites that cause or threaten to cause environmental pollution and then hazard rank all of these sites to determine which ones present a substantial danger. When the department determines a site to pose a substantial danger, state funds (Environmental Repair Fund) may be used for planned remedial actions. The WDNR Bureau of Solid and Hazardous Waste Management has published several updates of the initial abandoned waste sites report. The report "Inventory of Sites or Facilities Which May Cause or Threaten to Cause Environmental Pollution" was published in July, 1987 and listed 173 sites. A report titled "Wisconsin's Environmental Repair Program - Hazard Ranking List" published in March, 1988 identified 60 sites that pose a substantial danger to the environment.
- 4) **Underground storage tanks** - Wisconsin requires underground storage tanks to be registered. This registration program has identified 135,000 tanks in the state of which 115,000 are presently in use. Approximately 60,000 of these tanks will be regulated by the federal underground storage tank program. The contaminants most commonly associated with leaking underground petroleum storage tanks are benzene, xylene, toluene and ethyl benzene. Benzene has been found

TABLE 3. SUMMARY OF GROUNDWATER PESTICIDE MONITORING
FOR 07/01/83 THRU 01/01/88

CHEMICAL NAME	TOTAL NO. OF WELLS	WELLS WITH DETECTS	ENFORCEMENT STANDARD (UG/L)	WELLS EXCEEDING ENF. STD.	PREVENTIVE ACTION LIMIT (UG/L)	WELLS EXCEEDING PAL	HIGHEST DETECTED LEVEL (UG/L)
ATRAZINE	748	148	3.50000	79	0.350000	147	1500
ALACHLOR	828	72	0.50000	69	0.050000	72	3000
LEAD PB,TOT	333	119	50.00000	20	15.000000	42	3300
METOLACHLOR	510	59	15.00000	19	1.500000	52	230
ETHYLENE DIBROMIDE	58	9	0.01000	9	0.001000	9	12
CYANAZINE	309	30	12.50000	5	1.250000	27	110
DINITRO	227	9	13.00000	5	2.600000	6	2100
2,4-D	88	1	100.00000	1	20.000000	1	100
CARBOFURAN	182	1	50.00000	0	10.000000	1	15
ALDICARB, TOTAL	1587	384	NONE	0	NONE	0	111
METRIBUZIN	252	47	NONE	0	NONE	0	940
BUTYLATE	76	10	67.00000	0	6.700000	0	4.9
DICAMBA	63	10	NONE	0	NONE	0	360
SIMAZINE	59	10	2150.00000	0	215.000000	0	15
COPPER CU,TOT	30	6	1000.00000	0	500.000000	0	110
EPTAM	156	6	250.00000	0	50.000000	0	2.9
CARBARYL	241	5	NONE	0	NONE	0	45
PICLORAM	27	5	NONE	0	NONE	0	8
CHROMIUMCR,TOT	84	3	50.00000	0	5.000000	0	4
DACTHAL	11	2	NONE	0	NONE	0	760
LINURON	161	2	NONE	0	NONE	0	34
CHLORAMBN	53	1	NONE	0	NONE	0	50
TERBUFOS	152	1	NONE	0	NONE	0	52
DIMETHOATE	22	1	NONE	0	NONE	0	1.5

TABLE 3. SUMMARY OF GROUNDWATER PESTICIDE MONITORING
FOR 07/01/83 THRU 01/01/88

CHEMICAL NAME	TOTAL NO. OF WELLS 77	WELLS WITH DETECTS 0	ENFORCEMENT STANDARD (UG/L) 50.00000	WELLS EXCEEDING ENF. STD. 0	PREVENTIVE ACTION LIMIT (UG/L) 5.000000	WELLS EXCEEDING PAL 0	HIGHEST DETECTED LEVEL (UG/L) 0
ARSENIC AS,TOT							
ALDRIN	11	0	NONE	0	NONE	0	0
BENEFIN	1	0	NONE	0	NONE	0	0
BROMACIL	3	0	NONE	0	NONE	0	0
CHLORDANE, ALPHA	7	0	NONE	0	NONE	0	0
CHLORDANE, GAMMA	7	0	NONE	0	NONE	0	0
CHLORPYRIFOS	30	0	NONE	0	NONE	0	0
CHLOROTHALONIL	6	0	NONE	0	NONE	0	0
DDD O.P	8	0	NONE	0	NONE	0	0
DDD P.P	9	0	NONE	0	NONE	0	0
DDE O.P	8	0	NONE	0	NONE	0	0
DDE P.P	9	0	NONE	0	NONE	0	0
DDT O.P	8	0	NONE	0	NONE	0	0
DDT P.P	26	0	NONE	0	NONE	0	0
DIAZINON	32	0	NONE	0	NONE	0	0
1,2-DIBROMO-3-CHLOROPROPANDBCP	117	0	0.05000	0	0.005000	0	0
DIELDRIN	20	0	NONE	0	NONE	0	0
DISULFOTON	145	0	NONE	0	NONE	0	0
FONOFOS	76	0	NONE	0	NONE	0	0
ENDRIN	13	0	0.20000	0	0.020000	0	0
HEXAZINONE	1	0	NONE	0	NONE	0	0
ISOFPENPHOS	2	0	NONE	0	NONE	0	0
LINDANE, GAMMA BHC	11	0	0.02000	0	0.002000	0	0
MALATHION	4	0	NONE	0	NONE	0	0
METAM-SODIUM	23	0	NONE	0	NONE	0	0
VAPAM							

TABLE 3. SUMMARY OF GROUNDWATER PESTICIDE MONITORING
FOR 07/01/83 THRU 01/01/88

CHEMICAL NAME	TOTAL NO. OF WELLS	WELLS WITH DETECTS	ENFORCEMENT STANDARD (UG/L)	WELLS EXCEEDING ENF. STD.	PREVENTIVE ACTION LIMIT (UG/L)	WELLS EXCEEDING PAL	HIGHEST DETECTED LEVEL (UG/L)
METHOMYL	19	0	NONE	0	NONE	0	0
MCPA	3	0	NONE	0	NONE	0	0
MCPP	2	0	NONE	0	NONE	0	0
METHYL PARATHION	7	0	NONE	0	NONE	0	0
PARAQUAT	11	0	NONE	0	NONE	0	0
NONACHLOR, CIS	7	0	NONE	0	NONE	0	0
NONACHLOR, TRANS	1	0	NONE	0	NONE	0	0
OXAMYL	4	0	NONE	0	NONE	0	0
PARATHION	28	0	NONE	0	NONE	0	0
PENTACHLORONITROBENZENE (PPCNB)	5	0	NONE	0	NONE	0	0
PERMETHRIN, CIS	5	0	NONE	0	NONE	0	0
PERMETHRIN, TRANS	5	0	NONE	0	NONE	0	0
2,4,5-T	21	0	NONE	0	NONE	0	0
THIMET	166	0	NONE	0	NONE	0	0
2,4,5-TP	23	0	NONE	0	NONE	0	0
TRIFLURALIN	1	0	NONE	0	NONE	0	0
VAPONA	3	0	NONE	0	NONE	0	0

Table 4
 ATRAZINE + ALACHLOR (LBS./ACRE)

COUNTY	ATRAZINE CORN LBS/ACRE	ALACHLOR CORN LBS/ACRE	ALACHLOR SOYBEANS LBS/ACRE	ALACHLOR TOTAL LBS/ACRE	A+A TOTAL LBS/ACRE
Rock	0.421	0.400	0.135	0.535	0.95
Lafayette	0.398	0.331	0.011	0.342	0.74
Columbia	0.355	0.321	0.036	0.357	0.71
Dane	0.345	0.329	0.027	0.355	0.70
Walworth	0.303	0.289	0.059	0.348	0.65
Green	0.314	0.299	0.018	0.317	0.63
Dodge	0.311	0.296	0.015	0.311	0.62
Jefferson	0.286	0.272	0.053	0.326	0.61
Pierce	0.315	0.256	0.026	0.282	0.59
Kenosha	0.247	0.236	0.088	0.324	0.57
Outagamie	0.405	0.156	0.006	0.162	0.56
Grant	0.296	0.247	0.002	0.248	0.54
Racine	0.214	0.204	0.099	0.304	0.51
Fond du Lac	0.353	0.136	0.019	0.154	0.50
St. Croix	0.261	0.213	0.029	0.241	0.50
Winnebago	0.327	0.126	0.027	0.153	0.48
Green Lake	0.325	0.141	0.008	0.148	0.47
Pepin	0.233	0.190	0.043	0.232	0.46
Sauk	0.238	0.198	0.009	0.207	0.44
Sheboygan	0.317	0.122	0.005	0.127	0.44
Calumet	0.304	0.117	0.014	0.131	0.43
Iowa	0.229	0.191	0.004	0.195	0.42
Dunn	0.217	0.177	0.028	0.205	0.42
Trempealeau	0.215	0.175	0.027	0.202	0.41
Manitowoc	0.272	0.105	0.003	0.108	0.38
Brown	0.256	0.098	0.001	0.099	0.35
La Crosse	0.179	0.146	0.018	0.164	0.34
Kewaunee	0.235	0.090	0.002	0.093	0.32
Ozaukee	0.150	0.143	0.015	0.158	0.30
Buffalo	0.159	0.130	0.011	0.140	0.30
Richland	0.157	0.131	0.008	0.138	0.29
Waupaca	0.202	0.087	0.004	0.091	0.29
Waukesha	0.141	0.134	0.017	0.151	0.29
Washington	0.137	0.131	0.006	0.137	0.27
Crawford	0.139	0.116	0.004	0.119	0.25
Eau Claire	0.133	0.108	0.016	0.124	0.25
Vernon	0.138	0.115	0.001	0.116	0.25
Polk	0.169	0.073	0.006	0.080	0.24
Monroe	0.131	0.107	0.006	0.113	0.24
Portage	0.162	0.070	0.003	0.073	0.23
Waushara	0.156	0.068	0.010	0.078	0.23
Barron	0.160	0.070	0.003	0.072	0.23
Marquette	0.157	0.068	0.005	0.073	0.23
Chippewa	0.155	0.067	0.008	0.075	0.23
Juneau	0.135	0.058	0.008	0.066	0.20
Clark	0.172	0.028	0.001	0.029	0.20

Table 4 (cont.)

ATRAZINE + ALACHLOR (LBS./ACRE)

COUNTY	ATRAZINE CORN LBS/ACRE	ALACHLOR CORN LBS/ACRE	ALACHLOR SOYBEANS LBS/ACRE	ALACHLOR TOTAL LBS/ACRE	A+A TOTAL LBS/ACRE
Shawano	0.124	0.055	0.001	0.057	0.18
Wood	0.118	0.051	0.002	0.053	0.17
Jackson	0.089	0.072	0.007	0.080	0.16
Marathon	0.134	0.022	0.000	0.023	0.15
Adams	0.101	0.043	0.008	0.052	0.15
Oconto	0.099	0.044	0.000	0.044	0.14
Door	0.085	0.033	0.002	0.035	0.12
Taylor	0.056	0.009	0.000	0.009	0.06
Burnett	0.037	0.016	0.003	0.019	0.05
Rusk	0.039	0.017	0.000	0.017	0.05
Marinette	0.031	0.014	0.000	0.014	0.04
Milwaukee	0.010	0.010	0.020	0.030	0.04
Washburn	0.028	0.012	0.000	0.012	0.04
Langlade	0.020	0.009	0.001	0.010	0.03
Lincoln	0.018	0.003	0.001	0.004	0.02
Price	0.010	0.002	0.000	0.002	0.01
Sawyer	0.008	0.003	0.000	0.003	0.01
Ashland	0.005	0.001	0.000	0.001	0.00
Florence	0.004	0.002	0.000	0.002	0.00
Bayfield	0.002	0.001	0.000	0.001	0.00
Iron	0.002	0.000	0.000	0.000	0.00
Forest	0.001	0.001	0.000	0.001	0.00
Douglas	0.000	0.000	0.000	0.000	0.00
Oneida	0.000	0.000	0.000	0.000	0.00
Vilas	0.000	0.000	0.000	0.000	0.00
WISCONSIN	0.168	0.112	0.014	0.126	0.29

Assumptions and References for Pesticide Loading Calculation:

Loading Calculation - Percent treated and pounds applied per acre were obtained for each of the reporting districts (1). These numbers were then multiplied by the acres of corn planted in each of counties in that district to obtain an estimated loading.

(1) Pesticide Use - Wisconsin 1986 - Published by WDATCP

in 149 wells with the highest concentration being 14,000 parts per billion (the enforcement standard for benzene is 0.67 parts per billion).

- 5) **Spill incidents** - Wisconsin Chapter 144.76, the Hazardous Substance Spill Law, became effective in 1978. This law requires spillers of hazardous substances to report spills and to take actions necessary to restore the environment. The number of reported spills has increased from 360 in 1978 to approximately 1000 per year at present. Petroleum products comprise 65 percent of all reported spills in Wisconsin.

Volatile organic chemicals (VOCs) are the most significant contaminating substances associated with municipal landfills, underground storage tanks, abandoned waste sites and spills. Volatile organic chemicals disperse very quickly in the groundwater. VOCs may spread over a large distance (2 to 3 miles) in relatively uniform concentrations. Therefore, when various VOC sources are present in an area it is often difficult to identify the specific source of contamination.

Table 5 lists the 28 VOC's found in Wisconsin's groundwater to date. Also shown on Table 5 are the Wisconsin groundwater quality standards (both preventive action limits and enforcement standards) for 15 of the VOCs, the number of wells that have had VOCs detected in them, and the number of detections that have exceeded the groundwater quality standards. Trichloroethylene is the VOC most often detected at levels exceeding groundwater quality enforcement standards.

In addition to VOCs, improper handling and storage of pesticides (which for this report are classified as spills) are sources of groundwater contamination. To date, 22 sites have been identified in the state where the improper storage or handling of pesticides has caused groundwater contamination.

TABLE 5. SUMMARY OF GROUNDWATER VOC MONITORING
FOR 07/01/83 THRU 01/01/88

CHEMICAL CODE	CHEMICAL NAME	TOTAL NO. OF WELLS	WELLS WITH DETECTS	ENFORCEMENT STANDARD (UG/L)	WELLS EXCEEDING ENF. STD.	PREVENTIVE ACTION LIMIT (UG/L)	WELLS EXCEEDING PAL	HIGHEST DETECTION LEVEL (UG/L)
20425	TRICHLOROETHYLENE	5192	301	1.80000	262	0.180000	301	8800
20399	TETRACHLOROETHYLENE	5189	249	1.00000	235	0.100000	249	20000
20025	BENZENE	5090	150	0.67000	150	0.067000	150	14000
20167	1,2-DICHLOROETHANE	5011	131	0.50000	131	0.050000	131	450
20169	1,1-DICHLOROETHYLENE	5035	85	0.24000	85	0.024000	85	87
20236	ETHYLENE DIBROMIDE	228	50	0.01000	50	0.001000	50	150
20437	XYLENE (TOTAL)	5052	146	620.00000	21	124.000000	42	9100
20411	TOLUENE	5117	171	343.00000	19	68.600000	36	15000
20421	1,1,1-TRICHLOROETHANE	5141	297	200.00000	13	40.000000	56	2200
20434	VINYL CHLORIDE	4967	6	0.01500	6	0.001500	6	42
20171	1,2-DICHLOROETHYLENE	5089	129	100.00000	5	10.000000	37	8800
20233	ETHYL BENZENE	5043	104	1360.00000	2	272.000000	14	1400
20401	TETRAHYDROFURAN	4973	2	50.00000	2	10.000000	2	11000
20427	TRICHLOROFLUOROMETHANE	4984	50	3490.00000	1	698.000000	1	4100
20165	1,1-DICHLOROETHANE	5018	116	850.00000	0	85.000000	3	180
20153	1,2-DICHLOROBENZENE	4976	7	1250.00000	0	125.000000	1	310
20095	CHLOROFORM	5010	133	NONE	0	NONE	0	240
20051	BROMODICHLOROMETHANE	4986	51	NONE	0	NONE	0	53
20147	DIBROMOCHLOROMETHANE	4986	31	NONE	0	NONE	0	32
20087	CHLOROETHANE	4978	22	NONE	0	NONE	0	46
20157	1,4-DICHLOROBENZENE	4977	12	750.00000	0	150.000000	0	70
20428	TRICHLOROTRIFLUOROETHANE	4976	7	NONE	0	NONE	0	1200
20073	CARBON TETRACHLORIDE	4985	5	NONE	0	NONE	0	4.5
20053	BROMOFORM	4983	4	NONE	0	NONE	0	7.4
20393	STYRENE	4974	4	NONE	0	NONE	0	6.2

TABLE 5. SUMMARY OF GROUNDWATER VOC MONITORING
FOR 07/01/83 THRU 01/01/88

CHEMICAL CODE	CHEMICAL NAME	TOTAL NO. OF WELLS 4975	WELLS WITH DETECTS 3	ENFORCEMENT STANDARD (UG/L) NONE	WELLS EXCEEDING ENF. STD. 0	PREVENTIVE ACTION LIMIT (UG/L) NONE	WELLS EXCEEDING PAL 0	HIGHEST DETECTION LEVEL (UG/L) 410
20083	CHLOROBENZENE							
20155	1,3-DICHLOROBENZENE	4976	3	1250.00000	0	125.000000	0	23
20071	CARBON DISULFIDE	4973	1	NONE	0	NONE	0	0
20007	ACROLEIN	4972	0	NONE	0	NONE	0	0
20009	ACRYLONITRILE	4972	0	NONE	0	NONE	0	0
20046	BROMOBENZENE	4974	0	NONE	0	NONE	0	0
20055	BROMOMETHANE	4973	0	NONE	0	NONE	0	0
20063	BUTYL ACETATE	4973	0	NONE	0	NONE	0	0
20093	2-CHLOROETHYL VINYL ETHER	4973	0	NONE	0	NONE	0	0
20108	O-CHLOROTOLUENE	4973	0	NONE	0	NONE	0	0
20110	P-CHLOROTOLUENE	4973	0	NONE	0	NONE	0	0
20148	1,2-DIBROMO-3-CHLOROPROPANE	4969	0	0.05000	0	0.005000	0	0
20174	DICHLOROIODOMETHANE	4969	0	NONE	0	NONE	0	0
20181	1,2-DICHLOROPROPENE, TRANS	4973	0	NONE	0	NONE	0	0
20183	1,3-DICHLOROPROPENE, CIS	4974	0	NONE	0	NONE	0	0
20185	1,3-DICHLOROPROPENE, TRANS	4973	0	NONE	0	NONE	0	0
20298	ISOPROPYLBENZENE	4973	0	NONE	0	NONE	0	0
20319	METHYL ETHYL KETONE	4973	0	NONE	0	NONE	0	0
20325	METHYLENE CHLORIDE	33	0	150.00000	0	15.000000	0	0
20396	1,1,1,2-TETRACHLOROETHANE	4972	0	NONE	0	NONE	0	0
20397	1,1,2,2-TETRACHLOROETHANE	4972	0	NONE	0	NONE	0	0
20423	1,1,2-TRICHLOROETHANE	4973	0	0.60000	0	0.060000	0	0

COUNCIL ACTIVITIES

Groundwater Coordinating Council Meeting Minutes February 9, 1987

Members Present: Lyman Wible (DNR); Buzz Ostrom (WGNHS); Dallas Peterson (UW); Ted Stephenson (DOT); Bob Ehart (DATCP); Steve Born (Governor's Office); Bill Schmidt (DHSS); Bill Norem (DILHR).

Others Present: Ron Henning (WGNHS); Dave Fredrickson (DILHR); San Sinha (DHSS); Kevin Kessler (DNR); Bruce Baker (DNR); Mike Schmoller (DNR); Gary Jackson (UW); Ned Zuelsdorff (DATCP); Dave Lindorff (DNR); Carol Schultz (Dewitt, Porter); Dave Belluck (DHSS); Henry Anderson (DHSS).

The meeting agenda was altered to include Dave Lindorff's discussion of the upcoming Midwest Groundwater Conference and to rearrange the schedule of agenda items.

Dave Lindorff gave a brief update on the planning being done to host the 1987 Midwest Groundwater Conference. Though the topical areas are not decided on, it seems as though there will be concurrent sessions emphasizing specific areas of groundwater management. Also, it is planned that a number of exhibit booths will be used to outline Wisconsin's groundwater efforts. Ted Stephenson strongly emphasized the need for state agencies to actively contribute to the success of the conference. Tentatively, the conference is scheduled for October 28-30, 1987 at the Inn on the Park.

Next, Ron Hennings initiated discussion on agenda Topic V, the research subcommittee report on project review guidelines. Ron handed out a draft version of the review guidelines for discussion. Several topics were discussed, including the possibility of funding projects for longer than the proposed two-year period. There is a need for long-term research and it was felt that a two-year limit was too restrictive. Other topics debated included the definition of management practice monitoring, the possibility of modifying proposals to overcome shortcomings and the level of funding that could be dedicated to a single project. There was substantial comment that the \$50,000 limit was much too restrictive.

Ron Hennings next discussed agenda Topic VI on how state agencies can communicate research needs to the UW system. As part of this discussion, Dallas Peterson provided a draft proposal for the formation of a UW-Groundwater Research Coordinating Committee. The draft committee would include an advisory group consisting of state agency staff. The role of the advisory group would be the work with the committee on establishing research priorities. As proposed, these bodies will only be involved with the DIN review process. The entire proposal still needs to be reviewed by UW administration. As a group, the Council believed Dallas' proposal is an excellent starting point, but that the process needs to continue until an organized review procedure is in place. An update of this effort by Dallas Peterson and Ron Hennings will be an agenda topic at the April Council meeting. With this, discussion of the topic ended.

Next on the agenda, Kevin Kessler gave brief updates on the aldicarb emergency rule and the proposed amendments to NR 140. At this time, DNR is putting a hold on proceeding with the emergency change in the aldicarb groundwater standard from 10 parts per billion (ppb) to 1.0 ppb.

At the same time, Union Carbide has agreed to drop its lawsuits against the Department of Health and Social Services (DHSS). Also, Union carbide and DHSS staff are discussing the need for further health impact studies from the use of aldicarb. The outcome of these discussions will determine when and if DNR will resume its standard setting process for aldicarb.

The status of the NR 140 amendments is that public hearings are scheduled on the proposed changes. Based on the comments received, the DNR will continue the standard setting process as appropriate.

Lastly, Ned Zuelsdorff, DATCP, gave an informational presentation on DATCP's pesticide in groundwater monitoring efforts. The presentation highlighted to Council members the locations and concentrations pesticides are migrating to groundwater. Several Council members noted the utility of these studies to other state researchers and resource managers.

With this, the meeting adjourned. The next meeting will be April 6, 1987 at 1:00 p.m. in Room 027 of the Natural Resources Bldg.

8110T



WISCONSIN GEOLOGICAL
and NATURAL HISTORY SURVEY

3817 Mineral Point Road • Madison, WI 53705 • (608) 262-1705

MEMO

to: S. Born, B. Ehart, K. Kessler, D. Peterson date: February 9, 1987
from: R. Hennings
re: Notes and thoughts from our Jan. 27 meeting on groundwater research,
based on Steve's breakdown of the issue into three main parts.

1. Identification of short and long term research needs.
 - a. Expand research subcommittee to include other agencies, and other university and private sector groups.
 - b. Form a new U.W. based groundwater research coordinating committee with agency involvement (Walsh proposal).
 - c. Hold a statewide conference/workshop(s) with a or b above to include input from other interested individuals and incorporate a group priority ranking process. Similar to soil and water conservation processes.
2. Capacity and availability of researchers.
 - a. U.W. designated research institutions, Madison and Milwaukee.
 - b. Other U.W. researcher's, Stevens Point, Oshkosh, Eau Claire, Green Bay, WGNHS, etc.
 - c. Other universities, Northern Illinois, Beloit, Michigan Tech.
 - d. Industry or consulting firms.
 - e. Agency in-house research.
3. Implementation.
 - a. Existing funds primarily from DOA.
 - DNR and groundwater fund provide for some directed, short term, contract research.
 - b. WGNHS considers both long and short term research needs but long term (less directed) needs are difficult to justify and support.
 - c. New funds are needed for more long and short term research.
 - U.W. endorsement of need for research to support DIN process (Problems with U.W. priorities and directed research)
 - Special appropriation, set up similar to Coastal Zone funds of 1970's.
 - Individual agency reallocation for development of internal research capability.

February 9, 1987

RE: Formation of Groundwater Research Coordinating Committee

Background:

The UW-Madison Groundwater Research DIN has now been included in the UW System budget submitted to the Executive Branch. This DIN provides that research required to meet long-term needs in the groundwater area would be funded through the College of Agricultural and Life Sciences (CALS), UW Madison. It states that research would be coordinated with the Wisconsin Departments of Natural Resources (WDNR), and Agriculture, Trade and Consumer Protection (WDATCP); with Wisconsin Geological and Natural History Survey (WGNHS); with University of Wisconsin Extension (UWEX); and with appropriate federal agencies. The DIN also states that the coordinating committee would be composed of faculty from UW-Madison and other campuses as appropriate.

The purpose of this memo, then, is to propose structure, membership and functions for the DIN committee.

DIN Committee Structure and Membership

The CALS Dean annually will appoint members to the Groundwater Research Coordinating Committee. The committee members will be drawn from CALS and other appropriate UW-Madison colleges and units, and from other appropriate UW System campuses, such as the UW-Stevens Point. In making such appointments, the Dean will consult with faculty, and other college and unit heads. The Dean will also name the committee chairperson. Members will form any subcommittees which might be needed to facilitate them in their work.

The CALS Dean, after consultation with committee members, will appoint an Advisory Group to the Groundwater Research Coordinating Committee. The membership in this Advisory Group will be as broad as the committee members judge appropriate, but must include representatives from WDNR, WDATCP, Wisconsin Department of Health and Social Services, WGNHS, UWEX, and appropriate federal agencies.

DIN Committee Functions

The charge to the Groundwater Research Coordinating Committee is as follows:

1. In consultation with the Advisory Group, establish long-range groundwater research needs for the State of Wisconsin.

2. In consultation with the Advisory Group and in accordance with the long-range groundwater research needs of the state, place a priority on specific, shorter-term research program areas.

3. Issue through the offices of the UW-Madison, Agricultural Experiment Station calls for project proposals from UW Madison and System faculty consistent with the priority groundwater research areas previously established.

4. Use the peer review procedures of the UW-Madison, Agricultural Experiment Station to evaluate project proposals.

5. On the basis of the research priority rating and peer review evaluations, recommend projects for funding to the Agricultural Experiment Station director. The Advisory Group members should review these recommendations before they are made to the Director.

5. Using established procedures of the UW-Madison Experiment Station, monitor expenditures of research funds, conduct of research projects, and reporting of research results.

6. Conduct periodic seminars for UWEX county faculty, state and federal agency personnel, Legislators and other interested individuals. These seminars would report groundwater research conducted through this specific program as well as other relevant research being done within the System and elsewhere.

7. Recommend and justify additional state and/or federal funding to support research into priority groundwater problem areas.

Functions of Advisory Group to Groundwater Research Coordinating Committee

The charge to the Advisory Group is as follows, and may be added to or modified by the Coordinating Committee:

1. Assist the Coordinating Committee in identifying long-range groundwater research needs, and in establishing priorities for shorter term research program areas.

2. Review specific research projects to ensure that funding selections are consistent with priority research needs.

3. Assist in dissemination of research results.

4. Assist in establishing priorities for additional groundwater research funding.

0391H-49/50

Minutes of the April 6, 1987
Groundwater Coordinating Council Meeting

Members present: Steve Born (Governor's representative), Dallas Peterson (UW), Ron Hennings for Meredith Ostrom (WGNHS), Bill Schmidt (DHSS), William Norem (DILHR), Ted Stephenson (DOT) and Bob Ehart (DATCP)

Others present: Gary Jackson (UW), Nick Nehr (DATCP), Tom Dawson (WPI), Kevin Kessler (DNR), Bruce Baker (DNR), Mike Schmoller (DNR), Sam Sinha (DHSS), Dave Fredrickson (DILHR) and Carol Schultz (Dewitt, Porter)

Kevin Kessler opened the meeting with the approval of the February 9 meeting minutes and an agenda modification for this meeting. Tom Dawson and Nick Nehr were added to the agenda to discuss the problems related to pesticide regulation in Wisconsin.

The first topic to be discussed was UW activities in organizing their groundwater research activities. Dallas Peterson reported that the idea of creating groundwater coordinating body with the UW system is dead. Since the groundwater budget proposal for funding research activities was not included in the UW budget proposal, there would be no funding for this coordinating unit to direct the use of. In addition, Dallas Peterson stated that the UW did receive \$2.3 million to fund research geared towards economic development. The distribution of these funds will be decided by the President of the UW, but it appears that groundwater related studies have little if any chance to be funded.

After this introduction there was a very long discussion regarding the role of the UW in groundwater research and the low priority apparently given groundwater by the UW administration. The conclusions of these talks were:

- 1) There is a critical need to involve the UW faculty in groundwater research to answer many of the groundwater management questions facing the state.
- 2) To date the UW administration has shown little interest in coordinating its internal groundwater management activities or to actively solicit new funds for increased research efforts.
- 3) For the short term (several years at least) the state will have to rely on ad hoc relationships with individual professors to carry out any groundwater research efforts.

The following agenda item was a report on the activities of the Committee on the Regulation of Pesticides and Nitrate. This group was formed through legislative action to examine the need for and possible means of controlling the environmental impacts of agrichemical use. The presentation was made by Nick Nehr and Tom Dawson both members of the committee.

A number of topics were discussed but the focus of the discussion was the lack of research in many areas related to agrichemical use. Specific topics including environmental fate of pollutants, health levels for pollutants in drinking water and the development of new land use practices to reduce groundwater contamination highlighted the list of research needs. The discussion continued for some time till all the Council members expressed their high level of frustration in developing a coordinated research plan to address resource management agency needs.

Based on the discussions of the previous 2 agenda items Steve Born proposed that a legislative workshop be developed to heighten the awareness of the need for groundwater research. This idea was discussed but no resolution or action was taken by the Council.

Next on the agenda Dave Fredrickson gave a brief update on the promulgation of DILHR's rules related to groundwater protection. ILHR 10, which regulates petroleum storage, is currently on hold with the agency's administration. Dave believes that with USEPA issuing its new regulations for underground petroleum storage that this will help move the state's rule along. ILHR 83 regulates the use and siting of private sewerage systems. Those sections of the rule dealing with large scale systems have been revised to reflect groundwater concerns. These proposed changes are currently under review by the department's administration. Those sections of the rule dealing with small scale systems will soon begin to be reviewed by an internal DILHR code review committee.

Next Kevin Kessler gave a quick review of the provisions related to the new Safe Drinking Water Act. Included in his discussion were the setting of new Maximum Contaminant Levels and the use of wellhead protection areas. It appears the use of wellhead protection areas have a large potential for use in Wisconsin.

Lastly, Gary Jackson gave a review of the report he co-authored discussing agricultural best management practices. A draft outline and introduction of the report was handed out in the meeting.

When discussion of Gary's report concluded the meeting was adjourned.

9237T

Minutes of the October 5, 1987
Groundwater Coordinating Council Meeting

Members Present: John Metcalf (Governor's representative), Dallas Peterson (UW), Ron Hennings and Meredith Ostrom (WGNHS), Bill Schmidt (DHSS), William Norem (DILHR), John Roslab for Ted Stephenson (DOT) and Bob Ehart (DATCP)

Others Present: Max McCombs (Monsanto Company), Suzanne Pingree (UW), Steve Born (UW), Gary Jackson (UW), Champ Tanner (UW), Gordon Chesters (UW), Eugene Trani (UW), Tom Dawson (Public Intervener), Ron Buchholz (DILHR), Richard Meyer (DILHR), John C. Metcalf (DILHR), Tom Sieger (DHSS), David Belluck (DHSS), Nick Neher (DATCP), Gary LeMasters (DATCP), Jeff Postle (DATCP), Lyman Wible (DNR), Bruce Baker (DNR), Kevin Kessler (DNR), Mike Schmoller (DNR), Al Lulloff (DNR), Jeanne Christie (DNR), Rachael Ward (DNR), Terry Lohr (DNR) and David Lindorff (DNR).

The initial action of the meeting was an agenda change. Jeanne Christie, DNR, was added as the first speaker. Ms. Christie submitted a proposal that the Council endorse a series of statewide meetings between state agency staff and local governments (see attachment). The focus of these meetings would be to improve the coordination of groundwater management efforts between the two levels of government. The concept was endorsed by the Council by a unanimous vote.

The next agenda item was a presentation by Mr. Max McCombs of the Monsanto Company. Mr. McCombs gave a presentation prepared by the Chemical Manufacturers Association outlining their views on the structure of state groundwater management programs. In his presentation, Mr. McCombs focused on risk assessment as a key ingredient to any state program, particularly when setting groundwater quality standards and making how clean is clean decisions.

After Mr. McCombs completed his presentation, Eugene Trani and Dallas Peterson of the UW-Administration made a presentation regarding the coordination of University groundwater research efforts. Mr. Trani presented a proposal in which the UW-Water Resources Center would serve as the central coordinating body to pull together UW research activities (see attachment). The Center would be assisted in this task by a proposed Groundwater Research Advisory Council, consisting of representatives of those state agencies with groundwater management responsibilities. The Advisory Council would be responsible for developing a long range (e.g., 5-6 year) comprehensive research plan. The plan would address all aspects of groundwater management including health, environmental, social and economic issues. It is anticipated that this plan would be used by both the University and state agencies as a framework for developing research programs and budget requests.

It is intended that this plan would be the key document used by the state Legislature to identify priority state research funding needs. After some discussion, this proposal was unanimously endorsed, in concept, by the Council. The next step will be for Mr. Trani to gain approval of this idea with the UW-Administration.

Gary Jackson, UW-Extension, then gave a presentation concerning the report, Agriculture Management Practices to Minimize Groundwater Contamination. This report, co-authored by Mr. Jackson, is a comprehensive summary of the practices currently available to reduce agricultural chemical loadings to groundwater. The report is the result of a major effort by UW staff to inventory and describe the many options available to reduce groundwater contamination. A short question and answer period followed Mr. Jackson's talk.

After Mr. Jackson's presentation, Bill Norem, Richard Meyer, and Ron Buchholz of DILHR gave a presentation concerning the reorganization of several of their programs. Responsibilities of the former Bureau on Plumbing and Fire Protection Systems has been split into a Bureau of Plumbing and a new Office of Division Codes and Application. All responsibilities for private sewage disposal systems are now assigned to the Office of Division Codes and Application. A copy of the revised organizational chart for the DILHR Division of Safety and Buildings is attached to these minutes.

Following this presentation, each agency gave a brief update on their recent groundwater management activities. The Council decided that an annual report should be prepared this year and each agency was given until October 26, 1987 to submit short descriptions of their activities over the past year. After some discussion, it was agreed that the 1987 report would be a very brief summary of agency actions and that the next report would be a longer report similar to the previous annual reports.

Lastly, David Lindorff gave a quick update on the preparations for the 1987 Midwest Groundwater Conference to be held in Madison October 28-30.

The next Council meeting is scheduled for December 7, 1987 at 1:00 p.m. in Room 027 of the Natural Resources Building. The meeting was adjourned.



State of Wisconsin

DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny
Secretary

DATE: October 5, 1987

File Ref: 8250

TO: Groundwater Coordinating Council Members

FROM: Lyman Wible, Administrator, Division of Environmental Standards, WDNR

SUBJECT: Local Groundwater Planning Meetings Endorsement

The purpose of this memo is to request endorsement from the Groundwater Coordinating Council for a series of meetings that will be part of an effort to determine how state agencies can be more responsive to the needs of local governments engaged in groundwater planning efforts.

This effort would begin with a series of meetings throughout the state to discuss groundwater planning with local government representatives in early 1988. The purpose of these meetings will be twofold: first, to communicate to local government representatives how state agencies work with each other and with local governments to protect and improve groundwater quality and, second, to learn from local government representatives what types of groundwater planning they are interested in participating in. The feedback received at these meetings will be used to determine how counties or other local units of government might be prioritized for groundwater planning efforts around the state and what the involvement of state agencies in those efforts should be.

This initiative is the result of the ongoing cooperative groundwater planning efforts between WDNR, UW-EX and WGNHS. At the request of Steve Born, UW-EX, a meeting was scheduled August 26 inviting representatives of WGNHS, UW-EX, WDNR, DILHR, DATCP, CWGC, SEWRPC, FVWQPA, and DCRPC to discuss what State Agencies' roles in local groundwater planning should be. Meeting members determined more information was required before any recommendations could be made and the following steps were laid out.

1. Hold the series of meetings outlined above to share and gather information on local groundwater planning priorities statewide.
2. Ask the Planning and Mapping Subcommittee of the Groundwater Coordinating Council to determine what areas most need groundwater planning around the state based on susceptibility and known contamination problems.

3. Use the information acquired through the meetings and from the Planning and Mapping Subcommittee to determine if adjustments in existing state agency programs that affect groundwater quality would be useful.
4. Determine if additional program initiatives would be beneficial.
5. Make recommendations to the Groundwater Coordinating Council.

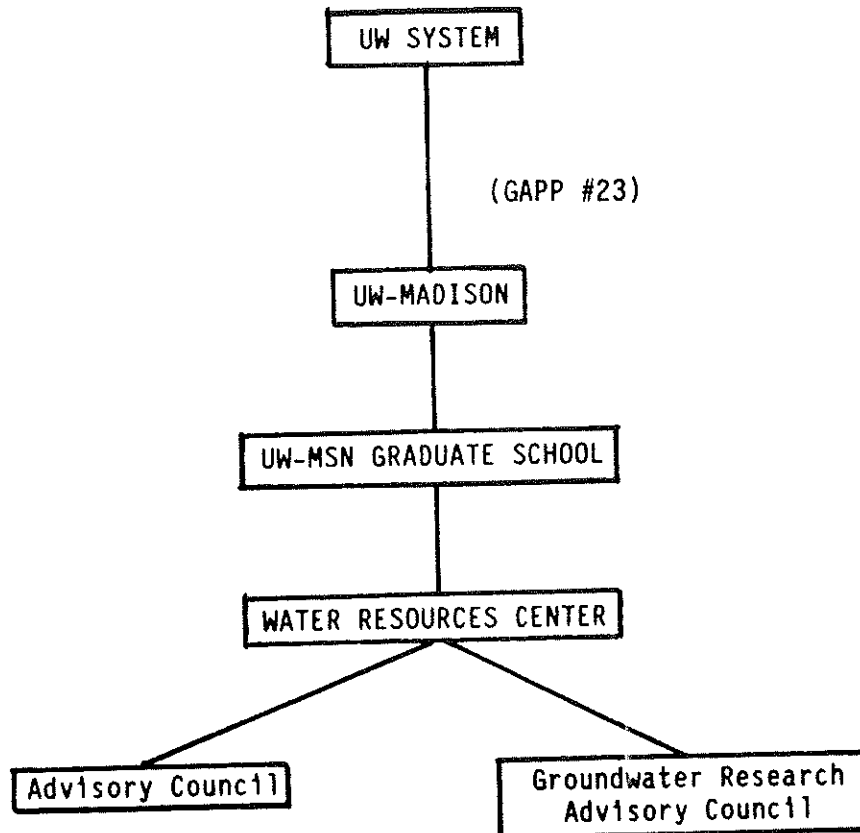
On behalf of the Local Groundwater Planning Committee, I am requesting the Groundwater Coordinating Council to endorse these meetings and communicate that endorsement through circulation of this memo to the council members' staff in order to facilitate the planning and execution of the statewide meetings. Thank you.

gwcc1
cc: Local Groundwater Planning Committee

UWS ADVISORY COUNCIL ON GROUNDWATER RESEARCH

ASSUMPTION: That there is a critical need for a long-range plan for groundwater research in the State; and, that given the adequate opportunity to participate, to identify research needs and prioritize them, and to contribute to the development of such a plan, the University System, the State Agencies, and other participating bodies will commit to the plan and work to assure its implementation. Further, that the long-range plan be viewed as a living document which can be adjusted as changes in the environment requires a re-prioritization of research needs.

ORGANIZATION:



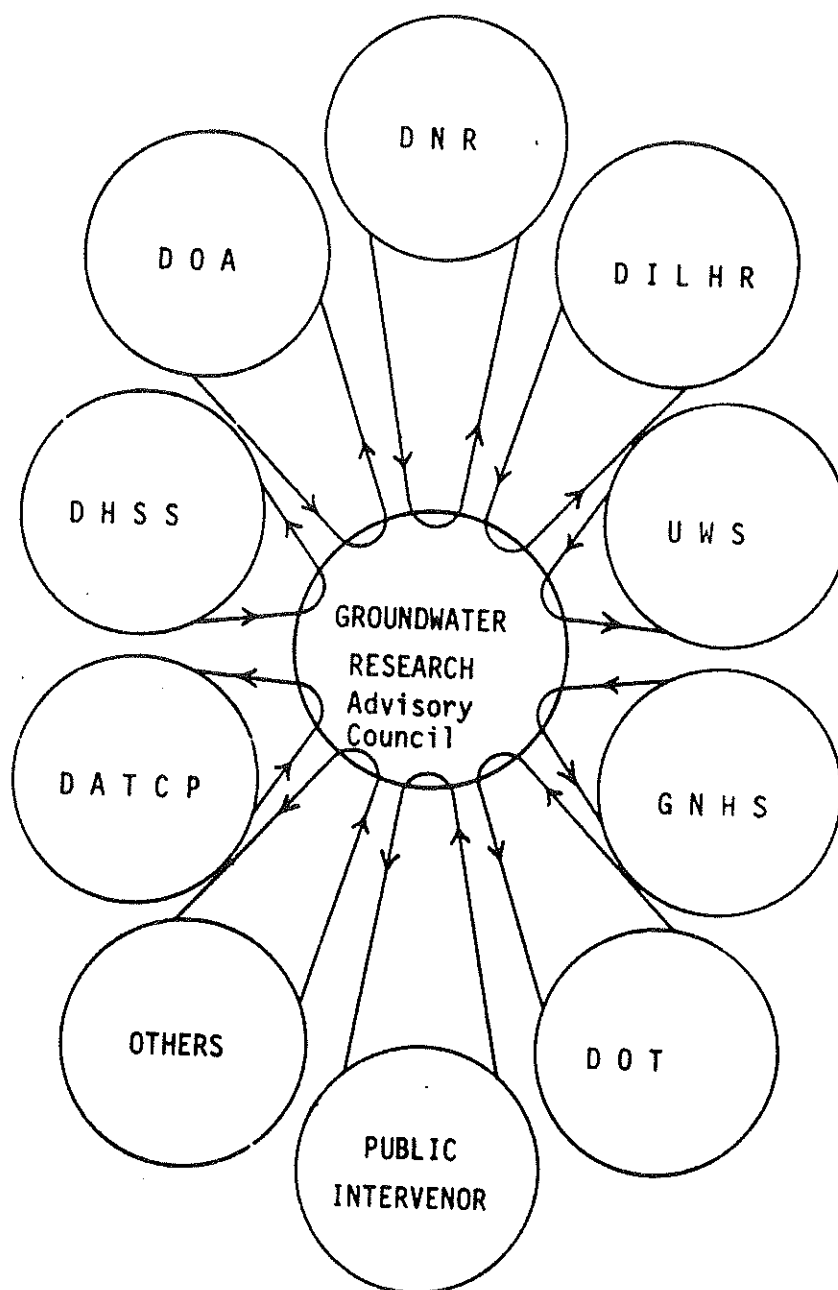
Charge: Next Page

Membership: To be most effective the Council should not exceed 15 voting members. Active participation will be expanded through the use of sub-committees assigned to address specific topics. Sub-committee chairs will meet with Council members in developing the final report. Approval of the Plan will be the responsibility of the Council.

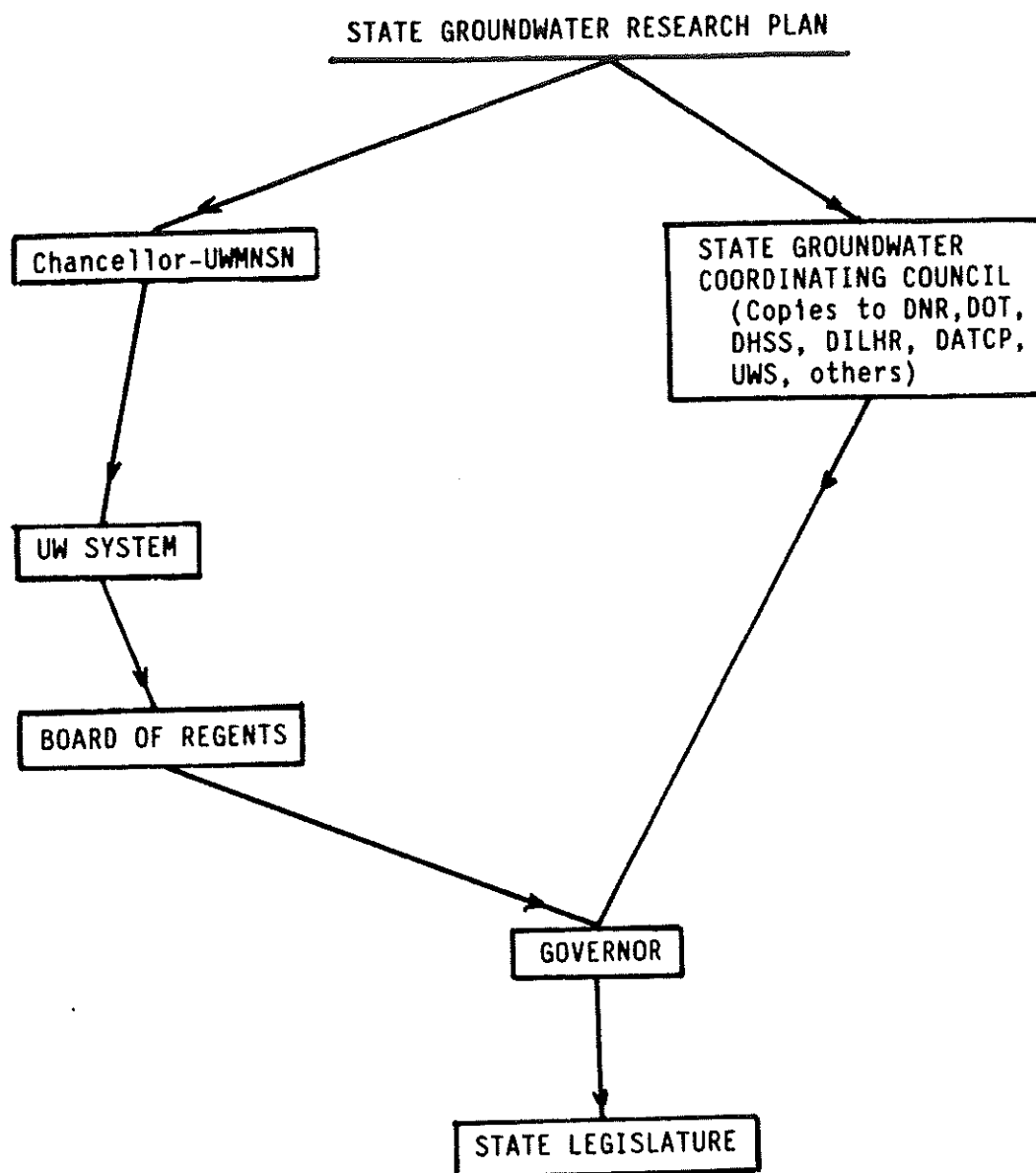
(Membership to include: UWS Institutions, State Agencies, "User" group representative, others).

DEVELOPMENT OF STATE GROUNDWATER RESEARCH PLAN

Charge to Council: To develop a comprehensive, coordinated five (or six) year groundwater research plan for the State by identifying critical basic and applied research needs, prioritizing those needs, and making recommendations on implementation and associated budgetary needs through the redeployment of existing resources, new State and Federal research dollars, and/or business and industrial support. The plan should include health, environmental, sociological, economic, legal, agricultural, geological, public policy, and industrial research needs since groundwater is a multifaceted issue and its contamination has a far-ranging negative impact on society.



IMPLEMENTATION:



DIVISION OF SAFETY AND BUILDINGS

MAY 1987 REORGANIZATION

Division Administrator
William V. Forem
266-1816

TOTAL
AUTHORIZED STAFF
244

Office of Division
Codes & Application
Richard Meyer
266-3080

Wisconsin Admin. Codes
Private Sewage
Petitions for Variance
All Material Approvals
Plating

Office Director
3 Supervisors
36 Employees

Deputy

General Office
Operations
Mary Ann Gosda

Business Operations
Purchasing
Personnel
Word Processing

1 Supervisor
7 Employees

Division Data
Processing

1 Employee

Budget

1 Employee

Data Processing
Ann Ryan

Accounting
Vacant

SAFETY INSPECTION

Ronald Remy
266-1930

Workplaces
Skl Jobs
Amusement Rides
Injuries
OSHA Rules
Asbestos

Bureau Director
1 Supervisor
20 Employees

PETROLEUM INSPECTION
& FIRE PROTECTION

William Morrissey
266-1605

Petroleum Products
Accidents
Explosions
Hazardous Situations

Bureau Director
10 Supervisors
53 Employees

TECHNICAL SERVICES

Gordon Helmeid
266-1818

Elevators
Boilers
Mines
Pressure Vessels
Mech. Refrigeration
Anhydrous Ammonia
Tank Installation

Bureau Director
3 Supervisors
24 Employees

BUILDING & STRUCTURES

John Wenning
266-1817

Electrical
Weatherization
Plan Review
On-Site Inspections
Certification of Inspectors
One & Two Family Code
Mobile Home Code
Plan Entry

Bureau Director
10 Supervisors
71 Employees

PLUMBING

James Sargent
266-8984

Plan Review
Licenses
Inspections
Educational
Programs
Plumbing Systems

Bureau Director
1 Supervisor
20 Employees

Groundwater Coordinating Council
August 26, 1988

Meeting Agenda

1. GCC Report to Legislature - Endorsement for Transmittal
2. Review and Update of Present Subcommittee Membership
3. Development and Implementation of Nutrient and Pesticide Management Practices/Relationship to U.W. Groundwater Research Decision Item Narrative (DIN) - Dave Jelinski - DATCP
4. Presentation on U.W. Groundwater Research Decision Item Narrative (DIN) - Al Beaver, Eugene Trani - U.W.
5. Research Subcommittee Report on Draft DIN
6. Council Action on DIN
7. State Groundwater Plan - Review and Endorsement of Reports - DNR staff
8. Agency Reports
9. Meeting Schedule
10. Adjourn



State of Wisconsin

DEPARTMENT OF NATURAL RESOURCES

Carroll D. Basadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

File Ref: 3230

Vice President Eugene Trani
1624 Van Hise Hall
1220 Linden Drive
University of Wisconsin
Madison, WI 53706

Dear Vice President Trani:

Thank you for meeting with the Groundwater Coordinating Council on August 26, 1988. I believe we had a fruitful discussion on the University groundwater research decision item narrative (DIN). I was pleased to hear your assertion that the University recognizes the needs and responsibilities of the other state agencies and will involve them in the groundwater research process.

As agreed, the Research Subcommittee of the Coordinating Council will meet shortly and prepare suggested changes to the DIN and Appendix A based on state agency comments. Bob Ehart and I will meet with you or Al Beaver in the near future to discuss our suggested changes. We greatly appreciate the opportunity to comment on the DIN.

On behalf of the Coordinating Council, I am hereby transmitting the resolution adopted by the Council endorsing the University groundwater research DIN. Again, I'd like to commend the University for its efforts in preparing and supporting a groundwater research initiative. If there is any way I can be of assistance in your presentation to the Board of Regents, please let me know. I look forward to working together in implementing this important initiative.

Sincerely,


Lyman F. Wible, Administrator
Division for Environmental Quality

cc: Groundwater Coordinating Council members
Al Beaver - UW
GCC Research Subcommittee members

Resolution of the Wisconsin Groundwater Coordinating Council
Endorsing Groundwater Research Initiative

August 26, 1988

Whereas the Groundwater Coordinating Council (GCC) has previously urged the University of Wisconsin to place a high priority on groundwater research needs and to seek and assemble the resources necessary to fund the groundwater research needed by state agencies; and

Whereas the University of Wisconsin, with the assistance of an advisory committee, has assembled a Groundwater Research Decision Item Narrative (DIN) and has transmitted that DIN to the Groundwater Coordinating Council for review and advice; and

Whereas the Groundwater Coordinating Council is created under s. 15.347(13), Wis. Stats., to include the President of the University of Wisconsin and Secretaries of the other state agencies or their designees with responsibilities for groundwater management; and

Whereas the Groundwater Coordinating Council is required by s. 160.50(1), Wis. Stats., to "advise and assist state agencies...in the coordination of nonregulatory programs...including...research activities and the appropriation and allocation of state funds for research"; and

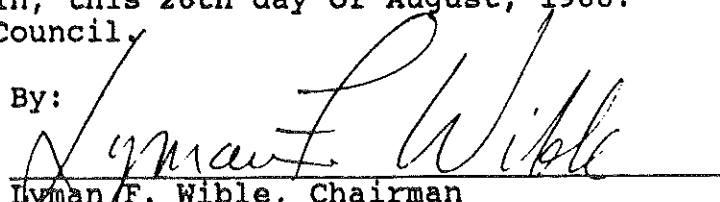
Whereas the Groundwater Coordinating Council understands that the DIN requests state funds in addition to those that support current state agency groundwater activities;

Now, therefore, be it resolved that:

1. The Groundwater Coordinating Council endorses the DIN concept which has been prepared by the University of Wisconsin for groundwater research and urges the University to include this item in its biennial budget request for inclusion in the executive budget; and
2. In recognition of the need to develop research priorities and in accordance with its duties under s. 160.50(1), Stats., the Groundwater Coordinating Council must have a substantive role in the development of the long range research plan and the recommendation of research priorities; and desires an advisory role on individual projects, where appropriate, to assure that the needs of state agencies are met.

Dated at Madison, Wisconsin, this 26th day of August, 1988.
Groundwater Coordinating Council,

By:


Lyman F. Wible, Chairman

