

MINNESOTA GROUND WATER ASSOCIATION

NEWSLETTER

v. 2, n. 4

July 1984

It's another early Monday morning, Mr. Ground Water sips his coffee and wonders why it has such an odd taste. Phone rings.

"Hello, Mr. Ground Water speaking, may I help you?"

"Yea, I live near that recent chemical spill and my water is tasting kind of funny, is there someone who can test it?"

"You bet, we're investigating that site right now. I'll send someone out to check your problem and also have them grab a water sample. Do you know how deep your well is?"

"Uh, no. I thought I was on city water!"

"You could be, uh, how does your coffee taste this morning?"

"It has kind of an odd taste."

"Hmmm, we'll get someone out there today. Goodbye." Mr. Ground Water sips the sludge in his cup and calls to one of his workers, "Say Zog, get some of those sample bottles, the ones on the work bench near the janitor's cleaning supplies and go get a sample at this guy's house. Say, maybe you better rinse out those bottles in the sink. By the way, do you think the coffee tastes odd? I wonder, do you know if the city's wells are located near that spill site?"

Last spring Mr. Ground Water learned quite a bit about the professional as an expert witness and last summer he learned how to drill sampling and monitoring wells. This summer, if he still has his job, Mr. Ground Water will have the chance to hear about Ground Water Quality Sampling and Analysis because that is the title of the MGWA's all day seminar to be held on August 23rd for an unbelievable price of \$20/members (\$30/non-members), pre-registration will be necessary. The speakers for this seminar are from Minnesota, Illinois, and Arizona representing public and private laboratories, state agencies, and private consulting companies. Lunch is included and the meeting will close with a philosophical-social discussion session. In fact, anyone that would like to help sponsor this part of the program should contact Gretchen Sabel (612/296-7318). Several companies have already agreed to help cover the cost of this and we welcome anyone else who would like to contribute. There will be an exhibit room and if you are interested in setting up a booth, give Gretchen a call. The seminar will be at the Thunderbird Motel in Bloomington, right off of I-494 and 24th Avenue South near the old Metropolitan stadium, the domeless one. Details inside, let's have a big turnout for this one.

This fall the MGWA is looking into a seminar and field trip on karst hydrogeology. I will have more information by the summer seminar and if you are interested in helping out, give me a call (612/296-0431). The MGWA was one of many cosponsors of another ground water conference, this time in Thief River Falls. Elections for new officers is coming up, please think about it. The MGWA will have a poster display at the Midwest Ground Water Conference in Lawrence Kansas this October 1-3. Anyone who will be attending the NWWA conference in Las Vegas this September and would like to represent the MGWA, please give me a call. Watch the Sept.-Oct. Ground Water issue for an editorial by Pat Leonard-Mayer; and the MGWA wishes Don Albin, USGS district chief, a speedy recovery. See you at the Thunderbird.

Gil Gabanski, President

MINNESOTA GROUND WATER ASSOCIATION



1984 MGWA Summer Seminar
Topic: Ground Water Quality Sampling and Analysis
Thunderbird Motel, Bloomington August 23, 1984

- 8:00 am Registration and Exhibits
8:30 Opening Remarks - Gil Gabanski, MGWA President
- 8:30 Planning Your Sampling Expedition - Rick Johnston, Minnesota Pollution
Control Agency
9:00 Collecting Representative Ground Water Samples - John Helfrich,
Illinois State Water Survey
- 10:15 Break and Exhibits
- 10:30 Quality Control and Quality Assurance in Sample Collection -
Earl Finder, Serco Laboratories
11:00 Sample Transportation, Chain of Custody - Roger Blomquist, Braun
Engineering
- 11:30 Lunch and Exhibits
- 1:00 pm The Hydrologist-Laboratory Interface - Sue Keith, Arizona
Department of Health Services
- 2:15 Break and Exhibits
- 2:30 Laboratory Procedures - Bill Scruton, Minnesota Department of Health
3:00 Avoiding Problems in Ground Water Monitoring - Steve Vanderboom,
Pace Laboratories
3:30 Panel Discussion on Problems in Interpretation of Ground-Water
Quality Data:
Al Gebhard, Barr Engineering
Bob Karls, Minnesota Pollution Control Agency
Sue Keith, Arizona Department of Health Services
- 5:00 Social Hour

MINNESOTA GROUND WATER ASSOCIATION SUMMER SEMINAR

Although best known for its "10,000 lakes," Minnesota is highly dependent on ground water. About two out of every three Minnesotans use ground water as a high quality source of drinking water. Increasingly, ground water supplies in Minnesota are threatened by a variety of contamination sources including waste impoundments, underground fuel tanks and pipelines, landfills, feedlots, unregulated hazardous waste storage and dump sites, salt storage piles and many other land use practices. While a relatively small percentage of available ground water has been degraded, incidents of contamination are widespread and are not limited to industrialized or densely populated areas.

The monitoring of ground water quality is, therefore, a growing concern. Water users need to be assured that the water they use is safe for all their needs. By the same token, persons engaging in activities which may contaminate ground water need to be able to assure the regulatory authorities they report to that the ground water impacts of their activities are negligible. It is the responsibility of the ground water professional to ensure that the data collected in these endeavors truly represents the quality of the ground water in question.

The focus of this year's MGWA summer seminar will be on ground water quality sampling and analysis. The seminar will provide MGWA members a forum for sharing their expertise and discussing their problems on this timely topic with other ground water professionals. The speakers represent a variety of backgrounds, each speaking from his or her own perspective to provide the audience with a wide view of the issues and priorities of ground water quality monitoring. A social hour follows the seminar for less formal meeting and mingling. We look forward to seeing you there.

- MGWA officers

MGWA Summer Seminar - Registration

You must register in advance to attend the MGWA Summer Seminar. The registration fee is \$20 for members, \$30 for non-members (the non-member fee includes a 1-year membership in the Association). The fee covers not only the presentations and exhibits, but also a buffet lunch, refreshments at breaks, and the social hour.

Your registration fee must be received by MGWA no later than Friday, August 17, 1984. Register today and mark your calendar.



JOIN THE MINNESOTA GROUND WATER ASSOCIATION

MGWA sponsored activities are paid for with dues and contributions from our members. If you wish to receive the quarterly Newsletter and to attend MGWA meetings and seminars, please become a member of the Association. Dues are \$10.00/year (\$5.00 for students). Send to MGWA, P.O. Box 3362, St. Paul, MN 55165.

*

Board of Directors: Gil Gabanski, President, MDNR, 612/296-0431; Dennis Woodward, Vice-President, USGS, 612/725-7841; Kelton Barr, Secretary, Barr Engineering, 612/920-0655; Gretchen Sabel, Treasurer, MPCA, 612/296-7318; Tom Clark, Membership Chairperson, MPCA, 612/296-7791.

* * *

Material for the MGWA Newsletter can be mailed to MGWA, P.O. Box 3362, St. Paul, MN 55165, or to Pat Leonard-Mayer at Minnesota Department of Health, 717 Delaware Street S.E., P.O. Box 9441, Minneapolis, MN 55440.

Summer Seminar Exhibits

Potential exhibitors for the MGWA Summer Seminar are being contacted at this time. Among those who will be present are: Galtek Corp., Johnson UOP, Timco, QED Environmental, Minnesota Valley Testing Labs, and the National Water Well Association. The exhibits will be a valuable part of the Seminar - another good reason for attending. Be sure to send in your registration today and mark your calendar.

Registration for the MGWA Summer Seminar:
Ground Water Quality Sampling and Analysis.
Thunderbird Motel, Bloomington, Minnesota, August 23, 1984

Name(s): _____

Amount enclosed: _____

Make checks payable to: Minnesota Ground Water Association
Mail to: MGWA, P.O. Box 3362, St. Paul, MN 55165

MGWA must receive your registration no later than August 17, 1984.

MINNESOTA GROUND WATER ASSOCIATION SURVEY

The MGWA Board of Directors is asking members to fill out the following survey and return it to Kelton Barr by August 31. You can mail the completed survey to Kelton at Barr Engineering, 6800 France Avenue South, Minneapolis, MN 55435, or drop it off at the Summer Seminar. Responses will be compiled and used by the Board to help plan Association activities over the next year or two. A summary of responses will appear in the next Newsletter. As a reminder, MGWA sponsored and co-sponsored events from October 1982 to the present are listed following the survey.

Please indicate your

occupation_____

number of years experience_____

How long have you been a member of MGWA?_____

I. Program

1. Has the location of a MGWA meeting or seminar, or the day of the week on which it was held, prevented you from attending a meeting or seminar that you would otherwise have attended?

2. Do you prefer having short meetings (four hours or less) in the afternoon or evening? What days are best? Worst?

3. Can you suggest topics / format / locations for future meetings?

4. Can you offer the use of facilities for future MGWA meetings?

5. Suggest speakers (local or nationally known) you'd like to have invited to speak at a MGWA meeting or seminar. Would you like to be a speaker? On what topic?

II. Newsletter

1. Do you get much "news" out of the Newsletter? Are there topics that are generally being overlooked or overemphasized?

2. Is a quarterly newsletter adequate for keeping members informed or would a bimonthly or monthly newsletter be more useful?

3. Is the "type, cut, and tape" format of the Newsletter adequate or would you prefer a professionally prepared publication? Would you pay more for it?

4. When bulk mailing is used, do you get your copy of the Newsletter in time to attend the meetings listed?

5. Are there regular features or specific topics you would like to see addressed in the Newsletter?

III. Other

1. Should the Membership Chairperson prepare an updated Directory at this time? What information should be included?

2. What can the Association offer to members that is not now offered?

3. Have you ever made a cash contribution to the Association? Would you be more willing to contribute if the money went into a fund for a designated purpose?

4. Do you think that the Association has made a difference - in general, or to you personally - in its first two years? Are you aware of any problems or conflicts resulting from MGWA activities?

Please add any other comments on a separate sheet. If you want a response to your comments, be sure to include your name. Thank you for responding to this survey.

MGWA Past Meetings

Hazardous waste disposal and ground water contamination; William Mitchell College of Law, November 1982.
Legal and regulatory aspects of ground water contamination in Minnesota; Earle Brown Center, University of Minnesota, St. Paul campus, March 1983.
Ground water modeling: Is it true that the Emperor has no clothes; University of Minnesota, St. Paul campus, May 1983.
Drilling, sampling, and monitoring well installation; Johnson Well Screens, New Brighton, August 1983.
The why's, wherefore's, how's, and I-told-you-so's of piezometer installations, St. Paul Vo Tech, November 1983.
The professional as an expert witness; Earle Brown Center, University of Minnesota, St. Paul campus, March 1984.
Modeling Aquifer Thermal Energy Storage: A practical application; St. Paul Vo Tech, May 1984.

ELECTION OF NEW OFFICERS FOR MGWA

The bylaws of the Minnesota Ground Water Association call for the election of three officers this year: the President, Vice-President and Secretary. For this, a nominating committee has been appointed by the Board of Directors to solicit and select candidates for each of these offices. Members of the nominating committee are Kelton Barr, Chairman; Dennis Woodward; and Pat Leonard-Mayer.

If you would be willing to undertake some responsibilities for the Association or know of likely candidates who should be contacted, we encourage you to contact any of the members of the nominating committee by August 15. From this pool of candidates, the nominating committee will select a slate of candidates to be announced at the August meeting of the MGWA. Additional nominations from the floor can be made at that time; nominees must agree to serve if they are elected. Election of new officers will be conducted by mail ballot following the August meeting, and the results of the elections announced at the next meeting of the MGWA.

Our Association has enjoyed phenomenal growth over the last two years. It has earned an enviable reputation for its excellent seminars, symposia and newsletters. Because of its efforts, the ground water profession and the general public have gained from the increased understanding and exchange of ideas brought about by the Association. This can continue only if the Association's officers are capable and motivated and the membership is willing to assist in the planning and execution of the Association's endeavors. In the final analysis, the future potential of the MGWA resides with each of us, individually and personally.

Kelton D. Barr (920-0655)
Dennis Woodward (725-7841)
Pat Leonard-Mayer (623-5297)

MEMBERSHIP

The following new members joined MGWA between April 1 and July 5, 1984:

John B. Erdmann	E.A. Hickok & Associates	Wayzata
Paul Gaudreault	MPCA	Roseville
John Gray	Minnesota Valley Testing Labs	New Ulm
Paul Horick	Iowa Geological Survey	Iowa City, Iowa
Kent Swanson		Bemidji
Jerry Wright	University of Minn. Extension	Morris
Sheilah Zimmerer	Student	Minneapolis

Welcome!

NOTES / MEETINGS

Membership Application

You may have noticed the new MGWA membership application form enclosed with this Newsletter. Take a moment to read it over. It was developed to help explain why the Association was organized and what a new member can expect when joining the Association. Pass the application along to a non-member colleague who is interested in Minnesota's ground water resources.

The Minnesota Project

The Minnesota Project has produced a 30-minute videotape and prepared a model ground-water ordinance. The videotape examines the karst - ground water - health connection. It was broadcast twice during prime time in Rochester, Stewartville, Kasson, Zumbrota, and Byron on cable t.v. The ordinance, developed for local units of government, will be available in mid-July. It includes provisions for sinkholes, water well construction, abandoned wells, individual sewage disposal systems, and livestock waste control. Although the ordinance was written specifically for southeastern Minnesota, only the sinkhole section is unique to karst. For more information about the videotape and the ordinance, contact Loni Kemp at the Minnesota Project office in Preston, Minnesota (507/765-2700).

League of Women Voters

Loni Kemp also mentioned that the League of Women Voters in Cannon Falls, Goodhue County, recently began a new public education program. Since June, they have been distributing flyers - in public places, at fairs, even by going farm to farm - to encourage residents to have their water wells tested through the county. The program is being coordinated with the county sanitarian and is still in progress.

Minnesota Rules

The Minnesota agency rules have been renumbered. For example, the Water Well Construction Code, formerly 7 MCAR §§1.210 - 1.224, is now Minnesota Rules Chapter 4725 (1983). A citation to a specific provision will include a part and a subpart: Minn. Rules p. 0000.0000, subp. 2.A(1983). The first four digits of the part number are the same as the chapter number.

Vertical Heat Exchange Devices

The Minnesota Legislature passed a law in the 1984 session to regulate vertical heat exchange devices. Vertical heat exchangers, commonly known as earth coupled heat loops, are heating or cooling devices consisting of a sealed piping system, installed vertically in the ground, which transfers heat to or from the surrounding earth. For heating, water or a water and antifreeze solution is circulated through the system. The heat of the earth is transferred to the fluid; the heat absorbed by the loop is then extracted by a heat exchanger (heat pump). For cooling, the system is reversed to use the earth as a heat sink. The vertical heat exchanger is similar in function to the ground water source heat pump except that the heating and cooling capacities and power requirements of the heat pump are a function of the ground water temperature and flow rate. Regulation of vertical heat exchangers will be done by the Minnesota Department of Health.

Roman Koch

Iowa Ground Water Association

A state Ground Water Association is now being organized in Iowa. At this time, all officer, board, and committee positions are filled and an initial survey has been conducted. The survey indicated that at least 73 individuals from a variety of professions are interested. An organizational meeting, to install officers, board, and committee members and to review the Constitution, Bylaws, and Articles of Incorporation will be held in September. A general membership meeting will be held in the fall.

Ground-Water Quality in Northeast Iowa

The Iowa Chapter of the Soil Conservation Society of America and others are sponsoring a conference to address aspects of soil conservation and other factors that affect ground-water quality in northeast Iowa. The conference will provide background on how ground water is being adversely affected, present what can be done to improve and maintain quality, and will show how landowners and public agencies can work together to solve problems. The conference will be held on October 16-17 at Luther College in Decorah, Iowa. Papers will be presented on the 16th, a field trip to view karst features in the area is scheduled for the 17th. The cost will be under \$40. To attend, you must act quickly - contact Roger Koster by July 15 at the Soil Conservation Service Area Office, 163 Franklin Street, West Union, Iowa 52175.

Midwest Groundwater Conference

Just a reminder that the Midwest Conference is coming up on October 1-3, in Lawrence, Kansas. State Associations from the Midwest will participate in a poster session at the conference - to describe what we've done, how we were organized, etc.. To receive registration information for the conference call Jerry Carr, 913/864-4321, at Lawrence.

Monitoring Well Rules

Rules governing the registration of engineers and the construction of monitoring wells were formally adopted and placed into effect in January, 1984. Requirements of the rules include the following: monitoring wells may only be installed by a licensed water well contractor or a professional engineer registered as a monitoring well engineer; a monitoring well may only be open to one aquifer and may not interconnect aquifers; plans and specifications must be submitted to the Minnesota Department of Health for approval of monitoring wells drilled below the aquifer nearest the ground surface; monitoring wells must be protected from damage.

Jim Nye

National Water Alliance - Midwest Water Symposium

The National Water Alliance (NWA) Midwest Water Symposium was held on May 18-19 at the Radisson in St. Paul. The purposes of the symposium were to clarify the role of states and regions in the development of a national water policy and to examine alternative management approaches to water issues. Speakers examined a number of topics including: the history of the process of establishing water policy and how the process can be modified to reflect current needs and interests of states and regions; an assessment of local management attempts which cut across geographical, political, and institutional boundaries; and an examination of a specific proposal - a national water policy incorporating water re-use as described in the book Future Water (William Morrow, 1983). Proceedings of the symposium will be available (contact NWA, 50 E Street, S.E., Washington, D.C. 20003, 202/646-0917).

The National Water Alliance, a non-profit, bipartisan, educational institution, was created in 1983 to serve as an information bridge among all water interests. NWA brings together Congressional leadership (Senator Durenberger is the NWA Co-chair) with corporate, agricultural, environmental, consumer, scientific, and other interests to ensure that water policy is made with wide participation. The minimum membership in NWA for individuals is \$10.

Ground-Water Research in Minnesota - USGS

The following material was received too late to be included in the April Newsletter Research Section. Only a few of the USGS ground-water projects can be highlighted here due to space limitations. For more information, see the report Status of Water Resources Projects in Minnesota, compiled by J.A. Jannis.

Appraisal of the Ground-Water Resources of the Twin Cities Metropolitan Area

The objectives of this study are (1) to develop an understanding of the hydrologic system in the Metro area, and the geologic framework in which it operates, (2) to evaluate the effects of continued development of ground-water resources in the area using the USGS flow model, and (3) to provide state and local water managers and planners the information and the means to evaluate alternative development and management schemes that are proposed.

Preliminary model simulations, using the 10-layer, quasi-3-dimensional finite difference model of the five aquifers and four confining units, have reproduced the major features of the Mount Simon-Hinckley and Prairie du Chien-Jordan aquifers. Differences between calculated and observed head in some area suggests that vertical hydraulic conductivities in the Eau Clair and the St. Lawrence-Franconia units are lower than previously estimated. Following additional steady state and transient calibration, several alternative ground-water development schemes will be simulated. These will include factors such as increased pumping for ground water heat pumps, increased pumping in the deeper aquifers to avoid contamination of upper aquifers, and partial conversion of the Minneapolis-St. Paul water supply systems to ground water.

This project is being done in cooperation with the Metropolitan Council, MGS and DNR. Contact: Michael E. Schoenberg.

Hydrogeologic and Water-Quality Characteristics of Aquifers in Minnesota

The objectives of this project are (1) to delineate the underground sources of drinking water in Minnesota and present the rationale for designating 14 principal aquifers in the State, (2) To describe the general hydrogeology and geochemistry of the aquifers, (3) to show the major aspects of the ground-water system related to underground injection control using maps, geologic sections, and stratigraphic columns, and (4) to compile dissolved solids data and prepare maps showing the areal distribution of dissolved solids for each aquifer. Four maps have been approved for publication. These describe the following aquifers: Mount Simon-Hinckley, Iron-ton-Galesville, St. Peter, and Prairie du Chien-Jordan.

The project is being conducted in cooperation with the US EPA for their Underground Injection Control Program. Contact: James F. Ruhl.

Hydrology of Big Marine Lake, Washington County

The objectives of this project are (1) to define the hydrologic system of Big Marine Lake, (2) to estimate an annual water budget, and (3) to establish the relationship between water-level fluctuations in the lake and in the aquifer system. The presence of clay layers, locations of ground-water divides, and the direction of ground water flow into and out of the lake has been determined. Measurements of the potentiometric surface in the Prairie du Chien-Jordan aquifer show that water-level fluctuations in the aquifer are probably responsible for the extreme variations in lake levels observed since 1847. Additional bedrock wells will be installed to obtain water-level data and for mapping. A conceptual model of the ground-water flow system will be used to explain the ground water - lake interaction using historical data.

This project is being conducted in cooperation with the DNR, Carnelian-Marine Watershed District. Contact: Robin G. Brown.

Impact of Agriculture on Quality of Water in Surficial Sand-Plain Aquifers in Douglas, Kandiyohi, Pope, and Stearns Counties, Minnesota

The objectives of this project are (1) to assess the areal and seasonal variation in water quality in the sand-plain aquifers in relation to agricultural practices, (2) to determine if there is vertical mixing in the aquifer down-gradient from irrigated areas, (3) to determine long-term changes in water quality, (4) to provide baseline data for future studies on water quality, and (5) to establish additional water-quality monitoring wells for the state network. Twenty wells were sampled for nutrients, iron, manganese, chloride, and sulfate; 33 wells were sampled for nitrates only; 8 wells were sampled for pesticides. Four samples contained the herbicides trifluralin or atrazine in concentrations from 0.16 to 0.6 ug/l. Samples from nested wells indicated that, of the constituents analyzed, nitrates were the most clearly stratified. Nitrates fluctuated seasonally more than other constituents. Analyses of water samples from wells representing three different land-use environments were compared: average nitrate concentrations were 1.9 mg/l for areas of minimal agricultural use, 5.1 mg/l for cultivated areas without irrigation, and 11 mg/l for irrigated areas.

Agencies cooperating in the project are WesMin Resource Conservation and Development Association and County Soil and Water Conservation Districts. Contact: Henry W. Anderson, Jr.

Development of Surface Geophysical Techniques for the Exploration of Buried-Drift Aquifers in Minnesota

The objectives of the project are (1) to develop the capability to conduct seismic refraction and reflection surveys of thick drift deposits in Minnesota, and (2) to develop field strategies and interpretation techniques for utilizing geophysical methods to determine depth to bedrock and to delineate unconsolidated aquifers in buried bedrock valleys, in river valleys, and interbedded in thick drift. Drift-filled bedrock valleys to be surveyed include buried alluvial channels near Hastings, Dakota County, buried tunnel valleys near Grindstone Lake in Pine County, and selected areas in Winona County. Buried beach ridges will be examined in Polk, Marshall, and Kittson Counties. Buried outwash plains will be examined in Swift County. A literature search was made and an annotated bibliography prepared.

This project is being conducted in cooperation with the DNR. Contact: Dennis G. Woodward.

IF YOU WANT TO REPRINT ANY INFORMATION FROM THIS NEWSLETTER

please request permission of the author or contact the Newsletter editor.

Thank you.

Coming in the next MGWA Newsletter: Risk, Uncertainty, Decision-Making and Ground Water.
Don't miss it!

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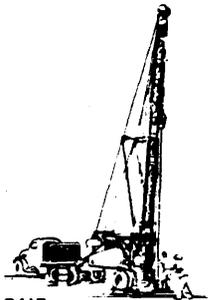
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