Minnesota Ground Water Association

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President Elect's Page

Why You are a Member - Or, Why are you a Member?

- Keeping up with progress and changes in ground water technological issues.
- Learning new methods and techniques.
- Networking, contact with others in the field.
- Fellowship, social contact.
- Changes in regulatory affairs, rules, requirements.
- It looks good on the resume.
- Information on seminars, meetings, classes, opportunities.
- Support for ground water concerns and awareness in the community.
- Concern for the environment.
- Reason to get out of the office.
- My company pays for me to be a member.

These reasons and others apply to our membership (now close to 600 members) some or most of the time, but from recent participation at meetings and election voting, the most common reason for membership might be "It looks good on the resume". Less than 5% of the membership cast ballots in the fall elections, and you can be sure the candidates voted for themselves or the opposition. Voter turnout for the fall election presented a less than overwhelming mandate for candidates to carry on the duties and obligations as officers of the MGWA. Attendance at meetings is at times mediocre. Cost, time, date, location, weather, topic, all are certainly factors for not attending, but now is the time to make your preferences known. The officers and volunteers who prepare and develop program ideas may be missing the boat, striking out, oblivious to the obvious, have their heads buried in the sand, are out to lunch or just plain out (of it). But the membership of MGWA needs to participate and let their interests and concerns be heard. The present officers have arrived at their duties with certain experiences, biases, knowledge, contacts, and interests in place and have developed meeting topics using that base. Now is the time to get what you want from the meetings and activities of the MGWA.

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Spring Meetings Summary

- **Birdsall Lecture**

In late February, MGWA, Macalester College, and the University of Minnesota cosponsored the visit of this year's Birdsall Distinguished Lecturer, Dr. Leslie Smith, to the Twin Cities. Dr. Smith lectured at the University as part of the Geology Department's Seminar series, he taught in one of Dr. Pfannkuch's regular classes, and he gave an evening seminar at Macalester college. Approximately 45 MGWA members were in attendance at the evening lecture on flow and contaminant transport in fractured rock.

- **Project Management Workshop**

Approximately 60 people attended the Workshop on Project Management which MGWA cosponsored with the Minnesota Chapter of the Association for Women Geoscientists on March 8th. Speakers were: **Jane Willard** of EnPro Assessment Corp., **Betty Craig** of Betty Craig Associates, **Steve Birkland** of Birkland & Assoc., and **Ron Taylor** from BusinessWare, Inc.

Many thanks to **EnPro Assessment Corp.**, which sponsored a portion of the refreshments.

If you missed the seminar, you might want to check out some of the books on the reading list supplied by one of the exhibitors, Odegard Books of St. Paul. Any of the following can be obtained through Odegard's:

Be an Even Better Manager - Michael Armstrong.

Cash Flow Control Guide - Upstart Publishing Group.

Competing against Time - George Stalk Jr. and Thomas M. Hunt.

Creating the High-Performance Team - Steve Bucholz and Thomas Roth.

Creative Time Management - J. L. Barkas.

Effective Meeting Skills - Marion E. Haynes.

High Impact Time Management - William T. Brooks.

How to Write A Winning Business Plan - Joseph R. Mancuso.

Managing Assertively - Madelyn Burley-Allen.

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The MGWA board is seeking your ideas for meeting or conference topics for the coming year. We are also seeking your nominees for candidates for the positions of Treasurer President Elect (who will serve as president in 1991-1992), and Editor (who has typically served a multi-year sentence).

The board will be more than happy to assemble the components of a program in exchange for suggestions and ideas for topics. From the lowliest field grunt to the loftiest project manager or company officer (maybe I mixed up that lowliest and loftiest), you all have an interest in ground water. You must have some area that you would like to know more about, need to know more about, or know everything there is to know about, in which case we will tap your vast knowledge base as a presenter at a meeting.

But, we need to know what will get you to our next meeting(s). That perplexing problem, management morass, marketing mix-up, client crisis or technical tangle has surely been faced and defeated or run away from by somebody before (although there are always new windmills to battle).

We want to include all areas from the most mundane activities like project management down and dirty, slugging it out in the trenches between regulators and the regulated, to the esoteric issues of drilling mud and drill rigs, client-consultant-legal counsel-regulator-employee-employer (and any combination thereof) relationships. This organization exists for its members, and has the capability to inform, educate, and most of all serve that membership.

This newsletter contains a questionnaire intended for the membership, and other parties who bootleg a copy of the newsletter, to respond to this request. Although we would love to supply a stamp, it's going to be up to you to come up with the postage to get it to the board. Let us know what topics are areas you would like to see addressed in meetings, articles, conferences, seminars, and the board will set to work and develop programs related to the topics.

It's time to justify some of those reasons for membership listed at the start of this essay and put your interests and concerns for ground water issues in the public eye.

The editorial staff of the newsletter also welcome your input in the form of articles, suggestions, etc. This organization and newsletter exist for the membership and we would like to see more involvement of the members in all phases of MGWA activities.

Our **next meeting** is an afternoon seminar which we are cosponsoring with the University of Minnesota's Geology Department. It will be held on **June 7th** at 3:30 pm in Pillsbury Hall 110. The speaker is Dr. E. A. Sudicky from the Waterloo Center for Ground Water Research, University of Waterloo, Waterloo Ontario. His topic is Field Observations and Numericl Experiments of Ground Water Flow and Solute Transport in Fractured Clay.

Meetings Summary cont.

Managing for Peak Performance - Alan Weiss.

Managing for Results - Peter F. Drucker.

Performance Planning and Appraisal - Patricia King.

- **Aquifer Test Analysis Workshop**

Yehuda Bachmat, Director of the Isreali Hydrologic Survey, conducted a workshop on single borehole techniques on March 20th. The workshop was cosponsored by MGWA and the Geology Department of the University of Minnesota. Approximately 10 MGWA members were in attendance.

- **Field Techniques and Data Interpretation Seminar**

The Minnesota Ground Water Association hosted a meeting to discuss field data collection and interpretation on Monday May 7, 1990, at the Earle Brown Center on the St. Paul Campus of the University of Minnesota. Approximately 120 were in attendance.

Gary Chirlin of Chirlin and Associates, Rockville, Maryland, discussed the development and application of slug tests to hydraulic parameter interpretation and some unresolved issues regarding the use of slug tests.

Chris Weber of InSitu, Inc., Laramie, Wyoming discussed the application of data loggers and transducers in aquifer testing and the techniques for getting the most out of the equipment.

Phil Davis of Geosphere Midwest, Brooklyn Park, Minnesota, presented techniques for defining the extent of contaminant plumes using geophysical methods.

Rick Marton of Barr Engineering, Bloomington, Minnesota, presented the use and techniques of soil vapor surveys including field techniques and data interpretation.

C.V. Theis Award.

The C.V. Theis award for major contributions in ground water hydrology was awarded to Thomas A. Prickett, President of Thomas A. Prickett and Associates, a graduate of the University of Illinois.

Mr. Prickett worked for seventeen years as a hydrologist for the Illinois State Water Survey. In 1977, he moved on to the private sector. He was vice president and general manager for Camp Dresser & McKee, Inc. until 1981, when he founded his own company. Mr. Prickett was one of the forces behind the introduction and acceptance of computer methods in the field of ground water hydrology. He has been active in professional societies and has published extensively in state publications and journals.

The C. V. Theis Award is given annually by the American Institute of Hydrology. Its goal is the advancement of hydrology.

Abandoned Well Study

Reprinted from Land and Water Conservation, a publication of the Hennepin Conservation District

Abandoned wells are a potential hazard to ground water as they provide a direct pathway for surface or near-surface contaminants to reach aquifers. Increased awareness of the sensitivity of our aquifer system to surface activity demonstrates the need to locate, rank, and develop a sealing program for the estimated 147,000 abandoned wells in Hennepin County.

Hennepin Conservation District is currently developing a method to locate abandoned wells throughout the County. A pilot study was conducted in Edina in the fall of 1989 to determine the feasibility of field-locating abandoned wells. The outgrowth of this study will be a step by step guide on how to locate wells.

Success of a well location program within each municipality is dependent upon the accuracy and availability of city records. For wells drilled before 1974, the only evidence of a well was found by comparing the date a building permit was issued to the date city water was installed. If more than a few months elapsed between the building permit and the city water hook-up, it is possible that the homeowner or builder had a well drilled on the site.

Since 1974, well drillers have been required to submit a record to the Minnesota Department of Health of each well drilled. This record is known as a Minnesota Water Well Record and allows a unique well identification number to be associated with each well.

Other sources can be utilized when city sewer and water records are incomplete. Information can be found in aerial photos, turn of the century plat maps, in the memories of long time residents and most importantly, historical society records.

The pilot study was designed to track Edina as it evolved from rural to commercial and residential, and to determine if wells could be located through this passage of time and multiple developments. Because of time constraints during the initial study, two areas within Eagan were chosen: 1) an area that evolved from rural to residential, and 2) an area that evolved from rural to residential to commercial with numerous re-development phases.

Structures on aerial photos or plat maps, address listings in historical directories and building permits were all taken to indicate the existence of a well. Likewise, structures with building permits post-dating city water installation were assumed to not have a well.

These sources, spanning the time from 1860 to present, were then cross checked with all water related agencies such as the Minnesota Geological Survey and the Department of Natural Resources. Of all wells drilled in the area, the study team felt confident that 98% had been located.

The prediction of a well at a specific address was then field checked with a door to door questionnaire. The field check confirmed the location of 99% of the wells and produced additional information on the status and construction of the wells.

A system of priorities can be established for sealing. High risk characteristics of wells are: condition of construction (i.e. depth, age, diameter of casing), proximity to critical areas, and penetration to municipal aquifers. Critical areas include designated hazardous waste areas, landfills, fuel storage tanks or pipelines, and corrosive soils. A complete list of these variables, specific to each municipality, will enable city officials to assess the potential threat to their water system.

A well location handbook compiled by the study team will offer suggestions for handling the data collected, project cost-time estimates for tracking compliance in sealing wells, and clarify the current well code for enforcement by city officials. Hennepin Conservation District hopes to help municipalities to locate and inventory all wells within the county.

Update on Well-Sealing Cost-Share Grant Program

Reprinted from the Water BillBoard of April 17, 1990

Program Origin

The Ground Water Protection Act provided for limited state funding to establish a cost-share program to seal abandoned wells. The program will be administered by the Board of Water and Soil Resources (BWSR) with the grant monies for well sealing going to selected counties. The legislation directs BWSR, in consultation with other agencies, to select counties to participate in this effort. The selected counties may contract for the administration of the well-sealing program with another local government unit, such as a soil and water conservation district or community health services agency. BWSR is also directed to establish priorities for well sealing.

Funding

A total of $400,000 will be available for cost-share grants during the period July 1990 to June 1991. This will be enough money to seal only a few hundred wells statewide. Because of the limited funding, only a few selected counties will receive funding from the first phase of the program beginning July, 1990. If the legislature continues the funding beyond 1991, additional counties may be added in the future. Beginning in July of 1991, funds appropriated will be available only to those counties that have identified the sealing of abandoned wells as a priority in their comprehensive local water plans.

There are no administrative funds for counties associated with this grant program. It is expected that all funds will go toward well sealing costs. Cost sharing is limited to 75% of the total cost, not to exceed $2,000 per well.

Objectives:

- Define a useable methodology for prioritizing wells for sealing.

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Cost-share funds are used only to seal high priority wells.

- Use most of allocated funds for pilot programs in several selected counties.
- Select pilot counties based on well construction, hydrogeology, aquifer and land use, as well as on the county's planning and inventorying efforts, the ability of the county to administer the program and the strength of the county's proposal.
- Select pilot counties in different hydrogeologic settings around the state where different well construction practices exist.
- Use a smaller portion of the funds for statewide ("wild card") eligibility, e.g. for counties not selected for the pilot program, but with a number of identified high priority wells.

Progress

An interagency work group was assembled with representation from the Board of Water and Soil Resources, Minnesota Department of Natural Resources, Minnesota Pollution Control Agency, Minnesota Department of Health, Minnesota Geologic Survey, and counties. Several meetings were held with the work group to develop a procedure for selecting pilot counties and prioritizing wells for abandonment.

Local water planning authorities were asked to provide input and an initial survey was sent to counties to determine interest in the program, identify contacts, and determine the extent of inventory activities at the local level. The results showed broad interest in the program, but that in most cases, inventories of abandoned wells were either nonexistent, planned, or just starting.

BWSR has decided not to accept applications from individual landowners for the first year of the program. Under this option, individuals could have applied directly to BWSR for 100% of the costs of well sealing, to be recovered by government services lien or property tax assessments. It was felt that, with the limited funds available, this option would severely detract from the county cost-share program.

Selecting Pilot Counties

A procedure for selecting pilot counties has been outlined. In early April, after screening the initial pool of respondents, an application packet will be sent to county contacts. The packet will contain information on the goals of the program, details of the grant process, criteria for selection of pilot counties, guidelines for inventorying and prioritizing wells, and contracting options.

Counties will be given until June 1 to supply additional information and to "state their case" if desired. In early June, the pool of applicants will be screened by BWSR staff and the interagency work group. Recommendations will then be made to BWSR for funding pilot counties and for "wild card" eligibility. It is hoped that grants will be made soon after funds become available in July.

Pilot County Options

Pilot counties will be given substantial flexibility to tailor the program to local needs. For example, counties will be able to vary the cost-share percentages (up to the maximum). The only exception is that funds be used to seal priority wells according to state code. The most efficient option may be for counties to develop a "package" contract with one or several water well contractors for the well sealing work.

Questions regarding this program can be addressed to Eric Mohring at BWSR (612) 297-7360.

New Members

Bob Arko, Malcolm Pirnie, Inc.

David Aspie, GME Consultants, Inc.

Jon Aspie, Braun Environmental Labs

Tom Bader, IT Corporation

Brad Barquest, Delta Environmental Cons., Inc.

Dan Bigalke, Delta Environmental Cons., Inc.

Donald Boyce, U.S.G.S.

Michael Brekken, Braun Environmental Labs

Terrance P. Brennan, EnPro Assessment Corp.

Jeffrey Broberg, Rochester Drilling Co.

Field day on: Ground Water Quality and Agricultural Chemical Management Research

Research directed at finding farming practices that will minimize ground water pollution from irrigated sandy soils will be featured on **Wednesday, August 1st** during wagon tours at the Rosholt Research Farm just west of Westport, Minnesota. Westport is located between Glenwood and Sauk Centre.

Wagon tours will include discussion on herbicide movement in irrigated sandy soils; nitrogen rates and application timing for corn under different tillage and crop rotation systems; manure management; chemical movement in the ground water; and land application of incinerator ash.

Tours will run from 8:30 am to 4 pm at the Rosholt Farm.

Booths on pesticide container disposal and several other water quality related displays will be available during the day. Registration of $2 includes a pork roast sandwich at noon.

Research at the Rosholt Farm is in its fourth year as a part of the Center for Agricultural Impacts on Water Quality's total research effort. The Center's goal is to determine how farming practices affect ground water quality and identify management practices which minimize the impact of agricultural chemicals on groundwater quality.

Sponsors of the event are the University of Minnesota's Center for Agricultural Impacts on Water Quality, Minnesota Extension Service, WesMin RC & D Association, and the Pope Soil and Water Conservation District.

For more information, contact Jerry Wright (612) 589-1711 or James Anderson (612) 625-8209

New Members, Cont.

Shadric Burcham, Delta Environmental Cons., Inc.

Paul D. Burley, Braun Environmental Labs

Jon A. Carlson, Braun Environmental Labs

Wade A. Carlson, Donohue & Associates

Roger Carpenter, Leggette Brashears and Graham

Madonna Cechota

Intarasuk Chalermchai, Twin City Testing

Rebecca Clodfelter, Foth and Van Dyke and Assoc.

Michael Connolly, MN Pollution Control Agency

Richard J. Corbett, VESSCO

John R. Dahl ,Terracon Environmental, Inc.

Gary Dale, Dale Associates

Chuck Donkers, NSP Co.

John E. Dustman, Terracon Environmental, Inc.

John Eberlin, IT Corporation

Sarah L. Emery, University of Minnesota

Mathew Erickson, ENSR Consulting & Engineering

Scott Fox, Minnesota Pollution Control

Louis J. Frykman, Northern Environmental Tech.

Douglas J. Fullen, Honeywell - TCAAP

Peter Giangrande, Delta Environmental Cons., Inc.

Matthew N. Gikas, GME Consultants, Inc.

Michael A. Gilgosch, P.E. Twin City Testing, Inc.

Linda Ho Gilson, Twin City Testing, Inc.

Vanessa M. Givens, MN Pollution Control Agency

Don Goodell,Tellus Consultants, Inc.

John Greer, Barr Engineering

Dr. Priscilla Grew, Minnesota Geological Survey

Chris Haas, Braun Environmental Labs

Mark Hagley, Barr Engineering

Karen T. Harder, MN Pollution Control Agency

Bob Hawkins, Goodin Co.

Mark Hoffman, MN Pollution Control

John N. Holck, MN Pollution Control Agency

Bill Holman, EWI Engineering Assoc., Inc.

Bonnie Holz, Brown-Nicollet Env. Health

Dirk Hoogenboom, Minnesota Valley Testing Lab

John T. Howe, Terracon Environmental, Inc.

James K. Huber, Archaeometry Laboratory

Robert Hutchinson, Anoka County Community Health

Gunnar Isberg, Rochester/ Olmsted Co. Planning

Joseph G. Jahnke, Donohue & Assoc.

John Jaschke, DNR - Division of Waters

Richard M. Jolley

Kerry L. Keen, Twin City Testing, Inc.

Beth A. Keister, Donohue & Associates

Leslie Knapp, Donohue & Assoc.

Roman Koch, MN Department of Health

Melanie G. Kompelien, Donohue & Associates

Michael Robert Kunz, Malcolm Pirnie, Inc.

Bob LaBombard, PACE Laboratories, Inc.

J. D. Lehr, DNR - Minerals Division

David Little, Nova Environmental Services

Robyn Livermore, MN Pollution Control Agency

Paul W. Loaney

Timothy M. Lockrem

Michael MacDonald, ENSR Consulting & Engineering

Roger Mackedanz MN Department of Agriculture

Richard Marton, Barr Engineering Co.

Patricia A. McGee Braun Environmental Labs, Inc.

Jack McMullin, Trask Engineering, Inc.

Glenn D. Melchert, DNR - Minerals Division

Mark Millsop, GME Consultants, Inc.

Martin Moran, Delta Environmental Cons., Inc

Ann Morin-Jansen, NOVA Environmental Services

Roger Niday, Braun Engineering Testing, Inc

Ruth Noack, UofM

Scott Nocton, Leggette Brashears and Graham

Jim Nye, MN Department of Health

Rita O'Connell, MN Pollution Control Agency

Jean Olson, MN Pollution Control Agency

Mark D. Olson, Bruce Leisch Associates, Inc.

Doreen M. Orbita, University of Minnesota

Bassou Oulgout, Twin City Testing, Inc.

Robert J. Peplin, McCombs-Frank-Roos Assoc.

Stephen D. Pettit, Donohue & Associates

Jeffery W. Pipes, Barr Engineering Co.

R. Andrew Polzin, Tellus Consultants, Inc.

Susan Price, HDR Engineering, Inc.

Todd Renville, EnecoTech Midwest, Inc.

David S. Russell, Braun Environmental Labs, Inc.

Brian Sandberg, Braun Environmental Labs

David Schafer, Geraghty & Miller

Jon E. Scharf, Braun Environmental Labs

Don Scheele, Bay West, Inc.

Michael P. Scott, MN Pollution Control Agency

Brad Sielaff, MN Pollution Control Agency

John Strey, Recovery Equipment Supply

David H. Swenson, Dakota Co. Env. Health

David A. Tetley, Braun Environmental Labs

Dennis Thein, Thein Well Co.

Dennis Thoemke, Delta Environmental Cons., Inc.

Tom Townsend, MN Pollution Control Agency

Ronald H. Vaughn, RMT, Inc.

Steve Vergelt, Delta Environmental Cons., Inc

Dave Walsh, Wenck Assoc., Inc.

Robin Whitaker, Delta Environmental Cons., Inc

Mike Whittington, Delta Environmental Cons., Inc

Tally Wright-Wells, Barr Engineering Co.

Karl Zenk, Braun Engineering Labs

Toward National Policy Coordination: The Challenge of Improving Intergovernmental Relations

This article is an excerpt from a Concept Paper produced by the Interstate Conference on Water Policy's (ICWP) Work Group on State-Federal Coordination. ICWP represents water managers from across the nation. In more and more water policy areas, states and local project sponsors are being asked to assume a greater share of responsibility, funding and/or financing. Improved cooperation and collaboration is needed among all levels of government especially when fiscal constraints and the need to share information, and technology are requiring greater interdependency. The Work Group will be accepting comments until June 1, 1990 at 955 L'Enfant Plaza, S. W., Sixth Floor, Washington D.C. 20024.

The Question of Institutional Problem-Solving Capacity

As water resources problems in this country grow increasingly complex and interrelated, so too have the institutions and the programmatic and regulatory cures devised by government. Fragmentation, excessive "red tape", and lack of incentives for innovation have impaired the problem-solving capacity of our institutions. The inability to respond quickly and effectively to rapidly changing and increasingly diverse environments is evident.

Water resource managers at all levels of government share the frustrations and disenchantment that the public has demonstrated as the gap between performance and expectations has widened. The problem centers on the inability of governments to collectively translate beliefs into tangible results. If left unattended, this problem will continue to seriously weaken both the credibility and performance of government services at all levels.

Intergovernmental process problems are seriously undermining our ability to effectively manage water resource problems. Loss of wetlands, contamination and depletion of ground water, drought conditions, and deterioration of basic water-related infrastructure all pose challenges to our existing water management framework. To meet these challenges, the "water decision gridlock" as discussed in a recent Western Governors Association White Paper, must be overcome. These gridlock problems include: adherence to agency missions rather than a shared vision or "problemshed" perspective: an unwillingness to alter traditional operating procedures to respond to changing needs and demands; redundancy of hierarchic reviews that tend to drive out innovation, waste money and stifle productivity; protracted disputes and "turf" battles between and among bureaucracies; and a lack of finality in decision-making.

To prepare the nation to cope successfully with the water challenges of the 21st century, water policy leaders will have to come to grips with the inefficiency that currently exists in the intergovernmental management of water resources. Whether the problems are vividly evident by images of a drought-ridden Mississippi River choked with barge traffic or whether they are more subtle and pervasive as with ground water depletion or nonpoint pollution, water policy leaders must dedicate themselves to improving the problem-solving capability of our water institutions or face an increasingly onerous future.

This paper offers a proposal for a mechanism to coordinate and formulate water policy as well as resolve conflicts inherent in existing water programs. Public debate is invited and welcome on this

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Economic Implications of Ground Water Contamination to Minnesota Cities, Counties, and Companies.

Ground water contamination poses an important challenge to future economic development in Minnesota, as well as nationwide, threatening property values, tax revenues, and business development. As more contamination is documented, groundwater remediation and ancillary costs will require greater expenditures on the part of cities, counties, and companies...costs not generally factored into planning, budgets, or perspectives.

A conference, "Economic Impacts of Groundwater Contamination To Minnesota Cities, Counties, and Companies" was held May 21, 1990, at the Hotel Sofitel, Minneapolis, Minnesota, to increase awareness of ground water contamination and present solutions and resources for effective ground water cleanup and development of preventive strategies. Sponsors included the Freshwater Foundation, League of Minnesota Cities, Minnesota Business Partnership, Association of Minnesota Counties, and the Minnesota Chamber of Commerce.

The conference provided discussions and workshops on: innovative financing; intergovernment cooperation; environmental planning; development of public/private partnerships; effectiveness of current ground water regulations; and future policy recommendations.

Case study presentations will highlight the results of a new report by the Freshwater Foundation of 21 Minnesota cities and 18 companies who experienced ground water contamination, and who, by their own conservative estimate, spent over $67 million on groundwater cleanup and remediation. The report details their costs, both direct and indirect, and their recommendations for limiting liability and creative management approaches. For more information on the special report, "Economic Implications of Groundwater Contamination to Companies and Cities" ($15 plus $2.50 p&h) contact: Freshwater Foundation, 2500 Shadywood Road, Box 90, Navarre, MN, 55392, (612) 471-8407.

proposal for a President's Council on Water.

Historical Perspective

Federal water policies stem from the Constitution and related court decisions. State water policies have their roots in common law, riparian and appropriative doctrine, and state constitutional provisions. Local water policies are those authorized by the respective states and carried out by counties, regional authorities, cities and towns.

During the conservation movement at the turn of the century, President Theodore Roosevelt was the first to recognize the need to address the issue of intergovernmental coordination, particularly between federal and state water policies by managing river basins in a unitary manner for multiple purposes. However, his 1907 Inland Waterways Commission was opposed by Congress and was refused appropriations in 1909. A follow-up action initiated by Congress under the Taft Administration in the form of the National Waterways Commission in 1917 was intended to give meaning to the Roosevelt idea of using every drop of water flowing from the mountains to the oceans. Unfortunately, this institutional structure also met with little success and was repealed by the 1920 Federal Power Act. While the Power Act did authorize a method of providing hydropower requirements through comprehensive water development plans, it was seldom, if ever, used by the Federal Power Commission.

During the subsequent 60 years numerous attempts were made by the federal executive and legislative branches to further conceptualize and institutionalize ways of addressing the water-related coordination problem. The most successful of these efforts, the Water Resources Planning Act (WRPA) of 1965, grew out of the Senate Select Committee on Water Resources (1959), which did not sponsor the legislation, but paved the way for its passage. The WRPA established the Water Resources Council (WRC) and gave birth to regional River Basin Commissions (RBC).

There have been numerous reviews of the Water Resources Planning Act (WRPA) beginning with its inception in 1965 and continuing beyond its dismantling in 1981. In an effort to understand the specifications for improving water policy coordination, the review of the WRPA conducted by the executive branch, Congress, WRC and state groups, among others, were analyzed to provide insight into both the strengths and shortcomings of the coordination effort.

None of the WRPA critiques quarreled with the basic intent of the Act. In essence, it was intended to assess the condition of the nation's water resources; promote the orderly and rational development and management of the nation's hydrologic systems through multi-government coordination within and among levels; and encourage the development of state water plans. Unfortunately, it is now generally accepted that the

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News from Delta

Delta Opens Corporate Office

Delta Environmental Consultants opened the doors of their new Corporate Office in early April. The staff is settling into the third floor of the Long Lake Office Center, a 71,500-square-foot complex located at 900 Long Lake Road in New Brighton. The New Brighton Chamber of Commerce hosted an open house at the new office center to allow area business people to see the facility.

Delta's corporate move allows expansion of the district office which remains at its present location. The corporate personnel move also signals continuing growth for this young company. After beginning four years ago with five individuals, Delta now employs more that 350 people in 12 offices nationwide.

Delta Names Quality Assurance Coordinator.

David Crisman has been named as quality assurance coordinator for the St. Paul office. He will be responsible for monitoring the performance of the services provided by Delta and its subcontractors. Crisman will continue to be involved in hazardous waste site investigation and remediation as the project quality assurance manager.

Prior to becoming quality assurance coordinator, Crisman worked for two years as a project manager for Delta. Before joining Delta, he worked as a ground water hydrologist for the Minnesota Pollution Control Agency for four years.

Crisman has a master's degree in geological engineering from Michigan Technological University. He received his bachelors degree in geology from Hope College.

Lewis part of U.S. Water Industry's Delegation Going to Russia

Gary Lewis, vice president and director of engineering for Delta Environmental Consultants, Inc., will be part of a United States Water Industry delegation to the Soviet Union in May 1990.

People to People International, in conjunction with the USSR Academy of Sciences and the Union of Scientific and Engineering Societies, has selected a team of water industry specialists to visit the Soviet Union.

Delegates will participate in technical meetings and discussions with Soviet colleagues on a variety of water resource engineering issues. Some of the topics to be discussed are waterworks design and engineering, water supply planning and design, water purification, and recycling of wastewater for re-use.

The Citizen Ambassador Program of People to People International was established by Dwight Eisenhower in 1956 to improve communication between Americans and citizens of other countries. The program is currently chaired by President Bush.

assumptions used to frame the legislation and the institutional structure chosen to accomplish its objectives were seriously flawed.

Specifically, it was assumed that: (1) an entire generation of multi-purpose federal water development projects were needed and desired by the American public; (2) unified, comprehensive river basin plans could serve as the primary mechanism for federal-state water policy coordination; (3) these river basin plans would guide state and federal actions even though they were developed outside their respective political arenas replete with multiple and competing interests and agendas; and (4) water quantity and quality issues could be separated in the deliberations of the WRC and RBCs.

These weaknesses in the WRPA authorizing legislation and its subsequent interpretation, coupled with the fragmentation inherent in the federal system, created a number of operational problems. The authority granted to the WRC and the RBCs was not adequate to carry out their assigned tasks. Instead of conflict resolution, conflict avoidance became quite evident. The WRC failed to provide a Presidential perspective or leadership. Congress and state governors tended to ignore the work of the WRC and RBCs as suited their needs. Agencies were reluctant to share and coordinate with the WRC for fear of exposing their programs to criticisms and potential loss of their organizational perogative. As a result, conflicting policies and agency missions went unaddressed in the Executive branch. Subsequent water-related legislative enactments circumvented any WRPA coordination requirements. Long nurtured and beneficial relationships independent of the WRPA between key decision makers and agency staff at state and federal levels were maintained at all costs. Few sensitive regional issues were brought to the attention of federal water policy leaders by state and federal agency staff for fear of destroying "good relations" or the threat of retaliation.

During the 1980's, the President and Congress shifted selected water-related activities to the states and local governments. This shift has been accomplished primarily by changing federal fiscal policy and eliminating various federal programs like the WRPA. Specific pieces of federal legislation, such as the Safe Drinking Water Act, the Clean Water Act, and the Water Resources Development Act could all be cited as examples of this shift to increased reliance on state resources. Notwithstanding these changes, federally mandated environmental and water related statutory objectives, requirements, and standards have remained in force.

Not only are state water managers facing increasingly difficult situations as water becomes more scarce and degraded, little or no consideration has been given to whether or how states and local governments can handle the increased responsibilities being handed down by the federal government. Many water policy experts agree that state and substate agencies have not exercised their full authorities or responsibilities, but researchers have begun to chronicle a new wave of policy and institutional innovation taking place at that level.

The search for leadership and a shared vision floundered in the face of 18 separate agencies in the Executive branch and 23 committees and subcommittees on the Congressional side, in addition to the separate perspective and water institutions in 50 sovereign states. Despite the differences and disagreements at all levels of government, fiscal constraints are requiring state and federal water agencies to be more dependent on one another. In particular, this reliance is evident in the need for more sharing of pertinent technical information, professional expertise, and capability.

In addition to shifts in responsibility which have precipitated confusion and frustrated cooperation, there is a growing recognition that water resources problems are not conducive to single-purpose solutions or scientific disciplines. Yet we are faced with a host of single-purpose water-related programs which have evolved over more than half a century with no means of integrating them into a coherent public policy. The cumulative impact of our attempts to solve discrete water problems has left in its wake a fragmented system of laws and agency responsibilities which at times defy our ability to seek holistic problem -solving approaches. Examples of this phenomena abound. Attempts to fashion comprehensive legislation to address groundwater needs is challenged by the fact that the necessary data and scientific expertise can be found in a minimum of three different federal agencies, all with unique and valuable perspective. Our primary water development and construction agencies are finding new opportunities for applying their engineering expertise to environmental problems not previously within their priority mission. Our soil conservation programs are increasingly viewed as water quality initiatives as well as soil productivity solutions. Clearly, as water problems become more pervasive and less amenable to single-purpose solutions, our institutions require the renewed ability to adapt.

As one reflects on this period of transition and anticipates the challenges of the coming century, it would appear incumbent upon water policy leaders to consider how, when and to what degree they will become involved in shaping the future. The past decade has served to heighten awareness of our water problem and the compelling need to realign the state-federal partnership. The goal of this endeavor is apparent: the coordination of intergovernmental and interagency actions to provide efficient and equitable water policy.

A Proposal: The President's Council on Water

The very nature of the federal system tends to frustrate coordination attempts in the field of water policy. Over the past 80 years there have been numerous councils, commissions and study groups that have tried to design and implement ways to achieve greater coor-

continued on following page....

dination. Despite good intentions these attempts have consistently fallen short of expectations.

In order to overcome problems of the past, the following specifications are offered for the design of a new federal coordination mechanism:

- A Presidential initiative with a commitment to economy, efficiency, and evenhandedness in intergovernmental water policy.
- A shared state-federal perspective on the value of improved coordination.
- Elevation of problems associated with intergovernmental coordination to the forefront of water policy discussions.
- A forum for state and local governments to express their needs and share concerns and problems with their federal counterpart.
- A coordination mechanism which is adaptive and responsive to rapidly changing and increasingly complex decision environments.
- Opportunities for various water-related interests and constituencies to participate in pertinent policy discussion.
- Encouragement of institutional innovation at all levels of government.

It is proposed that a President's Council on Water be created which would embrace the design criteria enumerated above. The Council would be created by Presidential Executive Order for an indefinite period of years, but subject to sunset review every 3 years. It would be charged with meeting the following objectives:

1. Provide a collaborative forum for the formation of national goals and objectives relative to water.

2. Review interagency and intergovernmental policies and programs to promote consistency, fairness and efficiency.

3. Provide a forum for constructive dialogue and potential resolution of water issues of national import.

The Council would be composed of 15 members with a rotating chairman selected by the members. Membership would include:

6 federal members (agency heads appointed by the President).

5 state members (appointed by the National Governors Conference).

4 regional/local members (2 appointed by the National Governors Conference and 2 appointed by the President).

To carry out its functions, the Council would rely heavily on ad hoc committees comprised of appropriate governmental and non-governmental interests with expertise and involvement in the specific issue under consideration.

What Constitutes an Environmental Site Assessment?

There is an opportunity for you to take a leadership role in the development of a standard or definition of what constitutes an environmental site assessment.

Would you like to serve on this committee? Volunteers are needed!

If you are interested, please contact:

Jackie Mack, AGWSE Liaison, 6375 Riverside Dr., Dublin, OH 43017.

University of Minnesota's Geology Department Spring Seminar Series

Seminars are presented on Thursdays (unless otherwise noted) at 3:30 pm in Pillsbury Hall 110, followed by refreshments in 121 Pillsbury Hall.

June 1, Dr. Yacov Y. Haimes, Former Congressional Fellow; University of Virginia, Charlottesville. "Risk Assessment and Risk Management in the Water Resources Field".

June 7, Dr. E. A. Sudicky, Waterloo Center for Ground Water Research, University of Waterloo, Waterloo, Ontario. "Field Observations and Numerical Experiments of Ground Water Flow and Solute Transport in Fractured Clay".

Midwest Herbicides.

USGS News Release

Detectable amounts of triazine herbicides were found at 55 percent of 150 stream sites sampled in 10 midwestern states during a springtime reconnaissance survey. The sampling was done in early spring, before new applications of herbicides to the fields. Follow-up sampling after herbicides had been applied showed detectable levels at about 90 percent of the downstream sites. "We expected to detect herbicides in the surface waters, but not the widespread occurrences we found", said Donald A. Goolsby, U. S. Geological Survey water quality specialist for the Central United States. Among herbicides detected at concentrations greater than health advisory levels in the second round of sampling were alachlor, atrazine, and simazine.

Calendar

June 4 - 5, 1990. *Annual Meeting of the Minnesota GIS/LIS Consortium.* To be held at the Radisson St. Paul. Contact Les Maki at (612) 297-3417.

June 5 - 7, 1990. *Theory and Practice of Ground Water Monitoring and Sampling - Designed for Newly Practicing Professionals.* To be held at the Westin Hotel in Cincinnati, Ohio by NWWA.

June 5 - 8, 1990. *The Geologic Modeling of Depositional Environments and Its Application to the Ground Water Professional - A Field Seminar.* To be held in Charleston, South Carolina by NWWA.

June 7, 1990. *Field Observations and Numerical Experiments of Ground Water Flow and Solute Transport in Fractured Clay.* A Joint **MGWA** and University of Minnesota Geology Seminar. The speaker will be Dr. E. A. Sudicky from the Waterloo Center for Ground Water Research, Waterloo, Ontario. To be held in Pillsbury Hall Room 110 at 3:30 pm.

June 7 - 8, 1990. *Environmental Site Assessments in Conjunction with Real Estate Transactions - Two Day Course.* To be held at the Westin Hotel in Cincinnati, Ohio by NWWA.

June 11 - 14, 1990. *Application of Computer Models to Ground Water Problems using the Analytic Element Method.* To be held in North Oaks, Minnesota. Contact Andrine Strack, Strack Consulting, Inc. 23 Black Oak Road, North Oaks MN 55127.

June 12 - 14, 1990. *Introduction to Ground Water Geochemistry.* To be held at the Sir Francis Drake Hotel in San Francisco, California by NWWA.

June 12 - 14, 1990. *AGU Chapman Conference on Hydrologic Aspects of Global Climate Change.* To be held at Lake Chelan, Washington. Contact AGU at (202) 462-6900.

June 12 - 14, 1990. *Microbial Processes in the Degradation of Ground Water Contaminants.* To be held at the Sir Francis Drake Hotel in San Francisco, California by NWWA.

June 12 - 14, 1990. *Applications of Environmental Isotopes to Practical Ground Water Studies.* To be held at the Sir Francis Drake Hotel in San Francisco, California by NWWA.

June 17 - 21, 1990. *AWWA Annual Conference and Exposition.* To be held in Cincinnati, Ohio. Contact: AWWA Conference 1990 6666 West Quincy Ave., Denver Colorado 80235.

June 18 - 21, 1990. *USA/USSR Joint Conference on Environmental Hydrology and Hydrogeology.* To be held in Leningrad, USSR. Contact Dr. Roman Kanivetsky, Minnesota Geological Survey, 2642 University Ave., St. Paul, MN 55114, or AIH at (612) 379-1030.

June 18 - 22, 1990. *Safety at Hazardous Materials Sites: A Hands-On Workshop.* To be held at the Westchester County Public Safety Training Center, Valhalla, New York, by NWWA.

July 9 - 11, 1990. *Watershed Management Symposium.* To be held in Durango, Colorado. Contact Robert Riggins, USACERL, P.O. Box 4005, Champaign, Illinois 61824-4005.

July 9 - 13, 1990. *The Princeton Course on Groundwater Pollution and Hydrology.* To be held in Princeton, New Jersey. Contact Omni Environmental Corporation, 3 Independence Way,Princeton, NJ 08540.

July 9 - 13, 1990. *National Conference on Irrigation and Drainage.* To be held in Durango, Colorado. Contact Robert Riggins, USACERL, P.O. Box 4005, Champaign, Illinois 61824-4005.

July 9 - 13, 1990. *The Princeton Course on Groundwater Pollution and Hydrology.* To be held in San Francisco, CA. Contact Omni Environmental Corporation, 3 Independence Way, Princeton, NJ 08540.

July 17 - 19, 1990. *Principles of Ground Water Hydrology.* To be held at the Red Lion Inn, Jantzen Beach, Portland, Oregon by NWWA.

July 20, 1990. *Environmental Site Assessments One-Day Course.* To be held at the Red Lion Inn, Jantzen Beach, Portland, Oregon by NWWA.

July 22 - 24, 1990. *Urban Non-Point Source Pollution and Stormwater Management Symposium.* To be held at the University of Kentucky, Lexington, Kentucky. Contact: University of Kentucky Institute for Mining and Minerals Research Office for Informational Services and Technical Liaison, 201 Porter Building, Lexington, KY 40506-0205.

July 23 - 27, 1990. *Ground Water Management Modeling: Simulation, Optimization, and Risk Analysis.* To be held by the IGWMC in Indianapolis, Indiana.

July 23 - 27, 1990. *International Symposium on Tropical Hydrology and Fourth Caribbean Islands Water Resources Congress.* To be held in San Juan, Puerto Rico. Contact: Dr. Munoz-Candelario, Water Resources Research Institute, University of Puerto Rico, Mayaguez Campus, PO Box 5000, Mayaguez, Puerto Rico.

July 30 - August 3, 1990. *Safety at Hazardous Materials Sites: A Hands-On Workshop.* To be held at the Westchester County Public Safety Training Center, Valhalla, New York, by NWWA.

July 30 - August 3, 1990. *ASCE Hydraulics Division: 1990 National Conference on Hydraulic Engineering and The International Symposium on the Hydraulics/ Hydrology of Arid Lands.* To be held at the Catamaran Hotel, San Diego, California.

Continued on next page...

August 7 - 9, 1990. *Critical Issues in Underground Storage Tank Management - Focuses on new EPA requirements.* To be held at the Dallas Sheraton in Dallas, Texas by NWWA.

August 11 - 16, 1990. *Annual URISA Conference: Information, the Currency of the Future.* Topics include Geographic Information Systems, Land Records, AI/Expert Systems. To be held in Edmonton, Alberta, Canada. Contact URISA, 900 Second St. NE, Suite 304, Washington, DC 20002 (202) 289-1685.

August 12 - 15, 1990. *Conserv 90.* A National Conference and Exposition Focusing on Water Supply Solutions for the 1990s. To be held in Phoenix, Arizona by NWWA.

August 12 - 17, 1990. *IBM PC Applications in Ground Water Pollution and Hydrology: A Hands-on Short Course.* To be held at the Nassau Inn at Palmer Square, Princeton, New Jersey by NWWA.

August 17 - 23, 1990. *Wyoming Centennial Field Trip.* Traverse the most spectacular geology and scenery in central and northwestern Wyoming. Contact WGA PO Box 545 Casper WY 82602.

September 3 - 6, 1990. *The Geologic Modeling of Depositional Environments and Its Application to the Ground Water Professional - A Field Seminar.* To be held in Charleston, South Carolina by NWWA.

September 3 - 6, 1990. *International Conference on Calibration and Reliability in Ground Water Modeling.* To be held in The Hague. Contact NWWA.

September 11 - 14, 1990. *Gas Transfer at Water Surfaces.* To be held in Minneapolis, Minnesota. Contact Steven Wilhelms, U.S. Army Engineer Waterways Experiment Station, P.O. Box 631 Vicksburg MS 39180 (601 634-2475).

September 17 - 19, 1990. *Introduction to Ground Water Geochemistry.* To be held at the Radisson Hotel in Toronto, Canada by NWWA.

September 18 - 20, 1990. *5th Canadian/American Conference on Hydrogeology: Parameter Identification and Estimation for Aquifer and Reservoir Characterization.* To be held in Calgary, Alberta, Canada. Contact the Alberta Research Council, P.O. Box 8330 Postal Station F. Edmonton, Alberta, Canada.

September 24 - 28, 1990. *Safety at Hazardous Materials Sites: A Hands-On Workshop.* To be held at the Westchester County Public Safety Training Center, Valhalla, New York, by NWWA.

September 24 - 28, 1990. *Incremental Flow Modeling for Analysis of Flow and Transport Problems.* To be held by the IGWMC in Indianapolis, Indiana.

September 25 - 26, 1990. *Ground Water Flow Systems and Land Use: Relation to Quality of Shallow Ground Water.* To be held at the Anaheim Convention Center, Anaheim, CA by NWWA.

October 1 - 3, 1990. *Theory and Practice of Ground Water Monitoring and Sampling - Designed for Newly Practicing Professionals.* To be held at the Ramada Renaissance Hotel in Long Beach, California by NWWA.

October 1 - 3, 1990. *Principles of Subsurface Contaminant Fate and Transport Modeling.* To be held at the Ramada Renaissance Hotel in Long Beach, California by NWWA.

October 4, 1990. *Environmental Site Assessments One-Day Course.* To be held at the Ramada Renaissance Hotel in Long Beach, California by NWWA.

October 9 - 13, 1990. *AIPG 1990 Annual Meeting Future Trends in the Decade of the 90's.* To be held at the Hyatt Regency in Long Beach, California. contact: Stephen M. Testa, General Chairman, Applied Environmental Services, 6695 East Pacific Coast Hwy., 2nd floor, Long Beach, California, 90803.

October 15 - 19, 1990. *Multiphase Organic Transport Modeling with Emphasis on Pollution by Hydrocarbons.* To be held by the IGWMC in Indianapolis, Indiana.

October 18 - 19, 1990. *35th Annual Midwest Groundwater Conference.* To be held at the Hilton Hotel, in Lincoln, Nebraska. Topics include: Geophysical applications to groundwater investigations, remote sensing/ geographic information systems, impacts of climatic change on ground water, effects of waste disposal on ground water, and agricultural aspects of ground water. Contact: Perry B. Wigley, Director, Conservation and Survey Division, University of Nebraska, 113 Nebraska Hall, Lincoln NE, 68588-0517. Telephone (402) 472-3471.

October 23 - 25, 1990. *A Comprehensive Approach to Development and Protection of Ground Water Supplies.* To be held at the Sheraton Palace Hotel in San Francisco, California by NWWA.

October 24 - 25, 1990. *Applied Drilling Engineering for Rotary and Auger Methods (for ground water-related investigations).* To be held at the Sheraton Palace Hotel in San Francisco, California by NWWA.

October 29 - November 2, 1990. *Safety at Hazardous Materials Sites: A Hands-On Workshop.* To be held at the Westchester County Public Safety Training Center, Valhalla, New York, by NWWA.

October 30 - 31, 1990. *23rd Annual Water Resources Conference.* To be held at the University of Minnesota, St. Paul, MN. Contact Bev Ringsak, Professional Development and Conference Services 335 Nolte Center, University of Minnesota, 315 Pillsbury Dr. S.E. Minneapolis, MN 55455 (612)625-6689.

October 31 - November 2, 1990. *Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection and*

Restoration. To be held in Houston, Texas by NWWA.

November 5 - 9, 1990. *26th Annual AWRA Conference - "The Science of Water Resources: 1990 and Beyond", " Symposium - Transferring Models to Users".* Contact AWRA at (301) 493-8600.

November 5 - 7, 1990. *International Conference on Groundwater Resources Management.* To be held in Bangkok, Thailand. Contact: The Secretariat, International Conference on Groundwater Resources Management, Division of Water Resources Engineering, Asian Institute of Technology, PO Box 2754, Bangkok 10501 Thailand.

November 6 - 8, 1990. *Critical Issues in Underground Storage Tank Management - Focuses on new EPA requirements.* To be held at Bally's Las Vegas in Las Vegas, Nevada by NWWA.

November 6 - 8, 1990. *Theory and Application of Vadose Zone Monitoring, Sampling, and Remediation.* To be held at Bally's Las Vegas in Las Vegas, Nevada by NWWA.

November 9, 1990. *Legal Implications of Environmental Site Assessments.* To be held at Bally's Las Vegas in Las Vegas, Nevada by NWWA.

December 3 - 5, 1990. *Principles of Ground Water Hydrology.* To be held at the Columbus Marriott North, Columbus Ohio by NWWA.

December 3 - 5, 1990. *Fundamentals of Ground Water and Well Technology.* To be held at the Marriott Inn North, Columbus Ohio by NWWA.

January 13 - 18, 1991. *IBM PC Applications in Ground Water Pollution and Hydrology: A Hands-on Short Course.* To be held in San Francisco, California by NWWA.

February 12 - 13, 1991. *12th Annual Midwest Environmental Laboratory Technology Conference.* To be held at the Earle Brown Center on the University of Minnesota St. Paul Campus. Contact Claire at (612) 624-2027.

May 12 - 18, 1991. *Fourth International Symposium on Land Subsidence.* To be held in Houston, Texas. Contact: A. Ivan Johnson, 7474 Upham Court, Arvada, Colorado 80003.

For information about meetings and seminars to be held by the NWWA, contact NWWA at 6375 Riverside Drive, Dublin, Ohio 43017 (614) 761-1711, Telex 241302.

For information about Short Courses held by the International Ground Water Modeling Center (IGWMC), contact the IGWMC, Holcomb Research Institute, Butler University, Indianapolis, IN 46208 (317) 283-9458.

NWWA Adopts Position on Monitoring Well Driller Licensing.

The National Water Well Association (NWWA) Board of Directors on October 28, 1989, adopted an Issue Brief outlining the Association's position on monitoring well drillers licensing. Following is an excerpt from the Issue Brief:

The National Water Well Association (NWWA) supports the administration and proper enforcement by states of a specialized licensing program for drillers supervising the installation of monitoring wells. NWWA recognizes the specific expertise needed to install monitoring wells and the fact that production well technology may not be appropriate for monitoring programs. In addition, particular care and knowledge are needed to assure that construction methods and materials do not bias sampling programs and do not exacerbate an already existing ground water contamination situation. NWWA has instituted a special voluntary certification program for monitoring well drillers and encourages states to adopt this certification test as a part of their monitoring well driller licensing program. The use of a national test provides a method of assuring a minimum level of competence throughout the industry, a standard of protection for the resource and a pathway to reciprocity. NWWA opposes grandfathering of individuals under monitoring well driller licensing programs.

NWWA recognizes the inherent health risks that may be present at sites where monitoring wells are installed. Proof of completion of a 40-hour safety training course meeting the Occupational Safety and Health Administration's standards should, therefore, be a requirement for initial license issuance. Additionally, completion of an annual eight-hour health and safety refresher course should be a condition for license renewal.

In order to maintain the level of competence as demonstrated by successful completion of the initial license test and to assure that advances in technology and science are applied in the field, NWWA endorses the concept of proof of continuing education as a prerequisite to license renewal. States are urged to scrutinize educational offerings and accept only those directly related to the monitoring well field for meeting this continuing education requirement.

NWWA believes that attendance at practical, field-oriented courses in monitoring well construction would benefit individuals wanting to enter the monitoring well market. Educational providers are encouraged to develop additional applied courses in monitoring well construction to meet this need.

NWWA recommends that state monitoring well driller licensing programs encompass all types of monitoring wells and suggests the following definition for consideration: Monitoring Well: a water well that is constructed within a soil or rock boring for the purpose of determining water levels and monitoring chemical, biological, and physical properties of ground water.

- reprinted, with permission, from *Briefings* Vol 5(4).

Changes:

Durjoy Mazumdar is leaving Bay West for Delta Environmental Consultants, where he will be in the Information Technology Group.

Bruce Rehwaldt has opened Northern Environmental Technologies, Inc., in Roseville. This new firm is a division of Bonestroo Rosene Anderlik & Associates, Inc.

Bob Guthrie will be joining Bay West. He is currently defending his Ph.D. thesis (wish him luck).

Susan Price moved from the Minnesota Pollution Control Agency to HDR where she took over from **Cathy Villas-Horns**, who had moved on to Foth & VanDyke.

Pat Leonard-Mayer is currently with the Department of Military affairs, on active duty as an environmental/legal professional.

Rennie Smith joined HWM Technologies from Twin City Testing.

Diane Desotelle is now with STS. Her previous position had been with Leggette Brashears and Graham.

Andrew Streitz was promoted to Hydrologist 3 and transferred from the DNR's Division of Waters to the Minnesota Pollution Control Agency. To balance the ship of state, **Justin Blum** transferred from the Minnesota Pollution Control Agency to the DNR's Division of Waters.

Pat Chabot and **Sheila Grow** both left Minnesota Pollution Control Agency to accept positions with the Minnesota Department of Agriculture.

Wenck and Associates have a new address: 1800 Pioneer Creek Drive, Maple Plain, MN 55359.

The zip code at **Barr Engineering Co.** has changed to 55439-3123.

Peter J. Thein, MWC, of the Thein Well Company, Spicer, Minnesota, was re-elected to the board of directors and appointed Secretary at the recent National Water Well Association Convention in Houston, Texas. Mr. Thein also serves as a trustee of the American Ground Water Trust.

CleanSoils, Inc. has promoted **Dr. Robert Wills** to Vice President, Engineering. CleanSoils provides contaminated soil remediation services with its Thermal Desorber™ equipment and other technologies.

Lee Trotta is taking a temporary assignment at USGS headquarters in Reston, VA. His water-use duties will be taken over by Bud Anderson during his absence. His MGWA newsletter editor duties have yet to be assigned. **Any volunteers?**

Edward A. Radecki has joined the environmental consulting staff of Nova Environmental Services, Inc. Mr. Radecki joins Nova after four years at Groundwater Technology, Inc. in Detroit Michigan. Mr. Radecki is a senior hydrogeologist and manager of special projects in Nova's Chaska Minnesota office.

Dr. John E. Moore, President of the American Institute of Hydrology, has recently retired from the Water Resources Division of the U.S. Geological Survey after 31 years of service in Colorado, Nevada, Florida and Virginia. He has accepted an appointment as the Senior Hydrologist with the Environmental Strategies Corporation, 8521 Leesburg Pike, Suite 650, Vienna, VA 22180 (703)821-3700.

Bay West announced that **Marvin J. Dietrich** and **Donald J. Scheele** have been promoted to project management.

Marvin Dietrich is a project manager for the Environmental Compliance and Waste Management Department. Donald Scheele is a project manager for the Ground Water and Engineering Department.

Donald K. Erickson, co-founder and Executive Vice President of Bay West, Inc. was elected to the Spill Control Association of America (SCAA) Board of Directors in February. He will serve a two-year term. SCAA is a non-profit organization of pollution control contractors, researchers, educators, and government professionals. It sponsors worldwide training and seminars on spill prevention and control, develops professional standards for the spill control industry, and provides representation and assistance to state and federal government agencies. The association, founded in 1973, is headquartered in Detroit.

Richard Alberg of Twin City Testing has been named to manage environmental field operations QA/QC. It is his responsibility to assure that TCT field scientists and technicians use proper sampling procedures appropriate for each situation. Alberg is certified by the American Society of Quality Control as a quality auditor (one of only about 1,200 in the U.S.).

TCT scientist **Ward Tongen** has worked with representatives from the Minnesota Pollution Control Agency and Albert Lea Vo-Tech to develop a presentation on proper underground storage tank sampling methods for the Minnesota Pollution Control Agency's UST contractor certification course.

David A. Byfield has joined Twin City Testing Corporation as director of TCT's Environmental Services activity.

Braun Engineering Testing, Inc. and **Braun Environmental Laboratories, Inc.** are pleased to announce eight new shareholders. Announcement was made by the Board of Directors at its recent annual meeting. Robert J. Janssen, P.E., project engineer and Blain office manager; Charles R. Brenner, P.E., senior materials engineer; Colby T. Verdegan, P.E., senior project engineer; all with the St. Paul office; Kent D. Larson, marketing representative; Tarif M. Jaber, P.E., senior materials engineer; **Mark A. Collins**, senior engineer and remedial services section supervisor; **Larry P. Christensen**, senior scientist and site assessment section manager; and **William J. Regan**, senior scientist and regulatory compliance section supervisor, at the Minneapolis headquarters office have purchased ownership in the firm.

Geologist Registration

The Handbook of Registration Laws contains information about all 20 states which have laws governing the practice of geology. The two-volume reference is available from the Association of Engineering Geologists, 323 Boston Post Rd., Ste. 2D, Sudbury, MA 01776.

Great Lakes Levels

1989 Annual Summary

The year 1989 continued a trend toward lower precipitation and declining lake levels that had begun in 1987. Lakes Superior and Michigan-Huron levels remained near- to below-average throughout the year. Lakes St. Clair and Erie, although declining, remained above the long-term average in 1989. Lake Ontario began the year below average and finished the year at about average.

Precipitation

Across the Great Lakes basin, the winter of 1988-1989 was dry; December 1988 and January and February 1989 all received below average precipitation. There was very little snow cover in the basin until March, when above-average precipitation brought a heavy snow pack to the northern U.S. portion of the basin, particularly in the Upper Peninsula of Michigan. The snow melted under ideal conditions, resulting in very few flooding problems. May and June were wetter than average, especially on the Lake Erie and Lake Ontario basins. The next four months were dry. November was wetter than average, while December was dry. Thus, the cumulative basin precipitation for the Great Lakes basin in 1989 was about 2.9 inches below average.

Lake levels

At the beginning of 1989, Lakes Michigan-Huron water levels were near long-term average. By the end of the year they were the closest they have been to Low Water Datum (LWD) since 1967. Lake Ontario began 1989 below average. A program of reduced outflows allowed the Lake to end 1989 at a near-average level. Lake Erie started the year three inches above average and ended the year at about average.

Lake Superior's water levels were slightly above average until August 1989, after which time the lake remained below average, ending the year near LWD.

Wellhead Protection

A technical advisory group has been established to assist with the development of rules needed to establish wellhead protection measures for wells serving public water supplies. Members of the work group include representatives from the American Water Works Association, the Consulting Engineers Council of Minnesota, the American Institute of Professional Geologists, the Minnesota Association of Planning and Zoning Administrators, the University of Minnesota School of Earth Sciences, the United States Geological Survey, the Board of Water and Soil Resources, the Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency, the Minnesota Department of Agriculture, the Minnesota Geological Survey and the Minnesota Water Well Association.

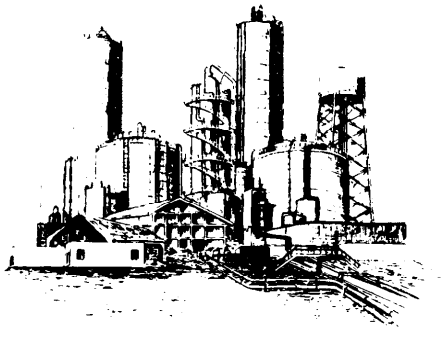
The group will be meeting 6 to 8 times over the next nine to ten months to prepare recommendations to the Commissioner of Health on the technical aspects of wellhead protection. The group will consider such issues as developing criteria for rating the vulnerability of existing wells to contamination, defining the criteria that should be used to dedicate a wellhead protection area, determining the applicability of various technical methods, and procedures for mapping wellhead protection areas.

The first meetings of the technical advisory group were held at the end of April and May. Also underway are plans to establish a similar policy advisory group to consider such concerns as costs, legal implications, political needs and the scheduling of implementation

Reprinted from Water Billboard, April 17, 1990.

Water Resources Education Materials

The AWRA Education Committee is trying to gather up as much water resources teaching material as possible. They are primarily interested in grades K - 12, but they admit they'll take anything K through death. Please send copies of anything available for free to: Richard A. Herbert, c/o AWRA, 5410 Grosvenor Lane, Suite 220, Bethesda, Maryland 20814-2192.



Ground Water Concerns Rank Highly in Ford Study

Ground water issues are of vital concern, according to a fall 1989 study conducted for the Ford Motor Company of 2,172 key leaders who are or will be involved in helping to shape public policy on a wide range of environmental issues into the early 1990's.

When asked to identify the 10 highest priority environmental issues at the state and local levels, "protecting ground water" was ranked first, with 82.5 percent saying it was of "high" priority and 13.6 percent identifying it as of "moderate" priority. Protecting ground water ranked 12th among the highest priority issues at the national and international levels. More survey respondents said they believe industry has been doing less (compared to "more") than its fair share in "reclaiming contaminated ground water" (9th rank, 64.9 percent). A similar attitude was expressed toward "reducing contamination of ground water" (13th rank, 59.0 percent).

Government's performance was not perceived as significantly different than that of industry. Survey respondents believe that government has been doing less than its fair share in addressing "reclaiming contaminated ground water" (10th rank, 61.8 percent) and "reducing contamination of ground water" (15th rank, 55.1 percent).

Seventy six percent said they were unaware of Ford's performance on protecting ground water, the poorest ranking for the automobile manufacturer. Nearly 60 percent said they wanted more information on Ford's performance toward protecting ground water.

Reprinted from Points, the newsletter of the American Ground Water Trust, Vol. 1, No. 1.

Questionnaire

Name: ____________________

Address: ____________________

Suggested Topics: ____________________

____

____

Names and Contact Numbers for Possible Participants: ____________________

____

____

Suggested Meeting Format: ____________________

____

____

Preferred Meeting Time: ____________________

Preferred Meeting Place: ____________________

What is the maximum cost you would be prepared to pay for a meeting (broad-based topic, half day, 3-4 speakers)? ____________________

What is the maximum cost you would be prepared to pay for a workshop (specific topic, up to a full day, learning experience)? ____________________

Should refreshments and social time be a part of the meetings?

____

____

Names(s) of suggested candidates for MGWA Board (include yourself if you would be interested):

President-Elect (select one)

I nominate: ____________________ or

_____ I'm so glad you asked, of course I'll be a candidate.

Treasurer

I nominate: ____________________ or

_____ I'm so glad you asked, of course I'll be a candidate.

Editor

I nominate: ____________________ or

_____ I'm so glad you asked, of course I'll be a candidate.

Join the Minnesota Ground Water Association!

If you are reading this newsletter second-hand, we'd like to take this opportunity to invite you to become a member of **MGWA**. Annual dues are $10 for professional members and $5 for students.

Just complete the form below and mail to: Minnesota Ground Water Association, c/o Don Jakes, 943 Lydia Drive, Roseville, MN 55113

- -

Name ____________________

Affiliation ____________________

Mailing Address ____________________

City, State, Zip Code ____________________

Home Telephone Number (optional) ____________________

Business Telephone Number ____________________

Address for Directory Listing ____________________

Telephone Number for Directory Listing ____________________

Mark your Calendar Now for this Upcoming Meeting:

June 7, 1990: Field Observations and Numerical Experiments of Ground Water Flow and Solute Transport in Fractured Clay.

3:30 pm,110 Pillsbury Hall, University of Minnesota

Minnesota Ground Water Association
P. O. Box 65362
St. Paul, MN 55165