THE GEOLOGICAL SOCIETY OF AMERICA ·1888·

The Hydrogeologist

NEWSLETTER OF THE HYDROGEOLOGY DIVISION OF THE GEOLOGICAL SOCIETY OF AMERICA APRIL, 1994

Message from the Chairman

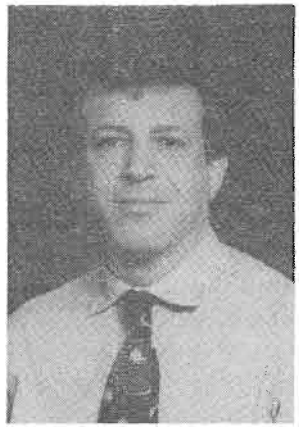
Dear Colleagues,

If you read the 1923 classical papers of Meinzer, as well as other early hydrogeological papers, you will see the very strong link between the assessment of ground-water resources and the description of the geologic framework containing the resource. However, the linkage then was generally qualitative rather than quantitative. Over the years, our analytical tools and approaches have become more quantitative—from analytical methods (applied mostly to well hydraulics and aquifer test analysis), to electric analog models, to very sophisticated numerical simulation models. Geologic information seemed to become useful mostly for simply defining formation boundaries. However, in recent years the focus of concern for many of us has shifted from water supply to water quality. Our work on contaminant transport problems in the last decade or so has highlighted the significant impact of aquifer heterogeneity on solute transport and dispersion. This brings us back full circle to the need to examine the geological controls on permeability and porosity patterns. If we more fully understand the geologic processes that have created and modified the porous media, then we should be better able to predict, quantify, and map the variability in hydraulic parameters.

This might be expressed by the occasionally asked question, "Do we need more *geology* in *hydrogeology*?" I believe the answer is *YES*, and, in fact, the Hydrogeology Division Symposium in Boston on "Geologic Insight and Ground-Water Modeling" focused on advances on this topic (see the separate summary of this symposium later in this issue of the Newsletter). While it is easy to conceptualize that hydrogeologic (or ground-water) studies would benefit from improved geologic input and analysis, the methodologies for doing this are still evolving and few practical demonstrations of its effectiveness in quantitative studies are available. Viewing the link between geology and hydrogeology from the opposite direction, other classical fields of geological sciences (such as structural geology, volcanology, geomorphology, ore deposits, and petroleum geology) would benefit from improved hydrogeologic awareness and analysis of ground-water flow and transport processes.

From my perspective, the Geological Society of America is the logical organization to facilitate scientific communication and interchange in this multispecialty area. The annual and sectional meetings provide a forum for hydrogeologists to interact with geologists, geochemists, geophysicists, and other hydrogeologists. Membership in the Hydrogeology Division will help keep you informed of relevant activities and ease networking with other scientists having similar or complementary interests. However, our membership has not grown in proportion to the growth of the field. Hydrogeology courses and specializations are being offered at a growing number of universities, and opportunities to work in the ground-water "industry" probably represent the largest job market for graduating geology students. Those teachers, students, and practitioners of hydrogeology who are not yet members of our Division would benefit from joining. But they may not be aware of us as an organization. I ask each of you to help your nonmember colleagues by inviting them to join and participate in the activities of the Division. If you need membership application forms, please contact any member of the Management Board, Section representatives, or GSA headquarters.

As the Chairman of the Management Board of the Hydrogeology Division, I am committed to having the Division serve the needs of the members. This requires that we



Lenny

Lenny Konikow
1994 Chairman
Hydrogeology Division

understand the nature of our membership and that individuals communicate their ideas for improvement (or criticisms) to the Management Board. I encourage all members to do that. As an example, a hydrogeologist who is a new faculty member at the College of William and Mary recently suggested that the Division develop an academic outreach program. We are now actively exploring the feasibility of implementing such a program (and of course would welcome any ideas from you). Plans to provide new publication outlets and benefits to members are also continuing. For example, our cosponsorship of the *Applied Hydrogeology* journal has been formalized, and I encourage you to submit hydrogeological manuscripts to this outlet (also see the separate write-up in this issue of the Newsletter).

Better serving our members requires knowing who our members are. Thus, I have made a preliminary attempt to categorize the nature of our membership. At the end of 1993, we had 1,884 members, including 378 student members and 200 Fellows. These numbers have remained fairly stable for the past six years. We are the largest Division of GSA, and about 11 percent of all GSA members are affiliated with the Hydrogeology Division. Looking at the geographic distribution of members, I was pleased that our membership includes a broad geographic base (about 4 percent of our members reside outside the United States). As a scientific organization, we serve our members from the academic and research communities quite well. However, about one-third of our nonstudent members work in private industry, primarily in consulting, and I want to assure that this constituency continues to be well served and represented in our planning and activities. Approximately 10 percent of our members are Fellows. I encourage you to nominate additional qualified members for Fellowship in the Society, as this is an excellent way to honor those who have made significant contributions to the science of hydrogeology.

We are also soliciting students to become members by encouraging their participation in GSA meetings. Our support includes providing partial financial assistance for research grants and travel expenses to attend meetings. The first student who registers for each Division-sponsored short course will also receive a small subsidy. At the past two Annual Meetings, all students were invited to a breakfast organized by the Past Chairman. They received not only a complimentary breakfast and appropriate door prizes, but also had the opportunity to meet and talk with some of the senior members of the Division and leaders in the field of hydrogeology, which was the main goal of the breakfast. These student-oriented activities are funded, in part, by donations prompted by the Hydrogeologist Mug Series, initiated and sustained by the Historical Committee. We appreciate the efforts of Bill Back and the Historical Committee.

I am also committed to continuing the efforts of my predecessors to assure that the hydrogeology activities at the GSA meetings are strong and varied. Our Program Committee and Management Board are collaborating closely in order to provide timely and high-quality technical sessions, well-planned and enlightening short courses and field trips, and enhanced professional networking opportunities at our meetings. The recent Boston meeting was the best that I have ever attended (thanks in large part to the efforts of Warren Wood). Many of the leading hydrogeologists in the country attended this meeting, and the technical sessions focused on leading-edge scientific topics. We are challenged to meet the standard set in Boston, but Steve Wheatcraft is putting together an exceptional program for the next Annual Meeting in Seattle. I hope to see you there!

For the Hydrogeology Division to remain a vital, healthy, and leading scientific organization, it has to be responsive to changing needs and may have to change in structure or direction when appropriate. The Hydrogeology Division is in the process of revising our Bylaws. A committee, composed of Paul Seaber (Chairman), John Cherry, and Joe Rosenshein, is charged with the task of updating and refining the current Bylaws under which we operate as a Division of GSA. One perceived need is for the Bylaws to clarify further the selection process and functions of various committees and officers. Please contact Paul or me if you would like to receive a copy of either the current Bylaws or the latest draft of the revised Bylaws. Also please feel free to contact any of the committee members with suggestions or comments concerning possible revisions to our Bylaws. I have also made an effort to streamline our organizational structure by reducing the number of committees and transferring their activities and functions directly back to the Management Board itself.

I am pleased to report that, through the efforts of the Historical Committee, the Water Resources Center of the Desert Research Institute, University of Nevada at Reno, has agreed to serve as the official permanent repository for the historical records and files of the Hydrogeology Division. Strong historical links exist between that institute and the Hydrogeology Division, in part because its first Director, Dr. G. Burke Maxey, was also one of the founders and the first Chairman of the Hydrogeology Division. Many members of the Division are students, "grandstudents," or "great-grandstudents" of Burke Maxey. We are grateful to the Desert Research Institute for their willingness to provide space in the George Burke Maxey Science Center for this function. Jack Hess has agreed to serve as the Division's contact for this activity.

In summary, we can all be extremely proud of the Hydrogeology Division and optimistic about its future. The Division provides a service to the science and many benefits to individual members. As the Management Board continues its efforts to improve both functions, we hope you will help us maintain the Division's strengths, increase benefits to members, and eliminate any weaknesses.

Minutes
1993 Annual Business Meeting

The 1993 Annual Business Meeting of the Hydrogeology Division of the Geological Society of America was convened by Chairman Frank Schwartz at the conclusion of the luncheon. The meeting was held on Tuesday, October 26, 1993, in Salon F of the Marriott Hotel, Boston, Massachusetts.

Chairman Schwartz, prior to the presentation of awards, introduced those seated at the head table: John Harsh, Secretary-Treasurer; John Cherry, Past Chairman; Niel Plummer (Meinzer Awardee); Leonard Konikow, Chairman-Elect; Donald Siegel, First Vice Chairman; Don Thorstenson (Meinzer citationist); David Stephenson (Distinguished Service Awardee); Paul Seaber

(Distinguished Service Awardee); Mrs. Gerda Seaber; and Jack Hess, Second Vice Chairman. Frank Schwartz recognized past officers; guests; John Sharp, GSA Council Representative; and Alan Dutton, Newsletter editor.

The presentation of awards followed the introductions. Don Thorstenson made the citation for the O. E. Meinzer Award, and Niel Plummer gave his response. Chairman Schwartz presented the Meinzer Bowl and Certificate to Niel Plummer. [Ed. note: Don Thorstenson's citation and Niel Plummer's remarks are printed in the March 1994 issue of GSA Today.]

Chairman Schwartz announced that the Distinguished Service Award Committee had selected two recipients for 1993: Paul Seaber and Dave Stephenson. Bill Back presented the citation on behalf of Paul Seaber, and Bruce Cutright presented the citation on behalf of Dave Stephenson. The two awardees received plaques from Chairman Schwartz.

Donald Siegel was introduced as the 1993 Birdsall Lecturer and was presented the Birdsall Certificate by Frank Schwartz. Following this presentation, Chairman Schwartz announced that the 1994 Birdsall Lecturer will be Fred Phillips of the New Mexico Institute of Mining and Technology. Darryll Pederson introduced the following recipients of the 1993 Student Research Grants: Susan Altman, Sandeep Burman, Marc Hinton, Barbara Mahler, and Piyush Srivastav.

The first item on the agenda for the business meeting was William Simpkins' announcement of a Penrose Conference on "Fractured Unlithified Aquitards: Origins and Transport Processes." The conference will be held June 16–20, 1994, at the Racine Marriott in Racine, Wisconsin. Contributors are encouraged to write the convenors: John Cherry, David Mickelson, and William Simpkins.

Frank Schwartz requested a moment of silence in memory of those affiliates of the Division who had died during the year: Willis L. Burnham, Newton D. Chute, and Joseph M. Trefethen.

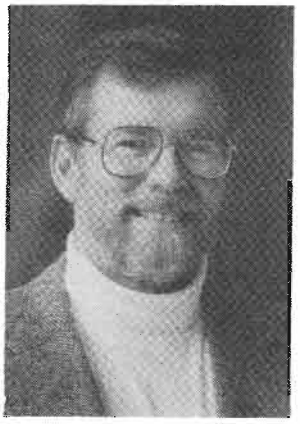
The minutes of the 1992 Annual Meeting in Cincinnati were approved as published in the April 1993 issue of *The Hydrogeologist*. John Harsh summarized the Division's 1993 financial activity as follows:

Division Fund Balance (12/31/92)	$77.73
1993 Dues Income	$9,210.00
Total Division Resources	$9,287.73
Total Division Expenses as of 9/30/93	$7,567.79
Fund Balances as of 9/30/93	
Division Fund	$1,719.94
Birdsall Fund	$38,834.75
Award Fund	$12,282.97

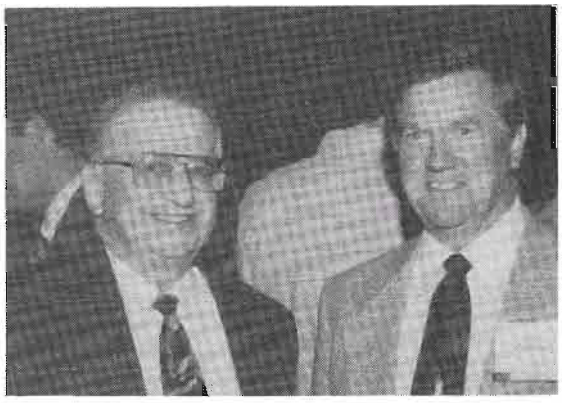
Motion to approve the Treasurer's report was made and seconded by Warren Wood and George Davis, respectively; the motion passed unanimously. Harsh announced the results of the balloting for Division officers: Leonard Konikow, Chairman; Donald Siegel, First Vice Chairman; and Jack Hess, Second Vice Chairman.

Warren Wood, Technical Program Chairman for the Boston meeting, acknowledged the exemplary work of the participants who developed the technical program, field trips, and short courses. He also mentioned that Kent Keller and Steve Wheatcraft reviewed more than 200 technical abstracts.

Steve Wheatcraft, Technical Program Chairman for the 1994 Annual Meeting in Seattle, described the proposed technical program including field trips, short courses, symposia, and theme sessions. Donald Siegel mentioned that John Van Brahana, Technical Program Chairman for the 1995 Annual Meeting in



Niel Plummer, O. E. Meinzer Awardee; Warren Wood, Division Technical Program Chairman for the Boston meeting; Paul Seaber (L) and David Stephenson (R), Distinguished Service Awardees; and Don Siegel, 1993 Birdsall Lecturer.



New Orleans, was making great progress with the meeting's proposed technical program.

Frank Schwartz presented an update on the work of the Publications Committee, much of which was described in the September 1993 issue of *The Hydrogeologist*. Division members will be able to subscribe to *Applied Hydrogeology* at a reasonable cost by checking a box on the 1994 Member/Fellow Dues Statement.

John Moore, President of the International Association of Hydrogeology (IAH), made a short presentation about the mission of IAH and the purpose of the IAH publication, *Applied Hydrogeology*. The journal's new editor will be Cliff Voss and the technical editor will be Bill Wilson. Chairman Schwartz also described the Division's publication initiative to create an annual volume on contemporary topics in Hydrogeology, the first of which will be Dimensions in Hydrogeology.

Fred Phillips, 1994 Birdsall Lecturer, briefly discussed plans for his lecture tour. Three topics are planned and they are indicated in the September 1993 issue of *The Hydrogeologist*.

Bill Back, Chairman of the Historical Committee, reported that the sale of O. E. Meinzer coffee mugs was going well. He wants the Division to continue to sponsor the sale of the hydrogeologist coffee mug series and to provide additional support to either the Birdsall or Award fund.

Paul Seaber and John Cherry have rewritten the Division Bylaws. The Bylaws will be reviewed by the Management Board, and the procedure for adoption will be announced to the membership after this review. Paul will also look into gaining approval from the Director of the Water Resources Center, Desert Research Institute, to use the Institute as the official repository for the records of the Division.

Chairman Schwartz recognized Alan Dutton's work as editor of the Division Newsletter.

David A. Stephenson is the new Vice President of GSA for 1994. Keros Cartwright, John Cherry, and George Davis are new Council representatives of GSA for 1994–1996. Jack Hess and Mary Anderson are new members of the GSA Committee on Committees.

Patrick Burkhart, William and Mary College, suggested the Division consider an academic outreach program to assist new faculty confronted with building a program in hydrogeology.

The meeting adjourned with the transfer of authority to the new Chairman, Leonard Konikow. New Chairman Konikow made a brief presentation of his plans and reminded the members to attend the Birdsall Lecture, "Hydrogeology of Wetlands: Paradigm Lost," presented by Donald Siegel in Salons H–I of the Marriott Hotel.

Prepared by John F. Harsh
Secretary-Treasurer

Summary of Hydrogeology Symposium in Boston

Submitted by Ken Belitz and Lenny Konikow

The Hydrogeology Division sponsored a symposium on "Geologic Insight and Ground-Water Modeling" at the October 1993 annual GSA meeting in Boston, Massachusetts. The underlying premise was that conceptualization is the critical foundation for the development of quantitative ground-water models and that much of the error in modeling arises from oversimplification of three-dimensional, heterogeneous geologic environments. Consequently, the symposium focused on the use of geologic models and knowledge of geologic processes to better define system properties and boundary conditions in modeling flow and transport in complex systems. The half-day symposium consisted of nine invited speakers (Matthew Davis, Graham Fogg, Lori Juergens, Howard Mooers, Timothy Scheibe, Jack Sharp, Kay Thompson, Erik Webb, and Tom Winter). The >200-person-capacity room was overflowing at times during the morning. The popularity and currency of the topic were further demonstrated by a similar half-day symposium, sponsored by the Sedimentary Geology Division, on the Sedimentologic and Stratigraphic Framework of Ground-Water Resources.

Papers presented at our symposium can be broadly classified into four categories: detailed (hydro)geologic mapping, depositional-process modeling, stochastic characterization (including classical geostatistical and a recently developed Markov-chain approach), and recognition of those geologic, geomorphic, and topographic characteristics that often control ground-water flow regimes. In general, most of the papers shared the goal of attempting to accurately portray geological heterogeneity and to evaluate the importance and relevancy of those heterogeneities to the estimation of hydraulic properties. It is noteworthy that most of the papers incorporated actual field sites at scales ranging from outcrop to depositional system. Fewer papers incorporated both geologic and hydraulic measurements, pointing to the relative newness of this line of investigation. In summary, researchers have made considerable progress in accurately quantifying geological heterogeneity, but the gap is still large between theoretical understanding of geological processes and practical implementation of geologically based parameter estimation for ground-water simulation models. Finally, we will pass along the following general rules noted by Jack Sharp during his talk: (1) you know that all aquifers are heterogeneous, (2) all aquifers are more heterogeneous than you originally thought, and (3) the degree of heterogeneity increases with the amount of study.

$50 Awards to Early-Registering Students

A cash rebate of $50 was awarded to the first student members of the Hydrogeology Division who registered for short courses sponsored by the Division at the 1993 Annual Meeting. This was the fourth year of the award. Terry Dixon (Kansas State University) registered for Contaminant Hydrogeology, taught by Chris Palmer and Jeff Peterson; Robert Tapper (University of Virginia) registered for Isotope Hydrology, taught by Carol Kendall and Neil L. Ingraham. Both students were sent a $50 check from Division Funds.

Poster Awards in Boston

GSA sponsors a best poster award for each morning and afternoon session at the annual meetings. Entries are judged on the basis of scientific content, clarity, coherence, and graphics.

The Hydrogeology Division extends its congratulations to James Z. Taylor (University of New Hampshire) and Mark Person (University of Minnesota) for winning the Second Place Award at the Boston meeting for their poster "Effect of upconing on well head delineation for island aquifer systems," which was presented in the Hydrogeology Division session, "Flow and transport in variable density ground water." Their poster was selected from among 86 others that were presented in all Tuesday afternoon poster sessions.

At the Boston meeting, about 35 percent of all papers accepted for Hydrogeology Division sessions were presented in a poster format. This increasingly popular mode offers several advantages to the authors, including (1) unlimited time for presentation, (2) opportunity to describe more details and data, (3) ability to customize oral discussion to viewers' varying interests and backgrounds, (4) immediate and direct feedback from audience, and (5) relaxed mode of presentation.

$2,250 in Contributions for Student Research Scholarships

John Harsh reports that about $2,250 has been raised in the past two years for support of hydrogeology student research scholarships. The suggested minimum individual contribution toward this deserving endowment is $25. To show appreciation for donations, the Division gives contributors a fine-quality, off-white coffee mug that has a photograph of an eminent hydrogeologist on one side and the GSA seal on the other. The 1993 O. E. Meinzer mug distributed at the Boston meeting is the second in the hydrogeologist mug series; Henry Darcy was featured on the original 1992 mug. A few mugs are still available. If you wish to do so, please send your contribution to John Harsh [U.S. Geological Survey, 100 W. Capitol St., Suite 710, Jackson, MS 39269].

The Historical Committee plans to offer a third mug in 1994. What eminent hydrogeologist would you suggest be celebrated on the next coffee mug? Send your suggestions to Bill Back [U.S. Geological Survey, WGS Mail Stop 431, Reston, VA 22092, phone: (703) 648-5856, FAX: (703) 648-5274].

Postmortem on the Boston Meeting

Submitted by Warren Wood

Total attendance at the recent GSA meeting in Boston was the second highest in its history with over 6,400 registrations. I would like to think that the large turnout was due in part to the Hydrogeology Division program and the efforts of the symposium and theme session chairpersons, field trip leaders, and short course instructors who put in the extra effort of beating the bushes encouraging people to attend. One aspect of attendance at the Hydrogeology Division can be measured by summing the maximum number of people in the rooms at all Hydrogeology sessions. This year's total was 1,440, which is nearly three times higher than the 500 at San Diego 1991 and almost twice as high as 790 at last year's offering in Cincinnati. Several of our sessions had peak attendance of 250 or more. I think everyone will agree that the rooms and poster sessions were jammed throughout the meeting, and we filled up our two field trips. Finally, I think the overall quality of the information and presentations was the best of any 18 GSA meetings that I have attended.

Introducing *Applied Hydrogeology*

Submitted by Cliff Voss and Bill Wilson

GSA Council and the Management Board of the Hydrogeology Division have agreed to support the journal *Applied Hydrogeology*, a quarterly publication of the International Association of Hydrogeology (IAH). By its action, the Board has, in effect, adopted this journal to represent the Division in lieu of starting its own official publication. GSA members may now choose to subscribe to this journal as part of their membership privileges.

IAH has long been a prestigious international organization. Founded in 1956, it has generally had a European thrust. Nonetheless, members of our Division have played important roles from time to time. The journal itself is a relative newcomer—the first issue was published in 1992 under the direction of founding editor (and Division member) Gene Simpson. At his own request, Gene has stepped down as editor, and we (who are also Division members) have assumed the formidable task of carrying on what Gene so ably began.

Applied Hydrogeology is the only journal that is concerned solely with hydrogeology in theory and practice, that is international in scope, and that is peer reviewed. Papers in hydrogeology are now scattered among various country-specific journals, a few international journals, and a multitude of hard-to-find conference proceedings. This situation makes it difficult for hydrogeologists to follow developments in the science. *Applied Hydrogeology* is intended to be a focus for publication of such papers by providing an international forum for scientific hydrogeology. The journal is published in Germany by Verlag Heinz Heise.

We intend to maintain this forum for expression of worldwide progress in hydrogeology in the form of an inexpensive and accessible publication outlet for scientists, researchers, engineers, and practitioners in all countries. We further intend this journal to be a link between developing and industrialized countries and to address the ramifications of hydrogeology on both environmental protection and optimal employment of natural resources.

The word *Applied* in the journal's name is not intended to limit the scope of the journal. Hydrogeology is ultimately a practical discipline; we study hydrogeology in order to improve the human situation on earth. The journal thus includes both reports that contain immediately useful information and those with theoretical information, because both lead to practical advances in the science.

Following the theme introduced by Gene Simpson for Volume 1 of this journal, *Applied Hydrogeology* will publish peer-reviewed papers related to most aspects of hydrogeologic science, including:

- theoretical and field studies ranging in scale from local areas and short time periods to regional or global problems and geologic time,
- descriptions of techniques and innovative instrumentation in the laboratory and field,

- water-resource and related mineral-resource evaluations,
- reports of observed hydrogeologic phenomena,
- overviews of regional hydrogeologic systems,
- state-of-the-art reviews,
- philosophy of scientific methods in hydrogeology,
- interactions between populations and hydrogeologic systems, and
- history of hydrogeology and biographies of eminent hydrogeologists.

Some of the major advances in hydrogeology in the coming decades will undoubtedly derive from multidisciplinary field studies involving various hydrogeologic disciplines, such as hydrology, geology, biochemistry, geophysics, geomorphology, geobiology, tectonics, mathematics, computational mathematics, economics, and sociology. We particularly invite reports of such efforts.

As the new Editor and Technical Editor, we welcome this opportunity to widen our circle of hydrogeologic colleagues and to guide this forum toward the furtherance of hydrogeologic science and its applications in the twenty-first century. We want to make *Applied Hydrogeology* a leading technical publication of exceptional quality, such that you will be proud to claim it as your adopted publication. Please consider this journal as a prime international outlet for your papers. Indeed, your ideas and manuscripts are eagerly solicited and warmly welcomed!

For inquiries and manuscript submission, please contact: Clifford I. Voss, Editor–*Applied Hydrogeology* [U.S. Geological Survey, 431 National Center, Reston, VA 22092, phone: (703) 648-5885, FAX: (703) 648-5274, E-Mail: cvoss@usgs.gov].

1994 GSA Annual Meeting, Seattle October 24–27, 1994

Prepared by Steve Wheatcraft

Symposium: *Shirley Dreiss Memorial Symposium: Recent Trends in Studies of Coupled Hydrodynamic, Tectonic, and Thermal Processes*

Fluid circulation and rock-water interactions are of fundamental importance to such diverse processes as the evolution of mid-ocean ridge systems, basin deformation, collision tectonics, metallogenesis, and the fate of pollutants. In this half-day symposium, special emphasis will be placed on theoretical, laboratory, and field-based studies that reveal the feedbacks and interactions between tectonic, thermal, and geochemical processes within ancient and active fluid systems. Contact: Mark Person [Department of Geology & Geophysics, University of Minnesota, 310 Pillsbury Dr. SE, Minneapolis, MN 55455, (612) 624-1333] or Ken Belitz [Department of Earth Sciences, Dartmouth College, Hanover, NH 03755, (603) 646-2373].

Theme Sessions

***The Role of Geology in Characterization, Contaminant Transport, and Remediation of Hazardous Waste Sites* (Oral session)**

Integration of geological site characterization with exposure assessments and remediation technology is of fundamental importance in successfully remediating contaminated subsurface soils and ground water. This session is a forum for innovative geologic and hydrogeologic case studies instrumental in assessing contaminant migration pathways and selecting remedial strategies. Interest areas: environmental geology, hydrogeology, engineering geology. Contact: Daniel Clayton or Kathy Goetz Troost [Shannon and Wilson, Inc., P. O. Box 300303, Seattle, WA 98103, (206) 632-8020].

***Geochemistry of Contaminant Transport* (Oral session)**

Contaminant transport through geologic media is affected by biological and chemical redox, solubility, and sorption reactions. In this session, special emphasis will be placed on a unified theoretical, field, and modeling framework for describing geochemical processes that affect contaminant migration. Interest areas: geochemistry, aqueous/organic, environmental geology, hydrogeology. Contact: L. Edmond (Ted) Eary [Sciences International, Inc., 7511 West Arrowhead, Suite C, Kennewick, WA 99336, phone: (509) 735-0758, FAX: (509) 735-4042] or G. R. Holdren [Battelle–Pacific Northwest Labs, P. O. Box 999, Richland, WA 99352, phone: (509) 376-2242, FAX: (509) 376-5368, E-mail: r_holdren@ccmail.pnl.gov].

***Stable Environmental Isotope Application in Ground-Water Systems* (Oral session)**

Presentations will describe the current status of the theory and application of stable isotopes of hydrogen, helium, carbon, nitrogen, oxygen, and sulfur to the understanding of ground-water processes including environmental applications to industries, waste repositories, waste treatment, and agriculture. Interest areas: hydrogeology, environmental geology, geochemistry, aqueous/organic. Contact: Noel C. Krothe [Department of Geological Sciences, Geology Rm. 425, 1005 E. 10th St., Indiana University, Bloomington, IN 47405, (812) 855-8197, E-mail: krothen@ucs.ind.edu] or Roy F. Spalding [Water Center, 103, National Res. Hall, University of Nebraska, Lincoln, NE 68508, (402) 472-8214].

***Hydrothermal Systems Evolution in the Cascade Range* (Oral session)**

This session focuses on localization, distribution, and temporal changes in volcano-related and other hydrothermal systems, with special emphasis on evidence for an integrated geothermal system in the Cascade Range, finding the most applicable heat-flow model, and assessing hydrothermal resources. Interest areas: hydrogeology, volcanology, geophysics/tectonophysics. Contact: Lisa Shevenell [Nevada Bureau of Mines and Geology, University of Nevada at Reno, MS 178, Reno, NV 89557-0088, (702) 784-6691, E-mail: lisa@comstock.nbmg.unr.edu] or Jules Friedman [Branch of Geophysics, U.S. Geological Survey, MS 964, Denver, CO 80225, (303) 236-1307].

***Relation of Depositional Environments to Chemical and Physical Heterogeneity within Sedimentary Aquifers* (Oral session). Cosponsored by Hydrogeology Division and SEPM**

This session will focus on the relationship between depositional processes and the resulting spatial heterogeneity of chemical and physical properties of aquifers that impact solute

transport and water quality. Interest areas: hydrogeology, sediments, clastic, geochemistry, aqueous/organic. Contact: Matthew J. Davis [Department of Earth Sciences, University of New Hampshire, Durham, NH 03824, (603) 862-4119] or George N. Breit [U.S. Geological Survey, Box 25046, MS 916, Denver Federal Center, Denver, CO 80225, (303) 273-8630, E-mail: gbreit@sedproc.cr.usgs.gov].

Geologic Significance of Microbial Processes **(Oral session)**

This session will focus on the geologic significance of microbial processes in the lithosphere, examining the active role of microbes in the diagenetic alteration of sediments and rocks and in the accumulation of some metal ores. Interest areas: geochemistry, hydrogeology, environmental geology. Contact: Philip C. Bennett [Department of Geological Sciences, The University of Texas at Austin, Austin, TX 78712, phone: (512) 471-3587, FAX: (512) 471-9425, E-mail: bennett@muon.geo.utexas.edu] or Frank Chapelle [U.S. Geological Survey, WRD, Stephenson Center, Suite 129, 720 Gracern Road, Columbia, SC 29210-7651, phone: (803) 750-6116, FAX: (803) 750-6181].

Computational Hydrology and Data Visualization/ Animation **(Oral session)**

This session will explore how to extract information from multidimensional, process-oriented, fluid-flow and mass-transport models or from large-scale experiments and will examine the future of these techniques in "digital" journals, hydrogeological education, and the legal arena. Interest areas: hydrogeology, computers. Contact: E. A. Sudicky [Waterloo Centre for Ground-Water Research, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1, phone: (519) 885-1211, ext. 6271, FAX: (519) 725-8720, E-mail: mclaren@sciborg.uwaterloo.ca] or F. W. Schwartz [Department of Geological Sciences, Ohio State University, 183 Scott Hall/ 1090 Carmack Rd., Columbus, OH 43210, phone: (614) 292-6196, FAX: (614) 292-0640].

Integration of Hydraulic and Geochemical Approaches in Vadose Zone Transport Studies **(Oral session). Cosponsored by Hydrogeology Division and IEE**

The purpose of this session is to better understand vadose zone processes and explore how to resolve conflicting hydraulic and geochemical data on direction and magnitude of subsurface water flux and of contaminant transport in the vadose zone. Interest areas: hydrogeology, environmental geology, geochemistry, aqueous/organic. Contact: Scott W. Tyler [Desert Research Institute, WRI, 7010 Dandini Blvd., Reno, NV 89512, phone: (702) 673-7391, FAX: (702) 673-7397, E-mail: scott@maxey.unr.edu] or Bridget R. Scanlon [Bureau of Economic Geology, The University of Texas at Austin, University Station, Box X, Austin, TX 78713-7508, (512) 471-1534].

Methods for Quantifying Unsaturated Permeability, Retardation, and Other Transport Properties in Rock, Soil, and Sediment **(Poster session)**

This session focuses on new and established interdisciplinary approaches, including empirical laboratory and field studies, direct measurement techniques, and multidimensional modeling, to achieve a more complete characterization and understanding of transport and water/substrate interactions in unsaturated soils, sediments, and rocks. Interest areas: environmental geology, geochemistry, aqueous/organic, hydrogeology. Contact: Judith Wright [Battelle–Pacific Northwest Labs, P. O. Box 999, MSIN K8-18, Richland, WA 99352, phone: (509) 375-3268, FAX: (509) 375-4838, E-mail: jvwright@pnl.gov] or James L. Conca [Washington State University, Tri Cities, 100 Sprout Road, Richland, WA 99352, phone: (509) 375-3268, FAX: (509) 375-4838].

Description and Measurement of Constitutive Relationships Governing Fluid Flow in Variably Saturated Media **(Oral session)**

This session addresses fluid flow in variably saturated media, focusing on the description, measurement, and scaling of the constitutive relationships between fluid saturation, relative permeability, and fluid pressure, and the development and testing of statistical, theoretical, and empirical models of pore-size distributions and percolation and pore networks. Contact: Martinus Th. van Genuchten [U.S. Salinity Laboratory, 4500 Glenwood Drive, Riverside, CA 92501, phone: (909) 369-4847, FAX: (909) 369-4818] or Robert J. Lenhard [Battelle–Pacific Northwest Labs, P. O. Box 999, MSIN K6-77, Richland, WA 99352, phone: (509) 376-5960, FAX: (509) 376-4428].

Short Courses

Isotope Hydrology **(Carol Kendall and Neil Ingraham)**

This course focuses on practical applications of isotopes for better definition of hydrologic systems and will discuss sample collection procedures, sample number optimization, and results interpretation. Pre-course reading materials will be distributed to help participants develop a basic understanding of the fundamentals.

Applied Ground-Water Modeling **(Mary Anderson and William Woessner)**

In this course, we turn off the computers and step back to analyze the key elements in the modeling process. The goal is to turn a "code user" into an informed modeler capable of attacking field-scale problems with a refined, strong modeling approach. We present methods to build hydrogeologic conceptual models, transform the conceptual model into a properly designed ground-water flow model, evaluate model results, and overcome typical problems faced by ground-water flow modelers.

Field Trips

Island and Coastal Hydrogeology of Hawaii **(Pre-meeting—Clifford Voss and Frank Peterson)**

A very large portion of the world's population lives less than 25 km from large water bodies, such as oceans and lakes. This trip examines the unique hydrogeology associated with island and coastal regions, along with the hydrothermal activity on the Big Island of Hawaii. Field trip stops will likely include geothermal areas on the Big Island; stops along the Kona coast where fresh water is exiting into the ocean (thus illustrating

important seawater intrusion concepts); flow basalts, which have extremely high permeabilities; hydrology and climate (rain forest to desert on the same island); and geomorphological features that result from stream erosion. Two days will be spent on the Big Island (Hawaii), followed by two more days on Oahu. Attendees will arrive on the Big Island on the Monday prior to the start of GSA. The trip will start Tuesday morning and finish Friday evening. Attendees have time for their personal interests on Saturday before flying to Seattle on Sunday for the start of the meeting. Participation will be limited to 25, but if there is enough interest, it may be possible to take two busloads.

***Geohydrology of the Hanford Site, South-Central Washington* (Post-meeting—Kevin Lindsey, S. P. Reidel, K. R. Fech, J. L. Slate, and A. G. Law)**

This trip examines the geohydrologic setting, stratigraphy, and structure of the U.S. Department of Energy's Hanford Site in south-central Washington, which holds over 60 percent of the high-level radioactive waste in the United States and is currently undergoing a major cleanup effort. Field trip stops will stress geologic features that are fundamental to vadose and ground-water regimes, contaminant transport, and waste remediation. Many of the stops will involve short hikes that will require good walking shoes. Because the trip will be on a U.S. Department of Energy facility, trip participants must be U.S. citizens. The trip takes two days and will be based out of Richland, Washington. Participation is limited to 30 people. Transportation will be arranged between Seattle and Richland following the meeting. Airline and Amtrak connections to Richland are available.

1995 Hydrogeology Program, New Orleans

John Van Brahana is in charge of planning the Hydrogeology Program for the 1995 Annual Meeting in New Orleans, Louisiana. Preliminary ideas for the program are listed below. If you have suggestions for additional program topics, or would like to volunteer to help as a session Chairman, theme advocate, or field trip leader, please contact Van Brahana [118 Ozark Hall, University of Arkansas, Fayetteville, AR 72701, phone: (501) 575-2570, FAX: (501) 575-3846, E-mail: jbrahana@jungle.uark.edu]. Note that filing deadlines to GSA will be approximately June 1, 1994, for field trips; December 1, 1994, for short courses; and January 2, 1995, for symposia.

Short Courses and Workshops: Organic Geochemistry; Hydrogeology and Geochemistry of Wetlands; Ground-Water Tracing in Karst

Symposia and Theme Sessions: Hydrochemical Interaction Between Ground and Surface Water in Karst; Application of Radionuclides to Hydrogeology; Geochemistry of Brines; Hydrogeology of Rocks of Low Permeability; The Future of Hydrogeology—From the Perspective of Meinzer Award Winners

Field Trips: Karst Hydrogeology of the Caribbean; Hydrogeology of Wetlands; Toxic Substances Hydrogeology—Brines in South Louisiana; Hydrogeology, Engineering Geology, and Environmental Geology of the New Orleans Area

GSA Sectional Hydrogeology News

Northeast–Robert L. Melvin, Section Representative

The Hydrogeology Division received accolades for its excellent technical program from many of the hydrogeologists who attended the national meeting in Boston. The field trips to USGS research sites at Mirror Lake, New Hampshire, and Cape Cod, Massachusetts, were particularly noteworthy parts of the program. Both field trips were filled to capacity, and several attendees remarked that they were the best trips they had ever been on. Special thanks go to Alan Shapiro and Denis LeBlanc who organized and led these field trips.

The Northeast Section's 1994 meeting is rapidly approaching. The meeting, to be held March 28–30 in Binghamton, New York, has several sessions of interest to hydrologists. Planning is under way for the March 1995 Northeast Section meeting to be held in Hartford, Connecticut. Tentative plans consist of hydrogeology technical sessions related to applications of borehole geophysics to hydrologic studies, relations between land use and ground-water quality, and hydrology of sedimentary bedrock terranes in the Northeast.

Other meetings of interest to hydrologists that have been held or are planned in the Northeast include the following. The annual meeting of researchers involved in the Fractured Rock Research Site at Mirror Lake, New Hampshire, was held at the University of Connecticut (Avery Point Campus) on January 26–28, 1994. Ongoing watershed-scale ground-water studies, geochemical and geophysical investigations, and tests at experimental well fields were described by federal and university scientists. A symposium on Applications of Geophysics to Engineering and Environmental Problems will be held in Boston, Massachusetts, March 27–31. This meeting is sponsored by the Environmental and Engineering Society [Box 4475, Englewood, Colorado 80112].

As I have recently become the Northeast Section representative for the Hydrogeology Division, I would like to ask other Section members to let me know about meetings, field trips, and other activities that should be mentioned in future issues of *The Hydrogeologist* [450 Main St., Hartford, CT 06103, (203) 240-3060].

Southeastern–Stuart Rojstaczer, Section Representative

The 43rd meeting of the Southeastern Section will be held April 7–8, 1994, in Blacksburg, Virginia.

North Central–Bill Simpkins, Section Representative

The North Central Section of GSA will meet April 28–29, 1994, on the campus of Western Michigan University in Kalamazoo, Michigan, and it will feature a strong hydrogeology program. General sessions offering papers in ground water include hydrogeology, environmental geology, and engineering

geology. Symposia entitled "Aquifer systems of the Great Lakes region" (cosponsored with SEPM), "Geology and hydrogeology of glacial outwash systems," and "Geophysical applications to environmental problems" will also be held. Short courses on "Environmental geophysics" (1 day), "Hydrocarbon monitoring and recovery" (1/2 day), and "Building ground-water flow models" (1/2 day) will be offered. A pre-meeting field trip on the "Hydrogeology of Kalamazoo and Cass Counties, Michigan" will take place on Wednesday, April 27.

South Central–Joe Yelderman, Section Representative

The 28th meeting of the South Central Section will be held March 21–22, 1994, in Little Rock, Arkansas.

Cordilleran–Kent Keller, Section Representative

There is interest in planning one or more hydrology/hydrogeology technical sessions for the 1995 Cordilleran Section annual meeting to be held in Fairbanks, Alaska, May 24–26, 1995. Possible topics include the incorporation of permafrost phenomena into subsurface flow models, a wide variety of ground-water contamination issues, sources of CO_2 in shallow ground water in cold climates, and issues in glacial-hydrology water balances including the problem of regional extrapolation from point measurements. If you have comments on these possibilities or other ideas, please contact Kent Keller, Cordilleran Section representative [phone: (509) 335-3040, FAX: (509) 335-7816, E-mail: ckkeller@wsuvm1.csc.wsu.edu].

Rocky Mountain–Bill Woessner, Section Representative

The 47th meeting of the Rocky Mountain Section will be held May 4–6, 1994, in Durango, Colorado.

In Memoriam: Shirley J. Dreiss, 1949–1993

Submitted by Barbara Bekins

Shirley J. Dreiss, a professor of Earth Sciences and Chair of the Earth Sciences Department at the University of California, Santa Cruz, died in a car accident in the Santa Cruz Mountains on December 14, 1993. She will be missed for her good cheer and the quality of her contributions to the academic community by friends and colleagues around the country. Dr. Dreiss had served the Hydrogeology Division and GSA in a number of key positions. As the 1991–1992 Birdsall lecturer, she spoke on "Hydrogeology of an active subduction zone" and "Regional scale transport in a karst aquifer." In addition, Dr. Dreiss was the Cordilleran Section representative to the Hydrogeology Division 1989–1991 and an associate editor of the GSA Bulletin. Last fall, she and Ward Sanford co-convened a session at the Annual Meeting on flow and transport in variable density ground water. For the 1994 meeting in Seattle, Dr. Dreiss was organizing a symposium on "Recent Trends in Studies of Coupled Hydrodynamic, Tectonic, and Thermal Processes." This symposium is now being organized by Ken Belitz and Mark Person in her honor.

As a senior member of her profession, Dr. Dreiss had numerous responsibilities outside GSA. She served as an associate editor for *Geology* 1990–1993 and as a member of the first review panel for the recently formed NSF hydrology section. She was also a member of the coordinating board of the California Water Resources Center and the National Academy of Sciences Committee to review the EPA EMAP program. Dr. Dreiss was on the Sedimentary and Geochemistry Processes Thematic Panel of the Ocean Drilling Program (ODP) 1989–1992 and was also part of the ODP detailed planning group for drilling on the Washington–Oregon margin. She co-convened a 1989 AGU session on the hydrology and geochemistry of closed-basin saline lakes. She also served on a National Academy of Sciences committee to study the health of the Mono Lake ecosystem.

Dr. Dreiss began her career in 1971 when she earned a bachelor's degree, with honors, in geology from The University of Texas at Austin. Her master's degree was granted in 1974 by the University of Missouri, Columbia, where Stan Davis was her advisor. Her master's thesis on the lithologic controls of limestone cavern formation provided an opportunity to pursue an avid interest in spelunking. This work and early Ph.D. studies at Stanford were funded by an NSF fellowship. Dr. Dreiss obtained her Ph.D. from Stanford University in 1980. Her advisor there, Irwin Remson, comments that "Shirley was very resourceful." For instance, when her early thesis research attempts to model flow in karst formations using finite differences were unsuccessful, she used instead a completely novel approach employing linear systems theory to analyze the travel time moments.

Dr. Dreiss' teaching perspective was enhanced by summer jobs, during her education years, at the Texas Bureau of Economic Geology, Texaco, Black and Veatch Consulting Engineers, and Lawrence Livermore National Lab. She also worked for the USGS, modeling heat and transport of liquid geothermal systems.

In 1979, Dr. Dreiss was hired as an assistant professor at University of California, Santa Cruz (UCSC). Her achievements there resulted in promotions to associate professor in 1986 and full professor in 1991. At UCSC she taught introductory ground water, soil mechanics, numerical methods in ground water, field methods in hydrogeology, and seminars on her current research interests. Dr. Dreiss supervised more than 20 graduate students working on an impressive variety of topics. In addition, UCSC Chancellor Karl Pister has written that "her service to the campus community was extensive, most recently as a member of the Natural Sciences Curriculum Committee and as chair of Earth Sciences since 1992."

Warren Wood, the 1990–1991 GSA Birdsall lecturer, comments that "Shirley was one of the few ground-water hydrologists whose research encompassed a broad range of hydrogeologic problems." The largest scale flow system she investigated was that of the Barbados Accretionary Complex. J. Casey Moore of UCSC, who sought out the original collaboration that lead to Dr. Dreiss' involvement in this research, said, "Shirley was a key contributor because she brought the perspective of a hydrogeologist to the active continental margins project of the Ocean Drilling Program." Another of her active research areas was variable-density ground-water circulation in

arid basins. This work concentrated on the politically and ecologically sensitive locale of Mono Lake, California, and it lead to numerous presentations at national meetings and several papers in preparation. Dr. Dreiss was also actively investigating the use of indicator geostatistics for hydrostratigraphic interpretation. The field area for this study encompassed three diverse sites in the Santa Clara Valley, California.

Dr. Dreiss had similarly broad research interests early in her career. As a new assistant professor, she obtained EPA funding to study chromium transport in variably saturated soils. This field investigation of a tannery sludge disposal site, which was located on a scenic coastal terrace overlooking the Pacific Ocean, was the object of a Stanford University field trip. Hedeff Essaid, at that time a Stanford Ph.D. student, comments that "it was an educational and inspiring field trip because the vadose zone instrumentation at the site was very impressive." Dr. Dreiss' other past research interests have included stream-aquifer interactions in alluvial valleys, hydrologic factors triggering shallow hillslope failure, and quantitative modeling of flow in karst aquifers.

I studied under Shirley during my Ph.D. research 1988–1993. One of her particular strengths was writing and speaking clearly to an interdisciplinary audience and also on an individual level. Her critiques of my own efforts were always extremely valuable and supportive. Shirley also possessed enormous energy and enthusiasm. At GSA meetings, she would attend talks all day plus committee meetings and dinners with colleagues, putting in 18-hour days all week.

Shirley is survived by her husband, David Freyberg, associate professor of Civil Engineering at Stanford University; her parents of San Antonio, Texas; and two brothers.

A Dreiss Memorial Fund has been established. The Hydrogeology Division Management Board has determined that the primary aim of the Fund is to work jointly with the John M. Birdsall Fund and cover expenses for the renamed "John M. Birdsall–Shirley J. Dreiss Distinguished Lecturer Series." If the expenses for the Birdsall–Dreiss Distinguished Lecturer Series are fully paid during a given year, then a secondary aim of the Fund is to provide additional support (if needed) for scholarships and research grants under the auspices of the Hydrogeology Division. Donations in memory of Shirley Dreiss may be sent to the GSA Foundation [Attn: Dreiss Memorial Fund, 3300 Penrose Place, P. O. Box 9140, Boulder, CO 80301].

[Ed. note: Dr. Bekins would like to create a photo memorial of Shirley's professional years. If you have pictures of her from field trips or professional gatherings, please send a copy, with notation of date, occasion, your name, names of others in the picture, and any personal comments to go with the picture in the album, to: Barbara Bekins, U.S. Geological Survey, MS 496, 345 Middlefield Rd., Menlo Park, CA 94025, (415) 354-3065].

History of the Hydrogeology Division

This issue concludes the presentation in the last several issues of historical information on the Hydrogeology Division, from its founding as a Hydrogeology Group within GSA in 1958 to the present. In this issue: 1991–1993.

Division Chairpersons	Year	Annual Meeting Location
Paul R. Seaber	1991	San Diego
John Cherry	1992	Cincinnati
Frank Schwartz	1993	Boston

Papers Cited in O. E. Meinzer Award

1991 Neuzil, C. E., Ground water flow in low-permeability environments: Water Resources Research, v. 22, p. 1163–1195, 1986.

1992 Bethke, C. M., Modeling subsurface flow in sedimentary basins: Geologische Rundschau, v. 78, no. 1, p. 129–154, 1989.

Bethke, C. M., Harrison, W. J., Upson, C., and Altaner, S. P., Supercomputer analysis of sedimentary basins: Science, v. 239, p. 261–267, 1988.

1993 Plummer, L. N., Busby, J. F., Lee, R. W., and Hanshaw, B. B., Geochemical modeling of the Madison aquifer in parts of Montana, Wyoming, and South Dakota: Water Resources Research, v. 26, no. 9, p. 1981–2014, 1990.

Buesenberg, E., and Plummer, L. N., Use of chlorofluorocarbons (CCl_3F_2 CCL_2 F_2) as hydrologic tracers and age-dating tools: The alluvium and terrace system of central Oklahoma: Water Resources Research, v. 28, no. 9, p. 2257–2283, 1992.

John Birdsall Distinguished Lecturers

1991 Robert N. Farvolden, University of Waterloo
Ground water in human societies
Hydrogeology and its implications in the world's largest city

1992 Shirley J. Dreiss, University of California, Santa Cruz
The hydrogeology of an active subduction zone
Regional scale transport in a karst aquifer

1993 Donald I. Siegel, Syracuse University
Effects of continental glaciation on ground-water chemistry: from dilution to pollution
The hydrogeology of wetlands: paradigm lost
Geochemistry of an oil contaminated shallow aquifer—environmental to geological implications

Award for Distinguished Service

1991 Keros Cartwright
Claire B. Davidson
William E. Wilson

1992 Robert Farvolden
Phyllis Garman
Eugene Simpson

1993 Paul Seaber
Dave Stephenson

Hydrogeology Division Organization

1994 Management Board

Chairman
Leonard Konikow, USGS-Reston

First Vice Chairman
Don Siegel, Syracuse University

Second Vice Chairman
Jack Hess, Desert Research Institute

Secretary-Treasurer
John Harsh, USGS-Jackson, MS

Past Chairman
Frank Schwartz, Ohio State University

Division Liaison to Council
John Cherry, University of Waterloo

1994 Committees

O. E. Meinzer Award Committee
Leslie Smith (Chairman),
Jean Bahr, John Bredehoeft,
Christopher Neuzil, Stavros Papadopulos

Distinguished Lecturer Committee
Warren Wood (Chairman),
Don Siegel (Coordinator),
Fred Phillips (Lecturer)

Distinguished Service Award Committee
Paul Witherspoon (Chairman),
Phyllis Garman, Bill Wilson

Nominating Committee
Olaf Pfannkuch (Chairman),
Robert Farvolden, Jack Sharp

Joint Technical Program Committee
Steve Wheatcraft (Chairman),
Mary Jo Baedecker, John Van Brahana,
Brian Katz, Warren Wood

Penrose Conference Committee
Bill Simpkins (Chairman),
John Cherry, Nari Narasimhan, Don Siegel

Bylaws Committee
Paul Seaber (Chairman),
John Cherry, Joe Rosenshein

Past Chairmen's Long-Range Planning Committee
Frank Schwartz (Chairman)

Division Historical Committee
William Back (Chairman),
Claire Davidson, Alan Dutton,
Phyllis Garman, John Harsh,
Darryll Pederson, Joe Rosenshein,
Paul Seaber

Representatives to Other Societies

Joe Weihaupt, American Association for the Advancement of Science, Section W

Nari Narasimhan, Hydrology Division of American Geophysical Union (AGU)

Joe Rosenshein, American Institute of Hydrology (AIH)

Warren Wood, Association of Ground-Water Scientists and Engineers (NGWA)

Tom Holtzer, GSA Engineering Geology Division

Paul Seaber, GSA History of Geology Division

James Quinlan, GSA Quaternary Geology and Geomorphology Division

Jack Sharp, U.S. Committee for the International Association of Hydrogeologists (IAH)

Section Representatives

Cordilleran–Kent Keller

North Central–Bill Simpkins

Northeastern–Bob Melvin

Rocky Mountain–Bill Woessner

South Central–Joe Yelderman

Southeastern–Stuart Rojstaczer

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News items for *The Hydrogeologist* are appreciated submitted in electronic mail or saved text only on computer diskette. Microsoft Word is used for newsletter compilation on a Macintosh computer. Deadline for submitting items for the Fall 1994 issue of *The Hydrogeologist* is August 1, 1994.