THE GEOLOGICAL SOCIETY OF AMERICA

The Hydrogeologist

Newsletter of the GSA Hydrogeology Division

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Hydro On The Hill

A New Column by David Diodato

U.S. Capitol Dome. Photo by Keith Stanley, www.kestan.com. (Used with permission.)

Greetings and welcome to Hydro on the Hill, a periodic column reporting on select legislative actions of interest to hydrogeologists. Safe and reliable water resources are of vital importance to domestic users, farmers, and industry. That fact is not lost on lawmakers in Washington. As hydrogeologists in the 17,000-plus member Geological Society of America, collectively you have a demonstrated expertise in virtually all aspects of water resources including planning, development, monitoring, protection, remediation, and related research. The purpose of this column is to help raise awareness about legislative activity of possible interest to you. Although the information presented here can quickly become dated, it is accurate at the time of writing and can serve as a basis for further inquiry. I welcome your suggestions for items to include in the column and for ways that the column could be improved. Please send your suggestions to me at *diodato@TheHydrogeologist.com*.

"Twenty-First Century Water Commission" proposed to study and develop recommendations for a comprehensive national water strategy. The 21st Century Water Commission Act, H.R.135, authored by Georgia Congressman Linder, was the subject of hearings in the House of Representatives. The Act would create a seven-member panel of water experts appointed by the President. The panel would assess current technologies and water management programs in the private sector and all levels of government and issue recommendations on how these programs and technologies can best be used to ensure an adequate water supply for the next fifty years. Among other things, the bill emphasizes "the primary role of States in adjudicating, administering, and regulating water rights and water uses." The Commission would issue reports of findings every six months and a final report within three years. The need to address this issue was expressed by Chairman Duncan in a hearing of the Water Resources and Environment Subcommittee of the Transportation

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In This Issue:

EDITOR'S NOTE: A color version of this newsletter is available on the web at [http://gsahydrodiv.unl.edu]

Chair's Corner...

Bob Ritzi
Chair
GSA Hydrogeology Div

Greetings to the membership. I am using this article to convey information about changes in the schedule of Hydrogeology Division activities at the next annual meeting, about fiscal matters, and about amendments to the Hydrogeology Division Bylaws that I hope you will vote to approve on the spring ballot.

For the coming annual meeting in Seattle, many of our Division events will be shifted one day earlier in the week, a consequence of the entire meeting now starting a day earlier (on Sunday instead of Monday). Thus the Division Luncheon, Awards Ceremony, Business Meeting, and Birdsall-Dreiss Lecture will be held on Monday. The Management Board meetings will be held on Sunday and Tuesday, and will meet through lunch instead of breakfast. (Please see the planning grid enclosed within the newsletter for details). The Hydrogeology Division Student Reception, however, will remain on Tuesday evening to avoid conflicting with the alumni receptions on Monday night.

By moving the luncheon to Monday, we avoid overlap with the Engineering Geology Division's luncheon. (There were a number of concerns expressed about the overlap that occurred last year.) We hope to cluster poster sessions on Tuesday afternoon and to close Tuesday with the NGWA Darcy Distinguished Lecture followed by the Student Reception. We hope to eliminate the very large Division expense for projection equipment this year by holding the Birdsall-Dreiss and Darcy Distinguished Lectures in convention center rooms, as opposed to at the hotel. Ralph Davis, our Secretary-Treasurer who makes the meeting arrangements, and Alan Fryar, our Division Technical Program Chair, both have been working hard to put these changes into effect, but a lot of control in scheduling lies outside of their hands and with the JTPC chair and GSA staff. Not all of our scheduling requests may be granted this year. If not, we will learn from the process and continue to work toward achieving the accommodations we desire at the least cost for future meetings. The Division's technical program for Seattle is nicely taking shape thanks to Alan's hard work and to the many who submitted proposals for topical sessions, short courses, and field trips. Thanks to the diligent work of all Division committee members, the awards selection process is nearly complete.

On fiscal matters, the Hydrogeology Division Management Board has voted to increase future membership dues from $8 to $12. This was done after discussion at the Denver meeting. There was broad participation in this discussion including Division committee members, section representatives, liaisons to other societies, past Management Board members, and members at large, in addition to the Management Board.

Please see **Chair** *on page 3*

The Hydrogeologist

The Hydrogeologist is a publication of the Hydrogeology Division of the Geological Society of America. It is issued twice a year, to communicate news of interest to members of the Hydrogeology Division. During 1998, the publication moved from paper-based to electronic media. The electronic version may be accessed at: *http://www.uakron.edu/geology/gsahydro/*. Members of the Hydrogeology Division who have electronic mail will receive notification of all new issues. Other members will continue to receive paper copies.

Contributions of material are most welcome, and should be directed to the Editor. Submission as Word or WordPerfect document is most expedient.

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Deadline, Fall Issue

August 16, 2003

Chair *from page 2*

There was a broad consensus for the increase among the participants at this meeting, which led to a unanimous vote by the Management Board. The last time Division membership dues were increased was in 1995, when regular member dues were increased from $6 to $8 and student dues were increased from $2 to $3.

What follows is a summary of how the Division expends membership dues and the rationale for the increase. Ralph Davis as our Secretary-Treasurer does a very good job at minimizing our expenses and watching our bottom line. Most expenditures are for Student Research Grant Awards, Student Travel Awards to attend meetings, other Division awards, and travel for the Birdsall-Dreiss Distinguished Lecturer. The remainder of the expenditures goes toward communication and the ancillary costs of the annual meeting (room rental, etc.) For the past several years, revenues generated from the membership dues and the interest-bearing accounts in the GSA Foundation together have been less than the cost of Division activities. There have been no new areas of significant expenditure, and some cost savings by moving to the mostly electronic distribution of the newsletter. But costs for other traditional activities have risen and, most importantly, there has been a large decline in revenue from interest income. The Division, as with the Society as a whole, relies largely on interest income from foundation accounts, which have declined dramatically with the change in the equity markets. The unrestricted Division accounts have a positive balance large enough to absorb some deficit spending during these times but cannot continue to do so indefinitely. The increase in dues will allow us to balance our budget, to cover our expenditures for the foreseeable future, and to build the general account back to its original balance, and thus make the Division more fiscally sound.

In a separate vote, the Management Board unanimously approved increasing student dues from $3 to $5. The rationale for this nominal increase is to keep up with inflation, and there is efficiency in processing a change in dues for both membership types together. The main issue among the Management Board in discussing student dues is that they be kept low enough so as not to prohibit students from freely joining the Division. The Board feels that a $5 membership fee is sufficiently low. The dues increases were ratifiied by the GSA Council in May.

> *"I am asking the regular members of our Division to pledge $25 per year over four years."*

In related fiscal matters, the Division has launched a campaign this year to bolster the Birdsall-Dreiss Distinguished Lectureship Funds. At last count, as a result of the change in equity markets, the Birdsall Fund principal was down to nearly $59,000, and the Dreiss Fund to $24,500. At the anticipated rate of return, those funds will generate only about $3,000 for use on the next tour. Lecturers typically have been allotted $6,500 for their tours in the recent past, and even this amount generally does not cover the extensive travel recent lecturers have undertaken. While we have been augmenting the Lectureship budget with money from our dues revenue, this has led to the unsustainable deficit spending mentioned above. Thus, the need for bolstering the Birdsall-Dreiss Distinguished Lectureship Funds is clear.

In this campaign, we are seeking tax-deductible contributions both from members of the Hydrogeology Division and from industry. We hope that the value of the lectureship to Division members is unquestioned. We hope that potential donors from industry will see that the Lectureship reaches thousands of students each year, and generates interest in hydrogeology as a course of study and as a career path. Thus, it is important in attracting top people into the profession that supports their business. Our goal is to raise $16,000 from each sector, members and industry, for $32,000 total. Given the increase in member dues is approved by GSA Council and the fundraising drive is successful, we expect that the annual travel budget can be increased to $10,000.

I am asking the regular members of our Division to pledge $25 per year over four years. Twenty members made this pledge immediately following the discussion of this campaign at last year's business meeting in order to kick off this drive. If you have already made a donation this year, I sincerely thank you for your support of the Lectureship. If not, please contribute what you can. Please let me know if you have any questions, comments, or suggestions regarding this campaign.

Please see **Vote** *on page 17*

2002 Annual Business Meeting Minutes

Reported by Ralph Davis, Secretary / Treasurer

The 2002 Annual Hydrogeology Luncheon, Awards Ceremony and Business Meeting of the Hydrogeology Division of the Geological Society of America (GSA) were held Tuesday, October 29, 2002 at the Marriott Hotel in Denver, Colorado. Chair Bill Simpkins introduced the Division officers, awardees, and special guests. Awards were presented by Chair Simpkins immediately following the luncheon.

Student Research Award Recepients (left to right) Brook Asbury, Jay Chennault, Sara Hill, and Tara Root. Photo by Ed Harvey.

Student Research Awards were presented to the following:

Sarah R. Hill - The Physical and Geochemical Characterization of Oxygen Depleted Breathing Wells (ODBW) in Central Alberta. University of Alberta. Supervisor: Dr. Carl A. Mendoza.

Tara L. Root - Arsenic Contamination in Groundwater in Southeast Wisconsin: Identifying Sources of Arsenic and Mechanisms Controlling Arsenic Release. University of Wisconsin. Supervisor: Dr. Jean Bahr.

Jay W. Chennault - Influence of Glacial Meltwater on Discharge at Thunder Creek, North Cascades National Park, Washington. Western Washington University. Supervisors: Dr. Robert Mitchell and Dr. Douglas Clark.

A. Brooke Asbury - Hydrological Modeling of the Hyporheic Response to Irrigation in Fall Chinook Salmon Spawning Areas. Central Washington University. Supervisors: Dr. Carey Gazis, Dr. Lisa Ely, and Graeme Aggett.

Noel Bush - Streambed Permeability and Water Chemistry Within the Hyporheic Zone of Streambed Gravels. California State University - Sacramento. Supervisor: Dr. Timothy C. Horner.

The chair recognized the accomplishments of Dr. Graham Fogg, University of California-Davis, during his tenure as the 2001-2002 Birdsall-Dreiss Distinguished Lecturer. Dr. Jean Bahr, University of Wisconsin-Madison was introduced as the 2002-2003 Birdsall-Dreiss Distinguished Lecturer.

A plaque for the Distinguished Service Award was presented to Dr. Mary Jo Baedecker, United States Geological Survey, for her contributions to the Hydrogeology Division, the Geological Society of America, and hydrogeology over the course of her career. A summary of major accomplishments was documented

Bill Simpkins (left) presented the 2002 Distinguished Service Award to Mary Jo Baedecker (center). Warren Wood (right) was Mary's citationist. Photo by Ed Harvey.

in a brochure provided for each person attending the luncheon.

The O.E. Meinzer Award was presented to Dr. Thomas C. Winter, United States Geological Survey. Dr. Donald I. Siegel was the citationist for Dr. Winter. Dr. Winter was presented with a plaque and a miniature of the Meinzer Bowl for his significant contribution to the field of hydrogeology with specific reference to the following papers:

1. Winter, T.C., Harvey, J.C., Franke, O.L., and Alley, W.M., 1998. Ground water and surface water, a single resource: U.S. Geological Survey Circular 1139, 79p.

2. Winter, T.C., 1999. Relation of streams, lakes, and wetlands to groundwater flow systems. Hydrogeology Journal 7 (1): 28-45.

3. Winter, T.C., 2000. The vulnerability of wetlands to climate change: a hydrologic landscape perspective: Journal of the American Water Resources Association 36 (2): 305-311.

4. Winter, T.C., 2001. The concept of hydrologic landscapes. Journal of the American Water Resources Association 37 (2): 335-349.

2002 O.E. Meinzer Award Recepient Tom Winter (center) is presented the award by Bill Simpkins (left). Tom's citationist was Don Siegel (right). Photo by Ed Harvey.

The annual business meeting was called to order at 2:00 p.m. after completion of presentation of awards. The first order of business was reading of the necrology followed by a moment of silence. Following this, chairman Simpkins presented the state of the division.

The Secretary/Treasurer report was presented by R. K. Davis. For the period ending June 30, 2002 division revenues and expenses were:

For the year July 1, 2001 to June 30, 2002 there was $7,523.50 in revenue from dues. Expenses include the annual meeting, newsletter, postage, awards and the Birdsall-Dreiss lecture tour for a total of $7,714.68. There was net income for the year of ($191.18). The negative net income during the budget period resulted from escalating costs associated with the Birdsall-Dreiss lecture series and significant reductions in the value of and income derived from the two accounts supporting the Birdsall-Dreiss lecture series. The Hydrogeology Division Management Board is moving forward with a number of proposals to increase revenues including a membership dues increase, and a fund drive to bolster the Birdsall-Dreiss endowments.

Dr. Carol Wicks provided a report on the status of the Division's program for the 2002 annual meeting indicating that the division sponsored or co-sponsored 30 topical sessions that included over 200 abstracts. Dr. Alan Fryar was introduced as the Hydrogeology Division's joint technical program representative for the 2003 annual meeting scheduled for Seattle, and Dr. Jim Hendry has agreed to take over these duties for the 2004 annual meeting.

A newsletter update was provided by Dr. Ed Harvey. The newsletter is now fully functional in electronic format. The WEB site for the Hydrogeology Division is now being hosted by the Conservation and Survey Division, University of Nebraska. If you have questions or comments about the newsletter or the WEB page please send Ed a note. He's always looking for new material to add to the newsletter.

Dr. Mary Anderson provided a report from GSA Council. She indicated that the Council would be receptive to new or additional members from the Hydrogeology Division. This is great considering we are the third largest division in GSA. Bill Simpkins reported that Don Siegel was our newly elected representative to GSA Council replacing Mary.

Dr. Leonard Konikow provided a status report for the International Association of Hydrogeologists. He made a plea for all to join the organization and start receiving the Hydrogeology Journal.

*Please see **Denver** on page 17*

Seattle GSA Annual Meeting Taking Shape

Story by Alan Fryar

Seattle, site of the 2003 GSA Annual Meeting. Photo courtesy of Seattle's Convention and Visitors Bureau. (Used with permission).

The hydrogeology offerings at this year's GSA Annual Meeting, which will take place November 2 – 5 in Seattle, once again promise to be of broad interest. Of the 152 topical sessions proposed, 28 are sponsored or co-sponsored by the Hydrogeology Division and another five pertain to hydrogeology. The proposed sessions are listed at http://gsa.confex.com/gsa/2003AM/top/index.epl. Note that the number of sessions to materialize depends upon the number of abstract submissions, so get those abstracts in! The deadline for submissions is midnight, Pacific time, July 15.

Among the occasions being recognized with topical sessions are the 200th birthday of Henry Darcy and the 100th birthday of M. King Hubbert. "Henry Darcy's 200th Birthday: Fundamental Advancements Through Observation and Analysis" will include a historical perspective of Darcy's accomplishments and recent, observation-based research that will fundamentally change our understanding of groundwater flow and mass transport phenomena and help identify future research needs. The session is being organized by Vicki Kretsinger (vkretsinger@lsce.com) and Graham Fogg (gefogg@ucdavis.edu) and is co-sponsored by the Hydrogeology Division, the National Ground Water Association, the History of Geology Division, and the History of Earth Science Society. "M. King Hubbert at 100: The Enduring Contributions of Twentieth-Century Geology's Renaissance Man" will review Hubbert's contributions to hydrogeology, structural geology, tectonics, and petroleum geology and explore his legacy as scientist, educator, citizen, and visionary. Co-convenors are Alan Fryar (afryar1@uky.edu) and T.N. Narasimhan (tnnarasimhan@lbl.gov). The session is co-sponsored by the Hydrogeology Division; NGWA; the U.S. National Chapter of the International Association of Hydrogeologists, and the History of Geology, Geophysics, Sedimentary Geology, and Structural Geology and Tectonics Divisions.

Among other offerings, three field trips and *two* distinguished lectures are planned! Steve Gingerich (USGS) will reprise "Island and Coastal Hydrogeology of Hawaii" October 26 – 31. Roy Gephart (Pacific Northwest National Laboratory) and colleagues are offering "Geohydrology of the Hanford Nuclear Waste Site in the South-Central Columbia Plateau" November 5 – 7. Steve Ingebritsen (USGS) and colleagues will lead "Hydrogeology of Cascade Range Volcanoes: Mount St. Helens, Mount Hood, and Central Oregon" November 6 – 8. The Hydrogeology Division luncheon, business meeting, and Birdsall-Dreiss Distinguished Lecture (by Jean Bahr) will take place on the afternoon of *Monday*, November 3. On *Tuesday* afternoon, the hydrogeology poster sessions will be held, followed by the NGWA Henry Darcy Distinguished

Please see **Seattle** *on page 17*

2003 GSA Annual Meeting Program Schedule (Tentative)

Hydrogeology Division

Saturday November 1	Sunday November 2	Monday November 3	Tusday November 4	Wednesday November 5
8:00 a.m. - noon	**8:00 a.m. - noon**	**8:00 a.m. - noon**	**8:00 a.m. - noon**	**8:00 a.m. - noon**
K-16 Workshops 8:00 am- 5:00 pm	Technical Sessions 8:00 am - 12:00 pm **Hydrogeology Division Management Board Meeting** **11:00 am - 1:00 pm** **(at Convention Center)**	Technical Sessions 8:00 am - 12:00 pm Exhibits Open 9:00 am - 5:30 pm	Technical Sessions 8:00 am - 12:00 pm Exhibits Open 9:00 am - 5:30 pm **Hydrogeology Division Management Board Meeting** **11:00 am - 1:00 pm** **(at Convention Center)**	Technical Sessions 8:00 am - 12:00 pm Exhibits Open 9 am - 5:30 pm
Luncheons:		**Hydrogeology Division Luncheon, Awards, Business Meeting** **noon - 3:00 pm** **(at conference hotel)**		
1:30 - 5:30 p.m	**1:30 - 5:30 p.m**	**1:30 - 5:30 p.m**	**1:30 - 5:30 p.m**	**1:30 - 5:30 p.m**
	Technical Sessions 1:00 - 3:30 pm Presidential Address & Awards Ceremony 4:00 - 6:00 pm **Welcoming Party & Exhibit Hall Opening** **6:00 - 8:30 pm**	Technical Sessions 1:30 - 5:30 pm **Hydrogeology Division Luncheon, Awards, Business Meeting** **noon - 3:00 pm** **(at conference hotel)** **Birdsall-Dreiss Distinguished Lecture** **4:30 - 5:30 pm** **(at Convention Center)** Alumni Night: Group Alumni Party 5:30 - 7:30 pm	Technical Sessions 1:30 - 5:30 pm **NGWA Darcy Distinguished Lecture** **4:00 - 5:00 pm** **(at Convention Center)**	Technical Sessions 1:30 - 5:30 pm GSA Annual Meeting Ends at 5:30 pm
Receptions:			**Hydrogeology Division Student Reception** **5:30 - 7:00 pm** **(at Convention Center)**	

2002 Birdsall-Dreiss Distinguished Lecturer's Report

Story by Graham Fogg

First, let me thank the Hydrogeology Division for choosing me as the 2002 Birdsall-Dreiss Lecturer. It is a great honor and thrill for me to carry on the vision of John Birdsall and the memory of Shirley Dreiss, following that long line of esteemed Birdsall-Dreiss lecturers. I am deeply thankful to the division, and humbled to be a part of such an illustrious group of hydrogeologists.

During the tour, which began in mid-January and will end in a couple weeks in Hawaii, I will have visited 45 places, including 37 universities, 2 USGS offices and 1 USGS workshop, 1 Geological Survey of Canada office, 2 state surveys, 1 national lab, 1 consulting firm, and 1 state professional society. I offered 3 different lectures during the tour: **Talk A**, Plume Behavior in Heterogeneous Geologic Systems: Natural Attenuation, Remediation, and the Role of Diffusion; **Talk B,** Groundwater Vulnerability and the Meaning of Groundwater Age Dates; **Talk C**, A Geologic Approach to Simulation of Subsurface Hydrology. I gave the plume talk 14 times, the age date talk 28 times, and the geologic approach talk 14 times. I never anticipated such symmetry, but certainly relished the opportunity to mix up the topics. That, the generally enthusiastic responses of audiences, and the always great hospitality of my hosts really kept me going – inoculating me against the most severe form of "groundhog day" syndrome.

I accepted nearly every invitation, but was guilty of some overbooking. This led to some undeserving victims of schedule changes. My apologies go out to Western Michigan University, Michigan State, University of Michigan, University of Kansas and University of Nebraska for the changes. I will be more than happy to make that up in the future.

Graham Fogg, 2002 Birdsall-Dreiss Distinguished Lecturer, speaking to members at Division luncheon. Photo by Ed Harvey.

I owe a dept of gratitude to the many campus hosts for the terrific hospitality at each and every stop. Your preparations and directions were impeccable – I only got lost only once in 14 trips and 13 rental cars driven 1,000's of miles. The culinary experiences include some of the best in my life (especially in China, New Mexico and Louisiana) – and I have the larger waistline to prove it. The collegial exchange of ideas will definitely affect the future course of my research and teaching for the better. Thank you for making each and every stop feel special.

I also want to pay special tribute to Dr. Jimmy Jiao of the University of Hong Kong. He initiated contact with me last fall, organized my three-university tour of China, and accompanied me on two-thirds of that 10-day tour as guide and interpreter. It was a great trip, both professionally and for pleasure. Dr. Jiao, together with Dr. Wang Wenke of Chang'an University in Xian and Dr. Zhou Xu of Chinese University of Geosciences in Beijing and their students also saw to it that I enjoyed some of the greatest attractions of China, including Hong Kong, the Terra Cotta Soldiers exhibits near Xian, the Great Wall, Ming Dynasty tombs, Tiannamen Square, the Forbidden City, and many others. The three-hour hike on the Great Wall was a great life experience for me.

Special thanks go out to my Dean, Neil Van Alfen and Associate Dean Randy Southard of the College of Agricultural and Environmental Sciences at UC Davis. Your granting of both release time from my teaching and funds to support lecturers to teach my classes as well as some of my travel costs is most appreciated. I am also grateful to my colleagues and staff in Department of Land, Air and Water Resources and my graduate

students in the Hydrologic Sciences Graduate Program for picking up the departmental, teaching and research slack left behind in my absence. Faculty colleague Dr. Carlos Puente and my graduate student Si-Yong Lee really stepped up to the plate in handling my teaching load this Fall.

Of course, I would have had little material for my lectures without the incredible research of the last 13 years by my graduate students and post-docs. Most of the work in my lab during that time has been connected to the same common thread. Consequently, the contributors list is quite long. Five of these scientists, however, contributed mightily to the topics of my Birdsall-Dreiss lectures: former Ph.D. students Dr. Steve Carle, Eric LaBolle, Gary Weissmann, and Chris Green, and post-doc Dr. Yong Zhang. I have been incredibly fortunate to work with so talented and creative a group.

Lastly and most importantly in the thank you list comes my family. My wife Karen Burow-Fogg is a *bona fide* superwoman for enduring my extended absences while working full time and dealing with 3 kids. The youngest is age three and constantly tested all parental limits by taking us on a seven-month voyage through toilet training during the lecture tour. (Carson is what one calls a "strong-willed child". We are still debating which side contributed that trait.) Also of great help were Karen's parents, Barbara and Wally, and our two teenagers, Paul and Dana. Without such a supportive family, I would certainly not have been able to accept the Lectureship. As if that's not enough, Karen also contributed invaluable data and insights to the research. She is one of my toughest, most cherished critics.

During the tour the three most commonly asked questions were: Are you OK (i.e., are you crazy)? How bad was the air travel in the wake of 9/11? Have you learned anything new about the state of hydrogeology?

Although difficult in many ways, the lectureship was wonderful in many others. I have no regrets. I will not miss the 3:00 AM wake-ups or quick breakfasts in the rental car, but will look back fondly on my interactions with faculty and students.

Along the way I took about 44 airplane flights and was exhilarated (including white knuckles) by numerous taxi trips in China, while visiting three different countries on two continents. Despite the increased security at airports, travel went amazingly smoothly. No late flights. No lost bags. Just a little extra time waiting in lines. What luck!

As for the "state of hydrogeology," I can echo most assessments by past Birdsall-Dreiss Lecturers of the recent past, and add a few of my own observations. It has been said that without innovation and change, excellence evaporates. Hydrogeology is clearly in a transition toward greater breadth – in terms of connections to the other hydrologic sciences as well as to other biological and physical sciences – and toward a modified academic model. Increasingly, hydrogeologists are seeing themselves in the context of a hydrologic sciences framework with strong geology roots, rather than in a strictly geology framework. By the same token, hydrogeologists are working harder than ever on more effective use of geology in subsurface characterization.

"Hydrogeology is clearly in a transition toward greater breadth – in terms of connections to the other hydrologic sciences as well as to other biological and physical sciences – and toward a modified academic model."

These apparently disparate trends are both healthy in my opinion, and partly a consequence of increased emphasis on (or necessity for) integrated science. Most hydrogeologists recognize that our most vexing problems, for example, the role of water in ecological processes (ecohydrology), role of land-atmosphere coupling in local and global climate, and contaminant transport phenomena demand integrated research and teaching at a number of interfaces between physical, chemical and biological sciences. This is consistent with the emerging CUAHSI model.

One can see evidence of this thinking in the hiring practices of geoscience departments. One geology department that I visited hired a soil physicist, or vadose zone hydrologist. Others have hired atmospheric scientists or hybrids to work on the atmospheric boundary layer. Some geoscience programs are even considering hiring surface water hydrologists. More geology departments have been hiring multiple hydrogeologists as well as multiple low-temperature geochemists. At one university, the geology department was in the process of merging with the environmental engineering department, two other geoscience programs

Please see **Lecture** *on page 10*

THE BIRDSALL-DREISS FUND NEEDS YOUR SUPPORT!

Story by Robert Ritzi

The Birdsall-Dreiss Distinguished Lectureship is one of the most valued assets of our Hydrogeology Division! The change in equity markets has severely impacted the principle in the GSA Foundation accounts that support it. The need for bolstering the Birdsall-Dreiss Distinguished Lectureship Funds is clear. Please join with the rest of the Division and make a pledge. We can then all share in a sense of pride for having helped. See the Chair's Corner article (this issue) for more information. **Pledges can be made through the GSA Foundation at: https://rock.geosociety.org/donate/donate.asp or Joan Bell, GSA Foundation, (303) 357-1067**

Note: Please make clear that you are contributing to the Birdsall-Dreiss Lectureship Funds. In reality there are two separate accounts (the Birdsall Fund, and the Dreiss Fund), but in practice they are treated as one. They are listed separately on the Foundation's web page pull-down menu, but not in alphabetical order so you may have to hunt a bit for them. You may make your full pledge to one or the other of these funds, or split it between them. Any of these approaches will have the identical, positive effect in supporting the lectureship.

We would like to thank the following individuals who "kicked off this fundraising campaign after the annual business meeting and our call for pledges of $25/year over the next four years:

Anderson, Mary P.	**Baedecker, Mary J.**	**Bahr, Jean M.**
Bekins, Barbara A.	**Bennett, Philip C.**	**Bohacs, Kevin M.**
Carey, Anne E.	**Davidson, Claire B.**	**Davis, George H.**
Davis, Ralph K.	**DeVine, Carolyn S.**	**Donovan, Joseph J.**
Eaton, Timothy T.	**Emrich, Grover H.**	**Fakundiny, Robert H.**
Fogg, Graham E.	**Harvey, F. Edwin**	**Herman, Janet S.**
Hess, John W.	**Kastner, Miriam**	**Konikow, Leonard F.**
McKenzie, Judith A.	**Neuzil, Christopher E.**	**Papadopulos, Stavros S.**
Pederson, Darryll T.	**Quinn, John J.**	**Ritzi, Robert W.**
Rogers, David B.	**Sasowsky, Ira Daniel**	**Siegel, Donald I.**
Simpkins, William W.	**Talbot, Michael R.**	**Wicks, Carol M.**
Wilson, John L.	**Woessner, William W.**	

We will publish an updated "thank you" list in the fall newsletter. Those who have recently contributed but are not on this list will be thanked at that time. Thanks to all for considering a pledge to this important cause.

Lecture *from page 9*

had recently created hydrologic sciences graduate degrees, and another is moving toward forming a hydrologic sciences department. There have also been efforts to create "graduate schools of the environment" within which hydrogeology and hydrologic sciences figure prominently at three universities, perhaps more.

Overall, our hydrogeology community has been struggling somewhat with the smaller pots of research money and the fluctuating numbers of student applicants. Nevertheless, based on the still generally healthy job market and the positive efforts to broaden hydrogeology toward the interfaces, there is much cause for optimism. I saw abundant evidence of that in the vibrant teaching and research programs everywhere.

Again, I thank you for sending me on the wild and great Birdsall-Dreiss ride.

Jean Bahr's 2002-03 Birdsall-Dreiss Lectureship Schedule

Date of Lecture	*Location*
Fall 2002 (Preview Talks)	
November 15	U Wisconsin-Madison
November 25	Northern Illinois University
Spring 2003	
January 6	USGS Menlo Park
January 9	University of California-Davis
January 13	U Washington Tacoma / USGS
January 15	Washington State / U Idaho
January 17	Central Washington University
January 21	Boise State University
January 29	U Texas Arlington
January 30	Texas A&M University
January 31	Baylor University
February 4	University of Texas-Austin
February 10	Indiana University
February 12	Wright State University
February 13	University of Kentucky
February 17	University of South Carolina
February 19	College of Charleston
February 21-24	Florida State University / Florida A&M / USGS
February 26	University of Alabama
February 28	Lousiana State University
March 12	Northern Arizona University
March 17	New Mexico Tech
March 18	Los Alamos National Laboratory
March 24	Western Michigan University
March 27	Michigan State University
March 28	University of Toledo
March 31	University of Toronto
April 2-3	Syracuse University / CNYAPG
April 4	Alfred University
April 7	University of Pittsburgh
April 9-10	University of Delaware
April 11	University of Maryland
April 12	Cosmos Club, Washington DC
April 14	Johns Hopkins University
April 16	College of William and Mary
April 17	University of Virginia
April 21	Virginia Tech
May 6	University of Montana
May 8	University of California-Berkeley
May 12	Stanford University
May 14	Oregon State University
May 15	USGS CVO, Vancouver WA
Fall 2003	
August 25-26	University of Utah/Utah Geological Association
August 29	University of Nevada at Reno
September 9	Western Illinois University
September 11	University of Kansas
September 12	University of Nebraska-Lincoln
September 15	Winona State University
September 17	Michigan Tech
September 18	University of Wisconsin-Oshkosh
September 23	Beloit College
September 26	University of Michigan
October 7	Pennsylvania State University
October 9	University of New Hampshire
October 10	Middlebury College
October 13	Queens College
October 14	University of Connecticut
October 16	The Ohio State University
October 24	University of Saskatchewan
October 27	University of Calgary
November 13	University of Tennessee
November 14	Oak Ridge National Laboratory
November 18	University of Wisconsin-Baraboo / Sauk County

For updates to the schedule, descriptions of the various presentations offered, and contact information for each lecture location, please visit - http://www.geology.wisc.edu/~jmbahr/birdsall.html

Creating Better 3-D Geologic Models

Story by Don Keefer, Illinois Geological Survey

Current desktop geologic modeling and visualization software makes it relatively easy to create three-dimensional geologic models. Depending on the size of the model, the geologic complexity of the system, and the modeling approach used, however, it can be difficult to construct a model that captures the desired geologic features and relationships. The success of a modeling effort can be improved if the modeling objectives are defined early, if explicit criteria are defined for evaluating individual surface models, and if the ways that geologic knowledge will be incorporated in the model are clearly understood.

Modeling Objectives

One of the most important steps in any modeling effort is the consideration and delineation of the modeling objectives. The scale, complexity and intended uses of the final geologic model should be used to guide the definition of modeling objectives. Table 1 lists several topics that should be considered. They are presented in a sequential, intuitive order, but this order is only intended as a guide. Not all of these topics are relevant for every project, nor do they all require the same amount of effort to address. All of the topics in Table 1 can, however, affect the reliability of the final model, especially those topics that identify the relative accuracy and precision of the model or that identify critical resources early in the effort. Consideration of these topics also will help avoid spending time and money collecting data that do not significantly improve the modeling results.

When defining specific modeling objectives, the consequences of decisions surrounding each of these topics should be taken into account. How do the decisions affect the detail that can be represented in the model? Will any of these decisions be significantly out of step with the data quality, model quality, or intended applications of the geologic model(s)? The answers to these questions should be used to guide the entire modeling process.

TABLE 1

Topics for consideration in modeling objectives.

- Quality, quantity, type and spatial distribution of data
- Data management strategy
- Regional geologic framework, known complexities, and formal stratigraphy
- Identification of surfaces to be mapped
- Available computer hardware resources
- Capabilities of available modeling and visualization software
- Intended uses of the geologic model
- Modeling approach (i.e., single vs. multiple realizations)
- Characterization of uncertainty within the data and the models
- Anticipated sizes and shapes of features within the known geologic units
- Desired minimum size of features to be included in the modeled units
- Necessary model dimensions to accurately represent desired features
- Schedule to accommodate integration of all data within the model
- Strategy for generating digital models/maps
- Conversion of geologic model to hydrogeologic parameter model
- Approach to up-scaling
- Documentation of products and methods

Criteria for Evaluating Models

After the modeling objectives are defined, criteria must be chosen to evaluate and select the final surface models from all possible surfaces. Statistical metrics (e.g., RMSE) and cross validation are sometimes used to evaluate individual surface models (Goovaerts 1997, Chambers et al. 2000). These tools can be difficult to use in a meaningful way because they are not related to observable map features and so are not very intuitive. Morphologic criteria such as the size, shape, orientation, arrangement, and curvature of features are more intuitive for evaluating surface models. Size criteria can be addressed using the grid size settings in the modeling software. Curvature, slope, and aspect can be easily

calculated for any surface model and provide discrete measurements to address curvature, shape, and orientation criteria. These criteria also can be addressed by setting various interpolation parameters to constrain the possible surface characteristics. For example, splines or radial basis functions tend to produce more smoothly varying surfaces than do inverse distance or natural neighbor methods.

In addition to these broad morphologic criteria, some specific data configurations and surface features can be used to evaluate differences in various surface models. Consideration of such configurations and features is helpful when evaluating the suitability of either an interpolation algorithm or the specific algorithm configuration, especially consideration of

- areas of low data density;
- areas with clustered data;
- areas with a large variability in data values;
- areas surrounding local extremes (e.g., peaks or valleys); and
- areas surrounding rapidly converging surface gradients.

Using Geologic Knowledge to Constrain Models

Because there are never enough data points to capture every desired aspect of a geologic sequence, and because interpolation algorithms don't incorporate geologic expertise, additional geologic knowledge must be used to complement the data-supported interpretations. Geophysical data can be used to define the shapes and spatial relationships of subsurface deposits. Sedimentologic models can be used to predict (1) a range of characteristics including anisotropy and heterogeneity within and between units and (2) the range in sediment textures that could be encountered. Outcrops and modern sedimentary analogues can provide detailed measurements of various properties that can be used to constrain model realizations in various ways.

Although these sources of additional geologic knowledge obviously can be useful, finding techniques for using this information to constrain surface models can be difficult. "Synthetic data" is a term I use to describe point values that I create from some additional source of geologic knowledge and use to constrain surface models during interpolation. "Synthetic data" are used intuitively by geologists in hand contouring, and the data are equally necessary in every computer-based contouring or interpolation effort. Synthetic data can include point values that are manually defined, obtained from a coarse-to-fine gridding procedure (Jones et al. 1986), or obtained by manually editing grid node values. Synthetic data can also include line or point values that are obtained by digitizing hand-drawn contour lines. Synthetic data are typically used to control surface models in areas where the data distribution cannot properly express the desired surface features. Any synthetic data that are used must be clearly identified in the data management plan.

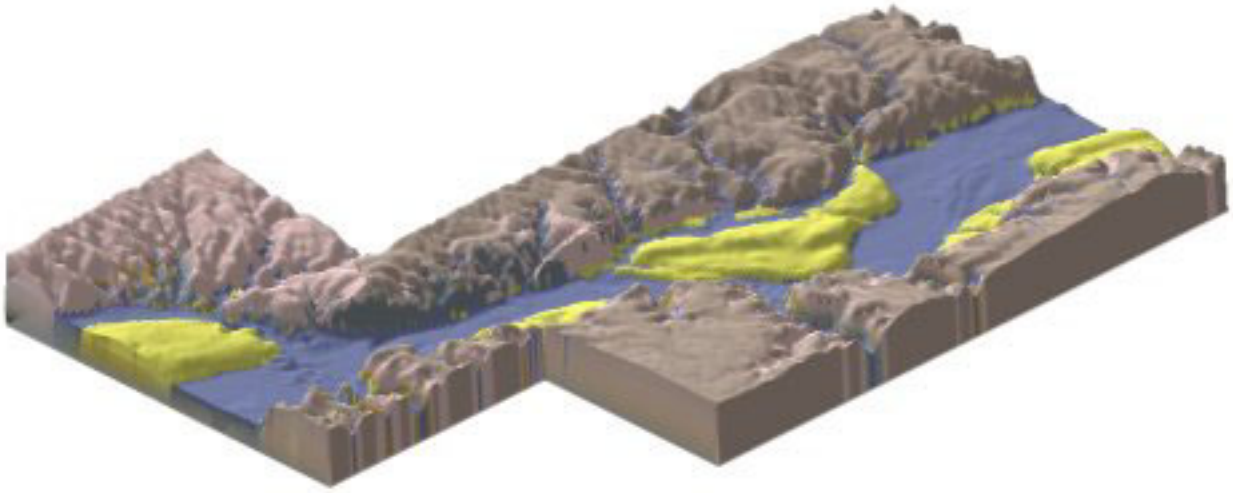

Figure 1. A three-dimensional geologic model of an area of central Illinois, viewed from the southeast. Vertical exaggeration is 20X.

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Goovaerts, P. 1997. Geostatistics for Natural Resources Evaluation. Applied Geostatistics Series, Oxford University Press, New York, 483 p.

Jones, T.A., D.E. Hamilton, C.R. Johnson, 1986. Contouring Geologic Surfaces with the Computer. Computer Methods in the Geosciences, Van Nostrand Reinhold, New York, 314 p.

A New Fractured-Rock Research Site In Central Pennsylvania

Story by William Burton, U.S. Geological Survey

This article is to inform you that the USDA Agricultural Research Service and the USGS Bedrock Regional Aquifer Systematics Study (BRASS) have created a new fractured-rock hydrology research well field in the East Mahantango Creek watershed in Northumberland and Schuylkill Counties, central Pennsylvania. The site consists of four six-inch diameter wells in a square array, 55 ft on a side, oriented N-S/E-W. Each well is cased (PVC) to a depth of 41 ft and has a total depth of 450 ft. The well field is located at the edge of a farmer's crop field, along the east side of subwatershed WE-38 (Gburek and others, 1998), and 250 ft west of the continuously cored 460-ft hole USGS-ARS-1 (Fig. 1). The well field is about 2 km north of two piezometer transects in WE-38 that have been utilized in previous research (Gburek and Urban, 1990; Burton and others, 2002). Yields for the wells determined at the time of drilling are as follows: NW well, 8 gpm; NE well, 7 gpm; SE well, 4 gpm; and SW well, 1 gpm.

The bedrock at the well array is interbedded siltstone and fine-grained sandstone of the Devonian Catskill Formation. The sedimentary layers strike E-W and dip N about 50 degrees, and exhibit a well developed bedding-plane parting. Bedding and parting is cut by a roughly equally densely-spaced cleavage that strikes E-W and dips S about 40 degrees, the two fracture sets together producing an orthogonal fracture pattern (Fig. 2). Ground water travel times in a N-S direction, parallel to the dip direction either of bedding-plane parting or spaced cleavage, should differ from those in an E-W direction, parallel to the strike of parting and cleavage and their intersection. This orthogonal, anisotropic fracture pattern is characteristic of fractured-rock settings in the Valley and Ridge geologic province and in the early Mesozoic basins of the eastern U.S.

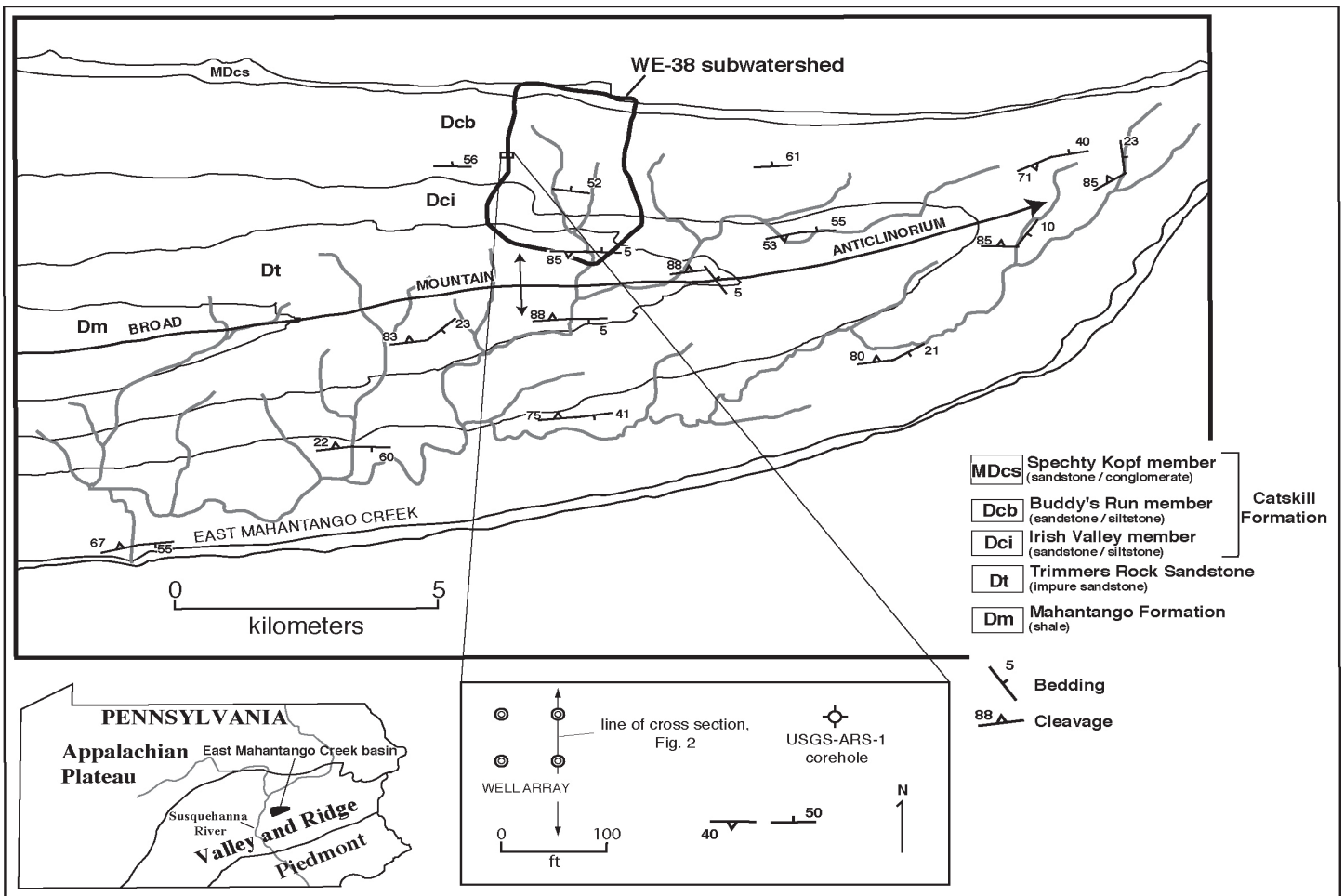

Figure 1. Location and geologic setting of ARS-USGS fractured-rock research site.

We seek collaborators at this site to do borehole and surface geophysics and conduct single-hole and cross-hole experiments that investigate the effect of the fracture pattern on ground water flow paths and travel times. Borehole logging will be needed first to accurately locate fractures in the holes and identify those that transmit water. BRASS has recently acquired from Century Geophysics some borehole tools, including an acoustic televiewer and magnetic deviation probe, induction resistivity and natural gamma probe, and EM flowmeter and temperature probe, and will be employing them at the site. However, we welcome the use of these and other tools from other sources as well. Following basic characterization, we envision experiments similar to those conducted at the Mirror Lake, NH research site, as summarized by Shapiro and others (1999). Results of research at this site should be transferable to the similar fractured-rock terrains noted above.

Please contact Bill Burton at bburton@usgs.gov for more information and directions to the site. Arrangements to work at the site will be coordinated through Terry Troutman at the ARS field office in Klingerstown: ttroutman@pswmru.ars.usda.gov . We encourage activity outside of the growing season to minimize crop damage, as the site is located at the edge of a cornfield. We look forward to working with you.

Bill Burton–USGS BRASS; *Bill Gburek*, *Gordon Folmar*, *Terry Troutman*–USDA-ARS

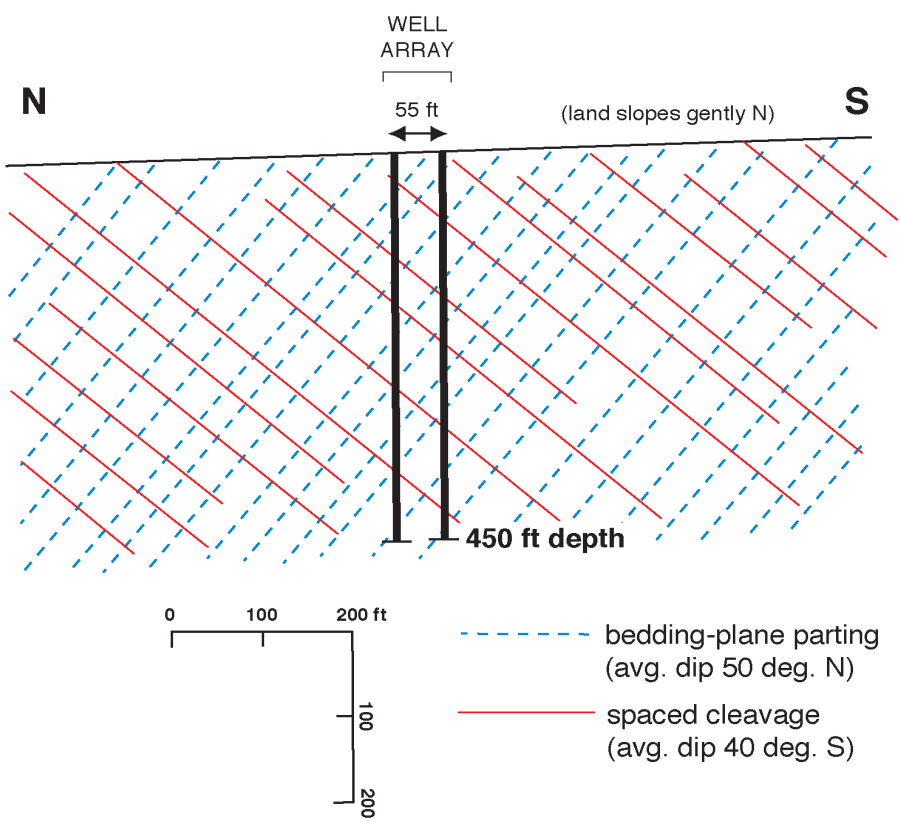

Figure 2. Schematic N-S cross section through one side of Mahantango square well array

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Environmental & Engineering Geoscience Wants YOU!

Environmental & Engineering Geoscience (E&EG) is a quarterly journal copublished by GSA and the Association of Engineering Geologists, is seeking new manuscripts. *E&EG* publishes peer-reviewed contributions, based on original work, in the broadly defined areas of environmental and engineering geosciences (including geomorphology, hydrogeology, low-temperature geochemistry, neotectonics, and other Earth surface processes). Both theoretical and empirical contributions related to these areas are welcome, although preference will be given to papers of an applied nature. Specifically, *E&EG* encourages the submission of the following kinds of papers:

- Results of original research in the environmental and engineering geosciences.
- Case histories describing the solution of new or unusually difficult problems in the applied geosciences.
- Review papers that summarize the state of the science or professional practice in a branch of the applied geosciences, including contributions describing relevant aspects of local or regional geology or the history of environmental and engineering geosciences.
- Short technical notes (6 published pages or less) describing new techniques, novel case histories or other topics in the environmental and engineering geosciences.
- Brief critical discussions of papers and technical notes published in *E&EG*.

Authors should submit 6 copies of manuscripts for review to:

Dr. Abdul Shakoor, Co-Editor
Environmental & Engineering Geoscience
Department of Geology
Kent State University
Kent, OH 44242

All text, captions, tables, and references should be double-spaced and printed on one side of the paper only. Good quality copies of illustrations should be sent until the originals are requested. Charges for color figures are $450 per page. Each author receives 25 free offprints of the published paper.

For more information, contact Dr. Shakoor (330-672-2968, ashakoor@kent.edu) or Co-Editor Dr. Alan Fryar (859-257-4392, afryar1@uky.edu).

"Hey You! Over Here!"... Have a new research idea to try out on a captive audience? Want to get everyone working on your particular research topic in one room and go "nose to nose" with them? Like to visit magnificent geologic locales? If your answer is yes to all three questions, then the Division needs your ideas for a Penrose Conference. Contact your Division officers about their experiences with past Penrose Conferences.

The Penrose Conferences, named in honor of R. A. F. Penrose, Jr., a benefactor of the Geological Society of America, were established in l969 by the Society as a further step in its service to the science of geology. The conferences provide the opportunity for exchange of current information and exciting ideas pertaining to the science of geology and related fields. They are intended to stimulate and enhance individual and collaborative research and to accelerate the advance of the science by the interactions and development of new ideas.

For Guidelines Contact GSA Headquarters via e-mail at:
ecollis@geosociety.org
or by phone or fax at:
(303) 357-1034 • fax 303-357-1070

Denver *from page 5*

The final order of business occurred when Bill Simpkins turned over the chair duties to Dr. Robert Ritzi. Bob Ritzi introduced new officers for the year as: Robert Ritzi– Chair; Chris Neuzil-First Vice Chair, Janet Herman– Second Vice Chair, Ralph K. Davis – Secretary/ Treasurer, and Bill Simpkins– Past Chair.

There was a significant discussion about the need to bolster the endowment of the Birdsall-Dreiss Lecture funds. Bob made a plea for each member to pledge $25/year over four years. This was well received and generate a significant number of donations at the close of the meeting. Janet Herman made a plea to buy remaining mugs from the Division's historical mug series (each mug has the biography of one of the founders of the science of Hydrogeology) as donations at the student raffle. This was also a great success. The meeting was adjourned at 3:00 pm.

Vote *from page 3*

Finally, in this newsletter, along with the ballot for electing officers, we are holding a vote for amending the Hydrogeology Division Bylaws. Most of the changes are cosmetic and requested by the Society of all divisions in order to make division bylaws conform with Society bylaws, conform with new changes in Society membership categories, conform with common practice, and to be gender neutral.

One change, however, was initiated within our Division. In its last meeting, the Management Board discussed and voted to approve a change in the criteria used in the selection of the Meinzer Award. Specifically, we approved dropping the criterion that papers cited in the Meinzer award must be published within the last five years. Many of the past Chairs of the Meinzer Award Committee have suggested that the Management Board remove this restriction. It has taken more than five years for the full impact of some of the seminal contributions to Hydrogeology to become established and broadly recognized. Furthermore, recent Meinzer Award recipients have been recognized for a body of work that significantly influenced the intellectual direction of Hydrogeology, but to the frustration of the Committee, the earlier and perhaps most important papers in this body of work could not be directly cited in the award. Many former Meinzer recipients and past Meinzer Committee Chairs participated in discussion of this issue with the Management Board during 2002. Only one among these was not in favor of the change. The main argument against the change was that the award should not be given to recognize a distinguished career in Hydrogeology, but rather it should focus on specific publications that are unequivocally seminal in nature. Counter arguments are that (1) the distinction between the Distinguished Service Award (given for a career of distinguished service to the profession) and the Meinzer Award (given for seminal papers) should be clear to those chosen to serve on those respective committees, and (2) the five year restriction in and of itself does not prevent a spurious decision in which the Meinzer Award is not based on the seminal nature of specific publications. Furthermore, one can look at the Nobel Prizes and Horton Award as analogs and see that an award can recognize truly seminal research contributions without being limited to a specific window of time and without turning into an acknowledgement of overall career achievement. The Management Board unanimously approved the change in wording in both the Division Bylaws and in the Division Rules and Regulations. The revised bylaws are before you in the enclosed spring ballot. A majority of the voting membership must approve the revisions in order for the bylaw changes to go further forward. If approved by the membership, it will be brought before Council for ratification, the final step.

In closing, I hope that the Hydrogeology Division will serve you well as a professional home this year. Please feel free to correspond with me on any issue throughout the year. I welcome your ideas and suggestions.

Sincerely,
Bob Ritzi
Chair, Hydrogeology Division

Seattle *from page 6*

Lecture. Richelle Allen-King will present "A Hydrogeochemist's Perspective on Organic Contaminant Transport in Groundwater." The Hydrogeology Division student reception will follow Richelle's lecture.

All of us who have helped to organize the program look forward to a dynamic meeting. Detailed information is available at www.geosociety.org/meetings/2003/

Please plan to join us!

KWI Workshop on Epikarst

The Karst Waters Institute is sponsoring an Interdisciplinary Workshop on Epikarst, October 1-4, 2003 in Shepherdstown, West Virginia. Epikarst is defined as the interface zone between soil and rock in karst landscapes and is characterized by small fractures and solution pockets that may or may not be filled with water. Water movement and storage in the epikarst zone appears to play an important role in the hydrologic regime of many karst aquifers. The workshop is designed to foster interdisciplinary understanding of epikarst by presenting ideas of specialists from a variety of diverse but complementary fields. The workshop will bring together ecologists, geologists, geochemists, geologists, geomorphologists, hydrogeologists, and zoologists to reach a better understanding of the physical and biological processes taking place in epikarst.

Epikarst was first given currency by the New Zealand geomorphologist Paul Williams in the 1980's. His demonstration of the secondary porosity of this zone, which he called the subcutaneous zone, brought it to some prominence. At roughly the same time, biologists such as John Holsinger of Old Dominion University in Virginia, were finding animals in improbable habitats such as the water in footprints and old water troughs that indicated their true habitat was above the cave but under the land surface. More recently, William B. White of the Pennsylvania State University and others have shown that epikarst may have a complex role in contaminant transport, especially of NAPL's.

The meeting will be tightly structured so that these topics will build upon each other in order to identify gaps in understanding that can best be filled by interdisciplinary cooperation. Speakers and discussion leaders at the workshop will be well-known specialists from a variety of fields who can bridge these gaps. The workshop will be four days in length and include a field trip to local epikarst sites and a cave.

The workshop format will consist of a relatively small number of formal presentations, followed by thorough discussions. The discussions will be transcribed and become part of the workshop proceedings. There will be one or two speakers for each of the topics. In addition, two technical workshops are planned. Three unique "Confusion Sessions" are planned where speakers are invited to take five minutes and no more than two slides to describe a problem, observation, idea, or data set with which they are grappling and for which the audience insight would be most helpful. There will be an evening contributed Poster Session, with special emphasis on "snapshots of epikarst."

Full information is available at:
http://karstwaters.org/epikarst/epikarst.htm

Hydro *from page 1*

and Infrastructure Committee of the House of Representatives held on May 7, 2003. More information about the bill is available at Congressman Linder's web site: *linder.house.gov.*

Senate passes "High Plains Aquifer Hydrogeologic Characterization, Mapping, and Modeling Act." As passed by the Senate in April, S.212 would create the High Plains Aquifer Comprehensive Hydrogeologic Program in the US Geological Survey, in cooperation with High Plains Aquifer states, to improve understanding of the High Plains Aquifer. (The bill identifies Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming as High Plains Aquifer states.) The objectives of S.212 are to "(1) provide for the hydrogeologic characterization, mapping and modeling of the High Plains Aquifer through a cooperative partnership effort between the U.S. Geological Survey and the High Plains Aquifer States; (2) coordinate Federal, State, and local data, maps, and models into an integrated physical characterization of the High Plains Aquifer; (3) support State and local activities with scientific and technical specialists; and (4) undertake activities and provide technical capabilities not available at the State and local levels as may be requested by a Governor of a High Plains Aquifer State within such state." EOS (84:13) reported that language in the bill supporting "monitoring" of the Aquifer was stripped in response to lobbying from groups that believe monitoring data acquisition to be an intrusion by the federal government. A review committee representative of the diverse interests of the constituency is charged with evaluating proposals and coordinating activities and priorities of the Program. Periodic reports to Congress and the High Plains Aquifer States would be produced by the Department of the Interior. The bill was sponsored by Senator Bingaman of New Mexico and co-sponsored by Senators Domenici of New Mexico and Brownback of Nebraska. More information on the bill is available at Senator Domenici's web site: *domenici.senate.gov*.

BULLETIN BOARD

2003 Midwest Groundwater Conference will be held on October 1-3, on the Western Michigan University campus in Kalamazoo Michigan. For more information visit http://www.wmich.edu/geology/mwgwc.html.

2003 NGWA Ground Water Expo in the Sunshine State

This year's National Ground Water Association's Ground Water Expo will take place in Orlando, Florida, December 9-12. For more information about the Expo, visit the NGWA webpage at [www.ngwa.org]

Edward Sudicky received the 2002 *Hydrology Award* at the Fall Meeting of the American Geophysical Union in San Francisco, California, last December. The award recognizes outstanding contributions to the science of hydrology.

Mervin Wayne Dale of Jacksonville, Florida was recently elected to the position of Secretary of the Executive Committee of the Florida Association of Professional Geologists. Mervin is an earth scientist with Tetra Tech Nus, Inc. in Jacksonville.

New Mexico Symposium on Hydrologic Modeling will be held at NM Tech-Socorro on August 12, 2003. The abstract submission deadline for oral or poster presentation is July 1, 2003. For more information visit http://wrri.nmsu.edu.

AGU Fall Meeting Deadlines Draw Near

Abstracts for the AGU 2003 Fall Meeting (December 8-12) in San Francisco are due on August 28 (by mail) or September 4 (online). For information on sessions see the AGU web site at: [http://www.agu.org/meetings/fm03/

GSA Seattle Meeting Approaching Fast

Don't forget to submit your abstracts for the upcoming GSA Annual Meeting in Seattle, WA. The online abstract deadline is **July 15, 2003**. Please visit the GSA Webpage [www.geosociety.org/meetings/2003/] to review the list of this year's sessions.

Announcement of the 2003
Annual Great Lakes Section-SEPM Field Conference*

Pennsylvanian Sharon Conglomerate, Past and Present:

Sedimentology, Hydrology, Historical and Environmental Significance.

Field Trip Leaders: Annabelle Foos, University of Akron; Neil Wells, Kent State University; Jim Evans, Bowling Green State University, with contributions from Joe Hannibal, Cleveland Museum of Natural History

Location: Cuyahoga Falls, Ohio

Date: September 26-28

Geologic Overview: The Sharon Conglomerate is the basal member of the Pennsylvanian Pottsville Formation. We will discuss the alluvial architecture and regional setting of this braided stream paleovalley complex. Classic exposures of the Sharon Conglomerate at the Gorge in Cuyahoga Falls and Ritchie Ledges in the Cuyahoga Valley National Park will be visited. Three-dimensional exposures of the Sharon at Ritchie Ledges will allow us to take a detailed look at the sedimentary structures, including spectacular, recumbently-overturned, crossbeds and huge, pebble-filled scours.

We will have a unique glimpse into the Sharon Aquifer where it has been recently dissected by downcutting of the Cuyahoga River at the Cuyahoga Falls Gorge. The chemistry of natural springs and seeps at the Gorge has yielded information about the heterogeneous flow through this unit.

Early settlers built dams and associated mills where the rivers flowed over resistant layers such as the Sharon Sandstone. We will visit two of these dams and discuss the controversy over their removal. We will also visit a dam failure site in Chagrin Falls where the village is remediating the site as a riparian wetlands.

Logistics: Additional details will be posted on the Great Lakes SEPM web site as they become available.
http://www.isgs.uiuc.edu/gls-sepm/

Cost: The meeting registration fee is $40 for professionals and $30.00 for students. Registration includes the fieldtrip guidebook, Saturday lunch and evening barbecue.

To request further information contact:

Annabelle Foos
Geology Department — phone 330-972-7991
University of Akron — fax: 330-972-7611
Akron Ohio 44325-4101 — afoos@uakron.edu

*** Co sponsored by NOGS (Northern Ohio Geological Society)**

Visit the GSA Hydrogeology Division web site at - http://gsahydrodiv.unl.edu - to catch up on the latest happenings within the division.

IGPP-Sponsored Workshop on Fluid Flow and Transport Through Faulted Ignimbrites and Other Porous Media

Where: Ghost Ranch in Santa Fe, New Mexico. **When:** September 8-10, 2003

Application deadline: July 1, 2003

Conveners: Claudia Lewis, Los Alamos National Laboratory, EES-9, MS D462, Los Alamos, NM 87545; (505) 665-7728 (phone); (505) 665-3285 (fax); & Laurel Goodwin and Jennifer Wilson, Dept. of Earth & Environmental Science, New Mexico Tech, Socorro, NM 87801; (505) 835-5178 (phone); (505) 835-6436 fax)

Porous media, including volcanic and clastic sedimentary materials, Exhibit a wide range in mechanical and hydrologic properties. The purpose of This workshop is to explore this range, with the goals of: 1) investigating physical controls on fault-zone deformation; 2) quantifying the hydrologic properties of structures produced by different deformation mechanisms; 3) utilizing fault-zone diagenesis as a record of fluid-rock interactions; and 4) developing methods to effectively model flow and transport through faulted porous media.

The workshop will begin with a field trip to examine faults in the Bandelier Tuff, exposed in Bandelier and Tent Rocks National Monuments. In Addition to beautiful scenery, the trip will allow us to explore a range in fault-zone structures from fractures to deformation bands and will set the stage for discussing the hydrologic implications of the petrophysical and structural heterogeneity of faulted tuffs.

The following two days will be divided between brief sessions of short talks, poster sessions (posters will be up all day to facilitate discussion), and discussion sessions. Potential topics for presentation and discussion include: 1) case studies, including structural, geochemical, and hydrologic investigations of faulted porous media; 2) how to effectively incorporate qualitative geologic data into quantitative hydrologic models; 3) upscaling of small-scale structural and hydrologic data; and 4)extrinsic (e.g., confining pressure, strain rate) versus petrophysical (e.g., porosity, cementation) controls on fault-zone deformation processes.

We will meet in the lovely Ghost Ranch conference center in downtown Santa Fe, which will limit the size of the group to 50 participants, although we hope to attract a broad range of earth scientists.

Please send letters of application by July 1, 2003 to Deborah Rivera, Los Alamos National Laboratory, EES-IGPP, MS C305, Los Alamos, NM 87545 or drivera@lanl.gov (phone 505-667-0920), including a brief statement of interests and relevance of the applicant's work to the conference topic. A short abstract of work to be presented at the meeting may be included if desired. Graduate students are encouraged to apply.

Conference costs will be $335 for participants staying at Ghost Ranch in Santa Fe (double occupancy; single occupancy dependent on availability, add $135 more) and $165 for locals who will drive to the conference each day. The conference fee for those staying at Ghost Ranch includes three nights lodging, three meals a day, snacks, and transportation during the field trip; commuter fee includes lunch each day, dinner Tuesday night, snacks, and field trip transport. Round-trip airport shuttle will cost an additional $40. Limited funds will be available to support some participants; applications should indicate the degree of need for such funds. Notification of acceptance will be given by July 15, 2003; the deadline for registration is August 1, 2003.

The final workshop agenda and additional travel information will be provided to all registrants in late July and will be posted on the New Mexico Tech Faults and Fluids Group web page at **http://www.ees.nmt.edu/Geol/Faults/Faultsflow.**

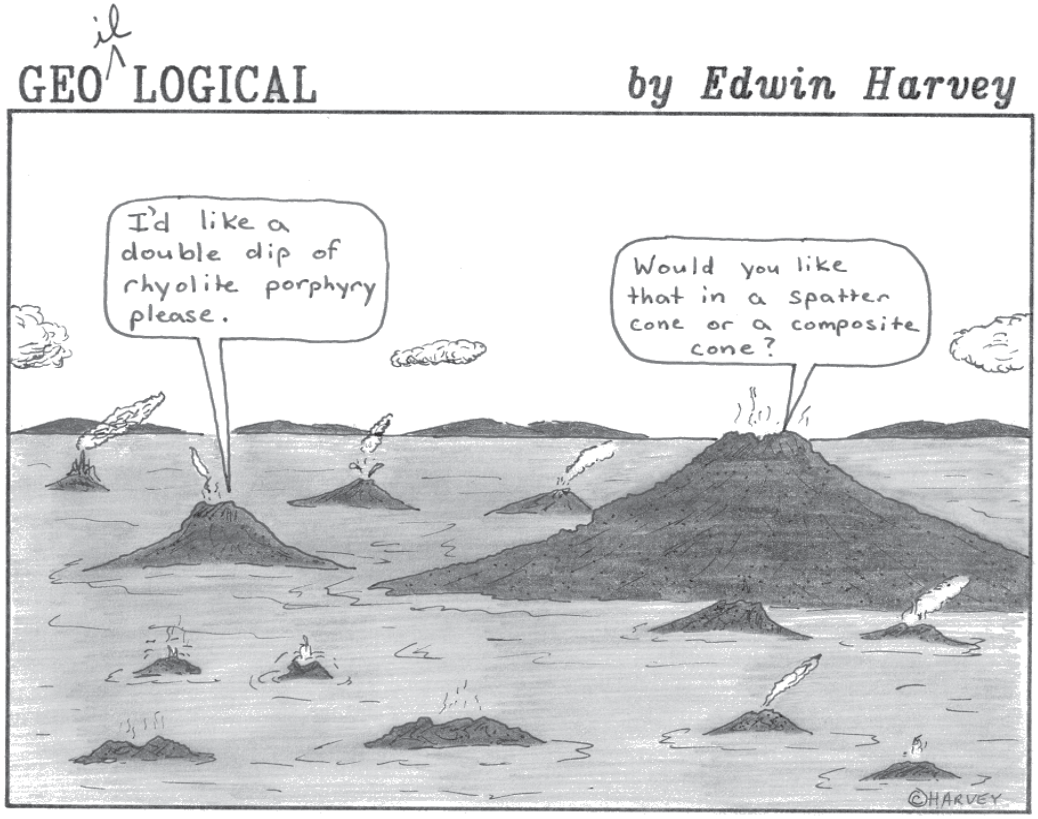
From The Editor...

Wow! What a monster this issue turned out to be, eh? I think the biggest ever. But I assure you, that it is an issue well worth your time and attention (*if I do say so myself*). This issue of the Hydrogeologist contains the new Hydrogeology Division Chair - Robert Ritzi's column, a new column reporting the latest "hydro happenings" in Washington DC, updates on the Seattle GSA meeting sessions and schedule, two interesting articles of a more scientific/technical nature, numerous meeting and conference announcements, and the proposed changes to the Division's bylaws which will be voted on by the membership over the coming weeks. Because of all of this exciting content...and due to the fact that I got married last week....the final draft of this issue was bit late going to press, and thus a bit late in being published. For my part in its tardiness, I offer you my appologies. I trust that you can understand given the situation, and will let it go this time.

I want to personally thank everyone who contributed an article, note, announcement, etc., to this issue, and also to thank all of you who helped me with edits, photos, graphics, reports, schedules and any other contributed information contained herein. This issue of the newsletter would not be possible without you.

Happy reading!

F. Edwin (Ed) Harvey, Editor
The Hydrogeologist



Geologic Ice Cream Parlor

PROPOSED CHANGES TO THE BYLAWS OF THE GSA HYDROGEOLOGY DIVISION:

The following text presents proposed changes to the bylaws of the Hydrogeology Division. Proposed additions are underlined. Proposed deletions show ~~strike-through~~. Reasons for proposed changes are [in brackets]. Only those parts of the bylaws with proposed changes are shown. The complete bylaws document is available at: http://gsahydrodiv.unl.edu

ARTICLE II
Membership

1. *Categories.* ~~Categories of membership are Individual Members and Student and Teacher Associates~~. Any Member (including Student and Teacher Members), Fellow, Honorary Fellow, ~~Teacher Associate, or~~ Student Associate, or Affiliate of the Geological Society of America who is in good standing may ~~affiliate with~~ become a member of the Hydrogeology Division. To effect such ~~affiliation~~ membership, an applicant shall express their desire on the GSA membership application form, or in writing to either the secretary-treasurer of the division or to the executive director of the Society. All ~~affiliates~~ division members, except ~~Student Associates and Teacher Associates~~ GSA Affiliates and Associates, may vote and hold office in the division. ~~Student Associates and Teacher Associates~~ GSA Affiliates and Associates may serve on committees as conferees. [These proposed changes align division bylaws with recent changes in GSA member types and with recent GSA bylaws changes regarding who is eligible to vote and to hold office, and reflects current practice in how membership is elected.]

ARTICLE III
Finances

1. *Responsibility*. The Society shall be financially responsible for normal expenses of the Division. All other financial obligations or commitments of the Division must have prior approval of the Council. The Division General Fund is managed by the Society, whereas special funds, such as the Birdsall, Dreiss and other award funds, may be managed by the Geological Society of America Foundation. [Reflects current status.]

2. *Dues*. The division may collect annual dues or special assessments from ~~affiliates~~ division members when recommended by its management board and approved by a majority vote of the voting ~~affiliates~~ division members at the Annual Business Meeting or by ~~mail~~ ballot. [Avoids confusion with the GSA membership category "Affiliate;" recognizes current practice of using both online and postal distribution of ballots.]

4. *Birdsall-Dreiss Bequests.* The $10,000 bequest from the estate of John Birdsall to the Hydrogeology Division, and the $5000 bequest from David Freyberg in memory of Shirley Dreiss, and all subsequent donations to the Birdsall and Dreiss funds are ~~is~~ to be kept intact, and only the proceeds will be used in accordance with standard procedures of the GSA Foundation, except that the management board will have the power to utilize portions of the principal ~~only~~ in the case of a clear emergency and only by unanimous vote of the Management Board, or by amendment of the bylaws in accordance with established procedure. [Reflects current status of the funds and how disbursements are made.]

ARTICLE IV
Management Board and Election of Officers of the Division

4. *Election of Officers*. The nominating committee of the division shall nominate candidates annually for chair, first vice-chair, and second vice-chair; and every two years for secretary-treasurer. When approved by the division chair, these nominations shall become the regular ticket and shall be submitted by the secretary-treasurer of the division to the executive director of the Society, who shall have prepared and ~~mailed~~ distributed to the voting ~~affiliates~~ members of the division a ballot which shall also have space for write-in nominees. [Allows distribution of both online and mailed ballots, in keeping with current practice.]

7. *Re-election*. …. In accordance with ~~Article II, Section 5~~ Article VI, Section 3 of the bylaws of the Society, the chair and vice-chair shall not be eligible for re-election to their respective offices until at least three (3) years have elapsed from the expiration of their terms of office. [References relevant section of revised GSA bylaws.]

10. *Expenses of the Management Board.* No member of the management board may be reimbursed from the funds of the division for their traveling expenses when attending meetings of the division. The management board may authorize expenses for attendance of any member of the division, including members of the management board, for attendance at the annual ~~Joint Technical Program Meeting of the Society~~ division chairs' meeting of the Society or other functions of the Society or division as deemed appropriate. Travel expenses may be paid for by the division on authorization of the

management board for any special function of the division, such as the Distinguished Lecturer Series, or any meeting or function deemed in the best interest of the division by the management board. [Reflects current practice. The JTPC now meets online. Divisions, including ours, commonly support the travel of the chair, or substitute from the management board, to the division chairs' meeting at GSA Headquarters in February.]

ARTICLE V

Powers And Duties Of Officers

4. *Second Vice-Chair*. The second vice-chair shall assume the ~~chairmanship~~ chair whenever both the chair and the first vice-chair are not available. Such absence or disability is to be determined by a majority vote of the management board. [For consistent terminology.]

6. *Past Chair.* The past chair shall serve as an advisor to the chair. [Current practice; will insert before existing part 6.]

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ARTICLE VI

Committees and Division Representatives

2. *Standing Committees.* The standing committees of the division shall include:

….

Nominating Committee. A nominating committee to nominate candidates annually for chair, first-vice chair, and second vice-chair of the management board~~;~~, ~~and~~ every two years for secretary-treasurer, and to facilitate the nomination of members of the division for other Society-wide appointments (e.g., Fellow of the Society). [Reflects current practice.]

O. E. Meinzer Award Committee. The O. E. Meinzer Award Committee is to consider annually the presentation of the award to the author (or authors) of a published paper (or body of ~~papers~~ work) of distinction that ~~(1) advanced the science of hydrogeology or some closely related field and (2) was published during the five calendar years prior to the year of its selection~~ has significantly influenced the intellectual direction of hydrogeology or broadly enhanced the knowledge of the discipline. [Eliminates 5-year time constraint on eligible papers or work.]

….

Birdsall-Dreiss Distinguished Lecturer Committee. The Distinguished Lecturer Committee to nominate the Birdsall-Dreiss Distinguished Lecturer for the following year. [Agreement between committee title and text.]

The newly elected chair of the division, with the advice of the management board, shall make appointments to fill any vacancies on the standing committees within four weeks after the conclusion of the annual business meeting of the division. The functions, purposes, and rules and regulations governing the standing committees are established in the Rules and Regulations of the division according to Article VIII of these bylaws. [Trailing phrase added to clarify reference to division bylaws, as opposed to Rules and Regulations.]

7. ~~*Student and Teacher Associates.* Student and Teacher Associates~~ *GSA Associates and Affiliates*. GSA Associates and Affiliates may be appointed as conferees to any committee. [Aligns Division bylaws with recent changes in GSA member types and with recent GSA bylaws changes regarding who is eligible to vote and to hold office.]

ARTICLE VII

Meetings

4. *Open Meeting Rule.* All in-person meetings of the board or committees of the division shall be open to division members to observe all or part of the proceedings, provided that such observers may participate only upon invitation of the person presiding over the meeting.

5. *Meetings of the Management Board*. …. The annual meeting of the management board must ~~meet in person~~ be an in-person meeting and held in conjunction with the annual meeting of the Society. [Consistency with VII (4) above.]

ARTICLE VIII

Rules and Regulations and Amendment of the Bylaws

2. *Bylaws*. … Bylaws may only be adopted, rescinded, or amended by majority vote of the voting ~~affiliates~~ members of the division. A ballot vote proposing a change of the bylaws shall be held if favored by a majority of the management board or if petitioned by two percent of the voting ~~affiliates~~ members of the division. …. [Aligns terminology with recent changes in GSA member types and with recent GSA bylaws changes regarding who is eligible to vote.]

TO ALL VOTING MEMBERS OF GSA'S HYDROGEOLOGY DIVISION:

This is the ballot for 2003-2004 officers and for proposed bylaws changes for the Hydrogeology Division. Please vote by marking your ballot and returning it to GSA postmarked no later than **August 31, 2003**. Biographical data for this year's candidates follow. Text of the proposed bylaws changes is on pages 23-24 of this newsletter. If you prefer, you may vote online by August 31 at: <**http://rock.geosociety.org/balloting/hydro.asp**>. At that site, access the electronic ballot using your GSA member number (or your e-mail address if it is in your GSA records). If you need assistance, please contact GSA at <gsaservice@geosociety.org> or (303) 447-2020 (option 3) or tollfree at (888) 443-4472.

Christopher E. Neuzil. Educ: BA Geology, SUNY Binghamton; PhD Hydrogeology, Johns Hopkins Univ. Mil Serv: U.S. Navy (71-74). Prof Exp: U.S. Geological Survey, WRD Natl Rsrch Prog Chief of Cretaceous Shale Hydrology Project (85-pres), WRD HQ Staff and Natl Rsrch Prog Hydrologist (77-85). GSA mbr 77, Fellow 93. GSA Service: Hydro Div Schol Comm (88), Panel on O.E. Meinzer Award (92-94, Chr 93), Birdsall-Dreiss Lecturer Comm (95-97), Hydro Div officer (01-pres). Addtnl Service: WRD Natl Rsrch Prog, Rsrch Advsr (90-00); Assoc Edtr, Water Resources Research (93-96); Edtrl Brd, Ground Water (93-pres); Natl Sci & Engg Rsrch Council (NSERC) panel for Industrial Chr, Univ of Sask (95-pres); Commentary Edtr, Ground Water (98-pres); Councillor, Geol Soc of Washington (99-01); AGU Grndwtr Tech Comm (01-pres). Awards: O. E. Meinzer Award (91); AGU Edtr's Citation for Excellence in Refereeing (92); Geol Soc of Washington Bradley Prize, 2nd place (92); Birdsall-Dreiss Disting Lecturer (95). Rsrch Int: Hydrogeology of low-permeability media, regional hydrogeologic systems, anomalous subsurface fluid pressures, groundwater-geologic process interaction, paleohydrology.

Janet S. Herman. Educ: BS (Highest Distinction) Geol Sci, PhD Geochemistry (low temperature aqueous), Penn State Univ. Prof Exp: Univ of Virginia, Dept of Envtl Sci (82-present), currently Professor and Director, Prog of Interdisciplinary Rsrch in Contaminant Hydrogeology, involving hydrologists, geochemists, microbial ecologists, civil & chemical engineers. Prof Affil: GSA (mbr 84, Fellow 94); IAGC, AGU, GS, NSS. GSA Service: GSA Bull, Assoc Edtr (93-95, 96-98, 99-00), Comm on Rsrch Grants (01-03), Hydro Div Panel on O.E. Meinzer Award (95-97, Chr 97), Hydro Div Second Vice-Chr (02-03). Addtnl Service: Applied Geochemistry, Assoc Edtr (10 yrs); Water Resources Research, Deputy Edtr (2 yrs); numerous Natl Rsrch Council committees. Rsrch Int: Chemical evolution of groundwater in pristine & contaminated hydrogeological systems; role of iron redox chemistry in contaminated aquifers, environmental fate of hormonally active agents, surface water-groundwater interaction influencing fate of dissolved chemicals in riparian zones.

D. Kip Solomon. Educ: BS Geol Engg, MS Geology, Univ of Utah; PhD Earth Sciences, Univ of Waterloo. Prof Exp: Univ of Utah, Dept of Geol & Geophy (93-present), currently Professor and Director, Noble Gas Laboratory; Oak Ridge Natl Lab (85-92), var positions incldg Rsrch Staff, Groundwater Group Leader); U.S. Geol Surv, Hydrologist (84-85). Appts: Natl Rsrch Council Comm on Improving Practices for Regulating & Managing Low-Activity Radioactive Waste (03-pres), Comm on Conceptual Models in Frac'd Unsaturated Zones (98-99); U.S. rep, Intl Atomic Enrgy Agncy Adv Grp (97); EPA Tech Rvw Comm (97). GSA mbr since 94. GSA Service: Joint Tech Prog Comm, Chr & Hydro Div rep (96-97). Addtnl Serv: IAEA Expert Missions (03, 02); Ground Water Edtrl Brd (97-01); AGU Wtr Qual Comm (93-97). Awards: Univ of Utah, Coll of Mines & Earth Sci, Outstanding Faculty Teaching Award (01-02); Univ of Waterloo, Pearson Medal and Alumni Gold Award (92). Rsrch Int: Envtl tracers in evaluating grndwtr flow & solute transport processes in local- to regional-scale aquifers, partic use of dissolved gases to evaluate grndwtr travel times, location & rates of recharge, and the sustainability of grndwtr resources.

Ballot Instructions

Vote no more than **once** for each proposal or office. Complete bottom section of ballot. Return ballot to: Geological Society of America, PO Box 9140, Boulder, CO 80301, Attn: Divisions. Ballots must be postmarked by August 31, 2003.

Shall the proposed revisions to the bylaws of the GSA Hydrogeology Division be adopted?

❑ Yes ❑ No ❑ Abstain

2003-2004 Officers of the Hydrogeology Division:

Chair	❑	Christopher E. Neuzil	❑	(or write-in) _____
First Vice-Chair	❑	Janet S. Herman	❑	(or write-in) _____
Second Vice-Chair	❑	D. Kip Solomon	❑	(or write-in) _____

Your Name (printed) _____

Your Signature (required) _____

Your GSA Member Number (required)* _____ _____

* Given at the top of your *GSA Today* label. GSA contact information for assistance is near the top of this ballot.

Hydrogeology Division Contacts

2003 Management Board

Chair: Robert W. Ritzi (rritzi@wright.edu)
First Vice-Chair: Chris Neuzil (ceneuzil@usgs.gov)
Second Vice-Chair: Janet Herman (jherman@)viginia.edu)
Secretary-Treasurer: Ralph K. Davis (ralphd@mail.uark.edu)
Past Chair: Bill Simpkins (bsimp@iastate.edu)

Standing Committees

Technical Program Committee:
Alan Fryar (Chair; afryar1@uky.edu), Jim Hendry

Nominating Committee:
Mary Jo Baedecker (Chair; mjbaedec@usgs.gov), Steven Wheatcraft, Ira Sasowsky

Meinzer Award Committee:
Ed Sudicky (Chair; sudicky@sciborg.uwaterloo.ca), Laura Toran, Fred Phillips, Scott Tyler, Fred Phillips, Tom Winter

Birdsall-Dreiss Lecturer Committee:
Stephen Ingebritsen (Chair; seingebr@usgs.gov), Graham Fogg, Jean Bahr (Lecturer)

Distinguished Service Award Committee:
Abe Springer (Chair; abe.springer@NAU.EDU), Berry Lyons, Ken Bradbury

Ad Hoc Committees

Historical Committee:
Steve Wheatcraft (Chair; steve@hydro.unr.edu)

Section Representatives
Cordilleran - Jim Thomas
Northeastern - Grover Emrich
North Central - Maureen Muldoon
South Central - Todd Halihan
Rocky Mountain - Robert Sterrett
Southeastern - Joe Donovan & Brian Katz

Representatives to Other Societies
American Geophysical Union - Dave Diodato
American Geological Institute - Dave Stephenson
National Ground Water Association - Dave Rudolph
International Assoc. of Hydrogeologists - Colin Booth
Water Science Policy Liaison - Dave Diodato
Society for Sedimentary Geology - Gary Weissmann

Newsletter Editor / Webmaster: F. Edwin Harvey (feharvey1@unl.edu)

GSA Council: Don Siegel (disiegel@mailbox.syr.edu)

Hydrogeology Division Website: http://gsahydrodiv.unl.edu