

BULLETIN

Fall 2004

"American Institute of Hydrology, the Society for Registered/Certified Hydrologists"

Volume 22, Issue 3



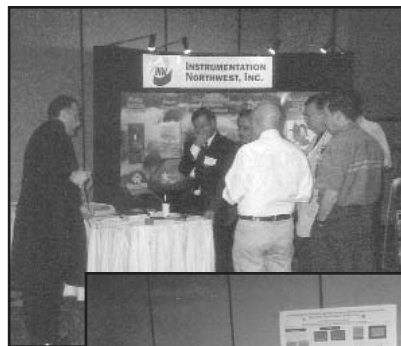
VIVA, Las Vegas A Summary of the 2004 Annual Meeting Integrated Water Resources Management October 17 - 20, 2004

The 2004 AIH Annual Meeting at the Alexis Resort and Hotel, in Las Vegas, Nevada was the first time in over 21 years that we held a meeting that was not planned and arranged by Helen Klose. She left us to do it all ourselves. Although it was not one of our best attended meetings, those that did attend were a part of an excellent technical program and social time. The Organizing Committee, headed up by Emmitt Witt and Doug Glysson decided to forego the large banquets and have more time to socialize and network at breaks and receptions. The poster presentations, exhibitors and vendors were setup in the same area as the breaks and receptions. This allowed for maximum contact with the attendees and as a result the exhibitors and vendors were very pleased to be a part of the meeting. On Monday night we were entertained by magician, Gary Norsigian, who thoroughly impressed us all with his slight-of-hand and showmanship. He especially impressed our President Pat Leahy, who was intent on finding out the magician's secrets.



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Technical Program

Miguel Marino, the Technical Program Chairman, organized an excellent set of papers into a well attended program. Keynote addresses were presented by Kay Brother, Deputy General Manger, SNWA Engineering and Operations, who spoke on the history of the Colorado River; Doug Miller, General Counsel for the Central Arizona Water Conservation District who discussed the National Ramifications of the Miccosukee Lawsuit and Keven Roth, USGS, who discussed the benefits and applications of the National Map Program developed by the USGS. All of the technical papers will be assembled, peer reviewed, and published in the next volume of the HS&T Journal. The student papers were just as well presented as the others and will be reviewed for publication as well. John Wiley Book Company donated several text books that were awarded to the students for their participation in the program.

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PRESIDENT'S MESSAGE

Closing Remarks

As the old saying goes "Time Flies" and it certainly has in my case as I look back on the past 2 years of my Presidency of the American Institute of Hydrology. I look back with pride upon the two conferences that AIH convened during my tenure. Conferences are the lifeblood of an organization and a profession. However, we like most professional organizations are struggling to increase attendance at these important forums for professional growth. A high point of the past 2 years has been the relationship building with AIH members who I have met and with my colleagues on the Executive Committee of AIH. I can assure you that the Executive Committee are among the finest professionals in the earth sciences that I have had the pleasure to work with. The Executive Committee has the best interests of the profession and the membership in mind as they deliberate on issues ranging from membership and certification issues, to themes and venues for conferences. The new Executive Committee will be installed in January and I will stay as part of that committee as Past President. I look forward to working with the new Executive Committee in a new role. I want to thank the current members of the Executive Committee including Miguel Marino, Vijay Singh, Bob Hordon, Marshall Jennings, Rolando Bravo, Alex Cheng, John Powell, Tony Laenan, and Doug Glysson. I also want to congratulate the new officers and wish them well as they address the challenges that lie ahead. The results of the election of officers are announced in this newsletter. I would be remiss if I did not recognize the major efforts of Helen Klose who managed the AIH office during the first year of my term. I also want to thank Jerry and Cathie Seaburn who were critical in terms of keeping the business end of the organization functioning during Helen's illness. This was a major challenge for AIH and we successfully transitioned to a smooth operating organization through their fine efforts. I believe member services are at an all time high. We are increasing our exposure in the corporate world and we are becoming much more aggressive relative to seeking new members.

A number of serious challenges face the organization. The first and foremost is membership that is active in the organization. AIH belongs to its members. We have a static membership; it is not increasing. In addition, we need to encourage and engage more of our members to take a more active role in AIH. On a positive note we are seeing more engagement in AIH by our membership from outside the United States. We have members from 33 nations with significant membership (greater than 6) in Canada, Russia and Azerbaijan. For the organization to maintain itself, it is important that our membership increase. This requires a major effort by the Executive Committee but more importantly for the members themselves to actively promote the benefits of membership. Certainly, AIH registration is a terrific means to promote the professional aspects of hydrology. This benefit in its own right should be a major selling point for our colleagues to weigh when they consider joining AIH. Our members need to become our most vocal advocates in recruiting future members. Because registration is so important in today's society, we need to continue to have strict standards for registration and membership. Our Board of Registration is doing an outstanding job with the testing and evaluation of new members and ensuring the continued excellence of our membership through the recertification process. We are seeing some individuals letting their certification lapse. This causes a major inconvenience for our members and for the Board of Registration as individuals seek recertification. The key of course is to keep your membership up to date and to recertify on schedule. One area we are discussing is how AIH might use information technology more effectively to make the process easier for our members.

The journal requires a major evaluation. Right now "Hydrological Science and Technology" is published only once a year and it has become the volume for the release of proceeding papers from our annual meeting. The proceeding papers from the Atlanta meeting have been compiled, edited, and prepared for publication under the able leadership of Tony Laenan. The next issue of the journal will be released probably by the end of the calendar year. The Executive Committee feels that the journal needs a complete overhaul. Several members have proposed ideas relative to the journal and this topic will be a major discussion item at the Executive Committee meeting at the Annual Meeting in Las Vegas. We will also be soliciting ideas and opinions from our members during the annual business meeting at the Las Vegas meeting.

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President's Message - continued from Page 2

The annual meeting will have taken place by the time you receive this newsletter. It promises to be an outstanding event. My only concern is that attendance is not as great as warrants the quality of the meeting. Emmitt Witt and his organizing committee have done an outstanding job in preparing a strong technical program that promises to expand and refine the technical skills of the members that participate in the meeting. Remember that attendance at the annual meeting is valuable in term of recertification. The meeting is not simply a convention but an opportunity for professional development. This year we have changed the format somewhat opting for less banquets, and using that time for more professional networking, demonstrations, and generally greater interaction among the participants. We will poll the participants to see if this change in format is desirable for future meetings. Another item we will reinstate is awarding outstanding student papers. We have a corporate donation to support the awards and I am pleased to see AIH reinstitute these awards; I believe that it will encourage greater student participation at the annual meeting.

The Awards Committee under the leadership of Alex Zaporozec has completed their deliberations and provided award recommendations to the Executive Committee. These awards will be presented at the Annual Meeting in Las Vegas. The recipients follow the rich tradition of prestige that has always been a hallmark of the AIH awards, and I wish to thank the committee for their work and personally congratulate the awardees.

The AIH will be celebrating its 25th Anniversary in 2006. We feel this is a very important milestone in our organizational history. A special 25th Anniversary Committee has been formed and includes Doug James, Vijay Singh, Joe Rosenshein, Alex Zaporozec, and Jerry Seaburn. This group will provide advice and recommendations relative to how AIH appropriately recognize its 25th. The committee's recommendations are not limited to events at the annual meeting but will include other ideas for activities and commemorations throughout the anniversary year.

Given the importance of the anniversary meeting, the Executive Committee has decided to forego planning a 2005 annual meeting. The 25th Anniversary meeting will be held in the spring of 2006. We have reacted to the suggestions that have been raised by many of our members that a fall meeting is challenging for them to attend because of the federal fiscal year, academic calendars, and other constraints. We hope this change will raise attendance. Because this change would mean that AIH would have two annual meetings within a 6-month period, the Executive Committee decided to focus efforts on the 25th Anniversary meeting. The venue for the meeting will be Baton Rouge and Vijay Singh has agreed to serve as the chair of the organizing committee. Although it is premature for a theme, I believe that issues such as ecosystem restoration, wetland loss, coastal hydrologic issues, and the lower Mississippi River basin make this an ideal location for an annual meeting. If you are interested in participating in the organizing committee, please contact Vijay.

Finally, I would like to close on a scientific point. I had the honor recently to serve on a review committee for the British Geological Survey (BGS). This committee was tasked to look at their programmatic goals for the next 5 years. A major emphasis is entitled sustainable water management and is tied directly to national goals. The BGS role is to investigate the ground-water resource. This will involve significant modeling examining the impact

of climate change, assessing resource availability at national, watershed, and local scales, and understanding both point and non-point source ground water pollution, and investigating the linkage of ground water and health. What is missing is looking at water management in a systems approach. Like most national geological surveys, surface water hydrology and in some instances water quality are addressed by other national entities. This is unfortunate because to truly address complex issues like sustainability requires a systems approach that looks at the interactions and interrelationships between the various components of the hydrologic system. As I relate this to AIH, I am struck that professional organizations are generally aligned without consideration of the entire hydrologic system. Some focus on hydrogeology, some on surface-water hydrology, and some on water quality. AIH is unique in that all elements of the system are components of our organization. It is a strength and we need to recognize it.

In closing, let me thank you for the honor of serving as your President for the last 2 years.

Pat Leahy, Ph. D., PH-952
President, AIH

Media Kit

The AIH staff is working on developing a Media Kit that will have a variety of tools for members to use and to promote AIH and many of its programs. The media kit is still under construction (uc); some of the tools are ready (r) while others need more work and some are just ideas (id) at the moment. Here is what we have so far:

- " Press release of headquarters relocation to Atlanta, Georgia (r)
- " Press release on new administration for 2005-2006 (r)
- " Newspaper-styled article on hydrology as a profession (needs restyled for each location)(r)
- " Full color flyer "Careers in Hydrology" for students (r)
- " Full color recruiting advertisement "The Essence of Hydrology"(r)
- " Update of existing materials (uc)
- " Modular PowerPoints presentation promoting AIH Mission and Benefits (uc)

The staff needs interesting photos and graphics to help illustrate a wide variety of hydrologic features. Please review your files and if you have any materials for consideration that you would like to contribute, send them to the AIH office in either paper or digital format. It would be helpful to have a descriptive caption of each photo. Please understand that should you submit your photos and or materials to AIH that you are donating them and they will be not returned to you. You agree to relinquish all rights to use the materials by AIH; including, but not limited to, use of the materials for any purpose AIH may choose, and to release all rights to review or approve the materials in any form or production. Thank s for your help.

COMPARISON OF THREE COMPUTER MODELS OF UNSATURATED FLOW

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ABSTRACT

Comparison of computer program SEEP/W, a finite element model of two-dimensional seepage, to two other soil-water flow models is presented. Comparison models used are the U.S. Army, Cold Regions Research and Engineering Laboratory (CRREL), FROST2B finite element model, and a one-dimensional nodal domain model of a vertical soil column. The first obvious test is to compare models of a steady-state problem involving a simple homogenous embankment of pervious silty soils on an impervious foundation. The next test was to examine SEEP/W applied to a sharp wetting front problem. While the finite element method works well for many cases, particularly for cases where changes are gradual, the finite element method may not work well for sharp changes such as a wetting front advance. The comparisons in part verify SEEP/W results.

Key words: unsaturated flow, finite element method, groundwater models

INTRODUCTION

The explosion of computer-based technology applied to a host of engineering applications has made a significant impact on how engineers analyze and design. It is literally possible to find software that does about everything we do. In this case we are interested in the advance of the phreatic surface through a levee that failed during a severe flood event that did not overtop the levee. To analyze this problem we used a software package called "SEEP/W" which is marketed by GEO-Slope International of Calgary, Canada. Although the users manual for this software contains some verification, we conducted our own verification. The purpose of this brief technical note is to present two examples of verification using our own models (Guymon, et al., 1993 and Hromadka, 1986) which had been prepared for the U.S. Army Corps of Engineers. The first and most obvious test was a two-dimensional steady-state levee configuration, and the second test was for the rapid advance of a wetting front since the finite element method which SEEP/W is based upon sometimes models these problems inaccurately.

BRIEF DESCRIPTION OF SEEP/W

This is a dynamic two-dimensional model of saturated/unsaturated flow in vertical slices. The model is based on the finite-element method (for example Guymon, 1994). The model accommodates a variety of boundary conditions and heterogeneous

soils. It is flexible in using a wide range of parameters. The model accommodates a variable grid space and several finite element types are available.

The model is imbedded in a Windows format and there is excellent problem setup capability as well as capability to review results.

BRIEF DESCRIPTION OF COMPARISON MODELS

The comparison models are both based on the finite element method embedded in a nodal domain scheme depending upon the weighting factor used in the capacitance matrix (Hromadka, 1986) and both are dynamic. One model which we call "UNSAT03" (Guymon, et al. 1993) solves the dynamic movement of water in a vertical soil column and accommodates a variety of boundary conditions and parameters. The other model which we call "FROST2B" (Hromadka 1986) is a two-dimensional dynamic model based on linear triangular elements. It too accommodates a variety of boundary conditions and parameters. Both models (Guymon, et al., 1993 and Hromadka, 1986) have been extensively tested against simplistic analytical solutions, field data, and instrumented laboratory column data.

RESULTS

The most obvious test is to determine if a steady-state problem can be modeled correctly. To do this, a simple homogeneous embankment of pervious silty soils on an impervious foundation was modeled. The embankment geometry is shown in Figure 1. A reservoir water table was imposed on the left side and exactly the same parameters were used in SEEP/W and FROST2B. Soil water parameters are represented by Gardner's relationship (Guymon, 1994) as follows:

$$\theta(\psi) = \theta_s / [A_w(\psi)^\alpha + 1], \psi \leq 0$$

$$K(\psi) = K_s / [A_r(\psi)^\beta + 1], \psi \leq 0$$

Where θ_s is porosity, K_s is saturated hydraulic conductivity, ψ is pore water pressure, and A_w , A_r , α and β are best fit parameters. Table 1 lists the parameters used. Note that SEEP/W uses a table of θ and K versus ψ which was determined from the above equations.

Both models used right angle triangular elements 2 feet on each side. The results are shown in Figure 1 for pressure heads. If the results are superimposed on each other, the results are essentially identical. Notice both models simulate the expected seepage surface on the downstream toe.

The next test was to determine if SEEP/W could correctly model a sharp wetting front. While the finite element method works well for many cases, particularly for cases where changes are gradual, the finite element method may not work well for sharp changes such as a wetting front advance. The degree that this may be a problem depends somewhat on the skill of the person who prepared the model code. Additionally, there may be convergence and oscillation problems when modeling a dynamic unsaturated flow.

The UNSAT03 model, in addition to being a finite element method, is based upon the nodal domain method (for example

Guymon, 1994 and Hromadka and Guymon, 1981) which allows one to choose a system matrix weighting parameter to simulate say integrated finite differences which can handle sharp wetting front problems accurately. This model and FROST2B were compared to the SEEP/W model for a vertical soil column of permeable silts. For each model, the exact same boundary conditions and parameters were used. In this case soil characteristics (i.e. pore pressures related to water contents) and the hydraulic conductivity as a function of pore pressures had to be the same for each model (see Table 1).

Figure 2 depicts the model discretization, boundary and initial conditions. Figures 3 and 4 show the simulated results at 12-hours. Figure 3 depicts pore pressures and Figure 4 depicts water contents. For both the SEEP/W and FROST2B results the wetting front (which is moving upward) is in advance of the UNSATO3 model which we regard as more accurate. Notice the UNSATO3 results yield a somewhat sharper wetting front. Despite this discrepancy we regard the SEEP/W results as satisfactory. None of the models exhibited convergence or oscillation problems.

CONCLUSIONS

An example of comparisons of SEEP/W results to two other models is presented. The comparisons in part verify SEEP/W results.

SEEP/W is an easy to use model with many attractive features. In our case, we found that the learning curve to use SEEP/W was relatively short. It is recommended that new users of this model should first start with a simple problem and geometries before tackling more complex problems.

APPENDIX I - REFERENCES

- Guymon, G.L., Berg, R.L., and Hromadka II, T.V., April 1993, Mathematical Model of Frost Heave and Thaw Settlement in Pavements, U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, (CRREL) Special Report, #93-2.
- Guymon, G.L., 1994, Unsaturated Zone Hydrology, Prentice-Hall.
- Hromadka, T.V. II and Guymon, G.L., 1981, Subdomain Integration Model of Ground-Water Flow, ASCE, Irrigation and Drainage Division, Volume 102, No. IR2, pp. 187-195.
- Hromadka II, T.V., 1986, A Nodal Domain Integration Model of Two-Dimensional Heat and Soil-Water Flow Coupled by Soil-Water Phase Change, U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, (CRREL) Special Report, #87-9.

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2004 Awards Program

On Tuesday at Lunch, AIH presented the Founder's, C.V. Theis and R.K.Linsley Awards to outstanding recipients.



Miguel Marino, Bill Klose and Belinda Klose

The **Founder's Award** was presented posthumously to Helen Klose, former Office Manager of AIH for over 20 years. Her children Bill and Belinda accepted the award. Also, in attendance were Helen's grandchildren, Collin, Nathan and Nicholas, her daughter-in-law, Tarii and Hiedi Burkhorst, a friend.



Yoram Eckstein, Jozsef Toth and Miguel Marino

The **C.V. Theis Award** was given to Jozsef Toth, Alberta, Canada for his pioneering work in Groundwater Hydrology. Yoram Eckstein gave the citation for Professor Toth.



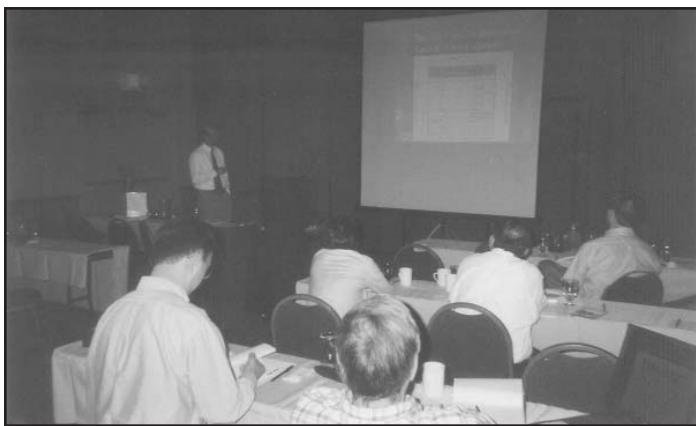
Miguel Marino and Tom Haan

The **R.K. Linsley Award** was presented to Tom Haan, Stillwater, Oklahoma, Dr. Haan is a Past President of AIH, and is honored for his long and dedicated service in the field of surface water hydrology. Stephen Burgess, the 2003 Linsley Award winner, presented the citation for Dr. Haan's award.

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Short Courses

Only one of the planned short courses was held. Attended by eight students, the course entitled "Integrated Surface Water/Ground Water Modeling with the Integrated Hydrologic Model (IHM)" received good reviews and the students were pleased to have attended. The instructors were Alaa Aly, Jeff Geurink and Patrick Tara.



Annual Business Meeting

The Executive Committee met to discuss and approve several issues of business and to plan the presentation of the state of the Institute at the traditional Annual Business Meeting. The major topics of discussion were:

1. To complete the transition of the worldwide headquarters to Atlanta, Georgia, under the direction of Dr. Seaburn and his staff,
2. Strategies to improve membership growth,
3. Strategies to improve revenue to fund projects that will promote growth and
4. A comprehensive program to attract members to volunteer their service to make the plans work.

There was a general consensus that the crisis of Helen Klose's death has passed and the Institute is positioned now for significant growth. Plans are being drafted to lead us through that next step in our evolution.



Corporate and Institutional Membership in AIH

AIH staff has initiated a campaign to increase the membership of corporations and institutions. Many consulting firms know the value of AIH's mission to set industry standards and ethics for the profession. The USGS has been an enormous supporter of AIH over the years. AIH can count on several state and regional agencies and institutions for support. However, we need more Corporations and Institutions to step up and support our efforts.

The purpose of AIH is to enhance and strengthen the standing of hydrology as a science and a profession by:

- Establishing standards and procedures to certify individuals qualified in hydrology
- Establishing and maintaining ethical standards to protect the public from irresponsible work
- Providing education and training in hydrology
- Providing the public and government agencies advise and guidance concerning hydrologic activities

What are the Benefits? Most importantly, AIH certifies and registers professional hydrologists that corporations and institutions hire to conduct significant work. By certifying through AIH, that they meet industry standards, these Professional Hydrologists meet the standards that the public and the profession expect with today's technology and its demand for water and water quality.

The benefits of being a Corporate or Institution Member of AIH include:

- Recognition of professional competence in hydrology and hydrogeology
- Free listing in the AIH Registry of Professionals and a copy of the Registry
- Free copy of the Journal, Hydrological Science & Technology (one volume per year)
- Organizational profile printed biannually in the newsletter
- Discount on AIH publications
- Reduced rates for exhibiting and/or sponsorships at AIH meetings.

Organizations interested in becoming Corporate or Institutional Members please complete the included forms on pages 7-8...

Newly Certified Professionals for 2004

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Raymond M. Slade, Jr. Austin, Texas	04-H-1617



AMERICAN INSTITUTE OF HYDROLOGY CORPORATE/INSTITUTIONAL MEMBERSHIP APPLICATION

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US Army Corps of Engineers and U.S. Geological Survey Continue Long-term Collaboration on Streamgaging

Information about the quantity and quality of water in rivers and reservoirs is essential to the efficient management of flood-control structures, water-supply and pollution-abatement facilities, and effective restoration of wetlands and estuaries. In order to provide information on the quantity of surface water, the U.S. Geological Survey (USGS) operates a network of some 7,300 streamgaging stations in cooperation with other Federal, State, and local agencies. The largest single network cooperator is the U.S. Army Corps of Engineers (USACE).

Ever since the Great Mississippi River Flood of 1927, the USACE has helped fund USGS streamgages across the United States. In 2003, the cooperative streamgaging program between the two agencies consisted of a national network of 2,478 streamgages and a program of over \$16M annually (fig. 1).

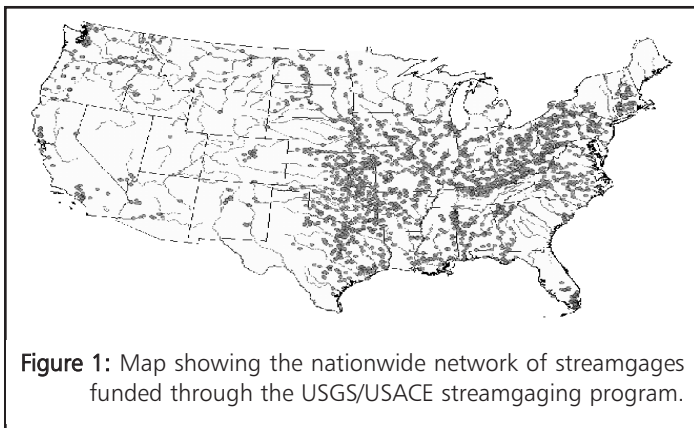


Figure 1: Map showing the nationwide network of streamgages funded through the USGS/USACE streamgaging program.

Over the decades, this cooperative program has yield long-term, site-specific and regionally-applicable records of river stage, discharge, sediment loads, and a diverse suite of water quality parameters that have helped the USACE operate and maintain its vast network of hydro-power, flood-control, and navigational projects. Because the USGS data are collected using nationally consistent, well-documented procedures and are broadly disseminated and archived, they are widely accepted as the authoritative basis for long-term river planning and real-time decision-making.

Historically, streamgaging techniques depended on establishing and maintaining empirical relationships between river stage and flow that limited the extent of network coverage. Recently the USGS, working with partners such as the USACE, enhanced and deployed acoustic Doppler technology that greatly increases the efficiency of conventional streamgaging techniques while enabling the measurement and monitoring of discharge in non-uniform, varied flows regimes that previously were impossible to measure accurately. As a result, sites that pose difficult measuring situations, such as streams affected by variable backwater from reservoirs, locks, larger rivers, and ground-water aquifers, by ocean tides, and by stratified conditions arising from differences in water temperature or

composition can now be studied in detail. These same technologies have the potential to improve the monitoring of turbulence and mixing, turbidity, sediment concentrations and loads, and sediment associated chemical constituents. Other technologies have been introduced to provide continuous monitoring of nutrients and bacteria. Approaches derived from these technologies can provide not only broad long-term data, but can be applied to project settings needing detailed information on the interplay of water and ecosystems.

Today, the USGS displays maps and tabular summaries of current streamflow, drought, and flood conditions at :

<http://water.usgs.gov/waterwatch/>.

Near real-time data for discharge, pH, salinity, and many other hydrologic parameters from thousands of gaging stations on upland rivers and many coastal waters are available on the USGS Website at:

<http://water.usgs.gov/NWIS>.

The partnership developed over the last century between the USGS and the USACE continues to serve the Nation's water resources information needs and strives to provide better technologies for the future management of our Nation's most valuable resource. For more information on the USGS surface water program, please contact Phil Turnipseed (pturnip@usgs.gov) .

Hire The Professionals!

Federal, State, Regional or Local government agencies hire hydrologists to develop, implement and enforce regulations. Consulting firms hire hydrologists to assess problems and help clients comply with regulations. Clients hire hydrologists to find the best solutions at the most economic price and as fast as possible.

Should you be the person that hires a hydrologist, how do you know that your candidate is the best? Of course, no one has devised a guaranteed way to pick the best; there is no "best." But there are ways to choose someone that meets our industry's standards. This person is someone that has quality on-the-job experience to make informed and responsible judgment for the client. This person is someone that has the integrity to know his/her limits and not exceed them. This person is someone that has demonstrated a high level of competency by being certified and registered to practice as a Professional Hydrologist (P.H.).

As with fellow colleagues registered as professional engineers or professional geologists, the Professional Hydrologist has an advanced education, has spent a minimum of five years working in the field of hydrology, passed a rigorous review of his/her technical experience and passed examinations designed to confirm technical competency.

So why hire someone that does not meet our industry standards when you could hire a certified and registered Professional Hydrologist. If being registered as a professional engineer or geologist is one of your criteria in evaluating new candidates, then include those same criteria when hiring hydrologists.

HIRE THE PROFESSIONAL!

And equally as important, insist that your existing staff of hydrologists achieve professional status with AIH.

Meetings, Conferences and Courses

Penn State Wastewater Biology Training Courses

October 11, 2004

- "Activated Sludge"

*The Penn State Conference Center Hotel
State College, Pennsylvania, USA*

October 20, 2004

- "Activated Sludge"

October 21, 2004

- "Anaerobic Digesters"
- "Settleability Problems and Loss of Solids"

*Ramada Inn West Point/Hudson Valley
Newburgh, New York, USA*

October 27, 2004

- "Activated Sludge,"

October 28, 2004

- "BOD and Metabolism"
- "Settleability Problems and Loss of Solids"

*Four Points Sheraton
Saginaw, Michigan, USA*

November 1, 2004

- "Biological Nutrient Removal (BNR)"

November 2, 2004

- "Troubleshooting the Activated Sludge Process with a Microscope"
- "Settleability Problems and Loss of Solids"

*Howard Johnson Hotel at Atlantic City
Atlantic City, New Jersey, USA*

November 3, 2004

- "Settleability Problems and Loss of Solids"
- "Parasites and Pathogens"

*Holiday Inn
Allentown, Pennsylvania, USA*

November 15, 2004

- "Activated Sludge"

November 16, 2004

- "Biological Nutrient Removal (BNR)"

*Holiday Inn Winchester
Winchester, Virginia, USA*

November 17, 2004

- "Troubleshooting the Activated Sludge Process with a Microscope"
- "Anaerobic Digesters"

*Clarion Embers Hotel and Convention Center
Carlisle, Pennsylvania, USA*

December 6, 2004

- "Anaerobic Digesters"
- "Troubleshooting the Activated Sludge Process with a Microscope"

December 7, 2004

- "Parasites and Pathogens"
- "Nitrification"

*Holiday Inn Columbus East I-70
Columbus, Ohio, USA*

For more information about these and other Penn State Wastewater Biology Training Courses, visit their Web site:

www.outreach.psu.edu/pst/Wastewater/Biology/
800-PSU-TODAY (778-8632)

9th International Symposium on Biogeochemistry of Wetlands

**March 20-23, 2005
Baton Rouge, Louisiana**

The LSU Wetlands Biogeochemistry Institute and the UF/IFAS Soil and Water Science Department are co-hosting the 9th International Symposium on Biogeochemistry of Wetlands. The symposium will be held in Baton Rouge, Louisiana, at the Lod & Carole Cook Conference Center & Hotel and the School of the Coast and Environment building located on the beautiful Louisiana State University campus.

The focus of the symposium will be on new approaches and techniques that link community structure at the micro, and macro, scales to better understand the mechanisms that control the fate of chemicals at the global scale. The symposium will include invited presentations by an outstanding array of experts and volunteered presentations of research conducted on various treatments of wetlands in the world.

Scientists and managers involved in research of biogeochemical processes occurring in freshwater and estuarine wetlands are strongly encouraged to submit abstracts describing their work. Deadline for abstracts submission: January 12, 2005.

For information, contact Tracy Nininger, Conference Coordinator:
TNNininger@ufas.ufl.edu.

Visit website: <http://www.conference.ifas.ufl.edu/wetlands/>

International Conference on Water Economics, Statistics and Finance

**July 8-10, 2005
Rethymno Crete, Greece**

For more information contact:

Konstantinos Tsagarakis
+30 28310 77433
+33 69457 06431
iwa@econ.socvoc.gr

Seventh International Symposium on Land Subsidence

**October 23-28, 2005
Shanghai, P.R. China**

For more information contact:

sisols2005@sigs.com.cn OR gonshiliang@sigs.com.cn
website: <http://www.sisols2005.com>

International Symposium on Hydrology and Management of Forested Wetlands

**April 8-20, 2006
New Bern, North Carolina, USA**

For more information contact:

Sharon McKnight at McKnight@ASAE.org

2006 AIH 25th ANNIVERSARY MEETING BATON ROUGE, LOUISIANA

- Greater Baton Rouge Chamber of Commerce
- Baton Rouge Convention and Visitors Bureau
- LSU AgCenter and Main Campus

International Conference “Challenges in Coastal Hydrology and Water Quality”

May 2006 (or to be decided)

The AIH Executive Committee, after substantial discussion and analysis, regarding the success of our Annual Meetings, has approved a proposal to hold future conferences in the Spring or early Summer months and with a more regional focus. The preparation for a major conference, such as the 25-year anniversary, necessitates that AIH forego an annual meeting in 2005. We intend to make our meetings have greater value to all attendees; thereby, hopefully increasing participation.

THEME

To provide an international forum for information exchange and discussion on all aspects of hydrology, hydrometeorology, hydraulics, and water quality issues pertinent to coastal processes and environment.

TOPICS

- Hydrology and Coastal Processes
- Hydrologic Pathway from Terrestrial and Coastal Ecosystems
- Hydrologic Processes in Coastal Wetlands and Floodplains
- Fresh Water and Salt Water Interactions
- Eutrophication and Hypoxia in Coastal Waters
- Coastal Wetland Restoration
- Surface and Ground Water Interaction in Coastal Regions
- GIS Applications in Coastal Hydrology Studies
- Potential Global Change Effects on Coastal Water Resources
- Socioeconomic Factors and Coastal Water Policies

FIELD TRIPS

- Atchafalaya River Basin (Mississippi Diversion)
- Mississippi River Delta National Wildlife Refuge (deltaic development)
- Constructed LaBranche Wetlands (wetland restoration)

COURSES

- HEC RAS
- MikeShe
- Hydrologic Field Methods

PAPERS

- Abstracts of less than 500 words
- Refereed Publications

POTENTIAL SPONSORS and PARTNERSHIPS

- Louisiana Governor's Office of Coastal Activities
- Louisiana Department of Natural Resources (Atchafalaya River Basin Program)
- Louisiana Department of Wildlife and Fisheries
- Louisiana Department of Environmental Quality
- Lake Pontchartrain Basin Foundation
- Louisiana Sea Grant College
- Louisiana Water Resources Institute
- USGS, Louisiana District Office
- US Army Corps of Engineers, New Orleans District

CALL FOR PAPERS

To participate in this Special Occasion and present a paper, please submit a 250-word abstract of your paper to AIH Headquarters by July 1, 2005. Speakers will be notified of their acceptance by November 1, 2005.

CONFERENCE CHAIRS

- **Vijay P. Singh**
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- **Y. Jun Xu**
School of Renewable Natural Resources
Louisiana State University, USA
Phone: +1-225-578-4168
Fax: +1-225-578-4227

CONFERENCE COMMITTEE

(Under development. International, national and local members are being recruited.)

ADVISORY COMMITTEE

Charter

The 25th Anniversary Advisory Committee
The American Institute of Hydrology

The American Institute of Hydrology (AIH) will be celebrating its 25th anniversary during 2006. During the past 25 years, the AIH has prospered and grown to an international membership that exceeds 1,000 members. AIH has fostered the professionalism of the practice of hydrology through its registration program, annual meetings (both domestic and international), journal, awards and reputation. It is appropriate and desirable to commemorate the accomplishments of AIH and to plan a unique celebration of the Institute during this anniversary year.

Charge: A special anniversary committee has been formed to recommend activities and other actions to the Executive Committee of AIH for potential implementation. These recommendations should be made in writing and will be discussed and considered by the Executive Committee at regularly scheduled monthly meetings.

Scope: The scope of the committees deliberations should be broad and include everything from promotional materials (e.g. letterhead, pins, etc.), awards (e.g. proposed new Water Quality Award), activities (e.g. commemoration and special symposia at the 2006 AIH annual meeting). The committee is not being asked to organize the 2006 meeting but rather to interface with the AIH 2006 Meeting organizing committee.

Membership:

Dr. L. Douglas James - Chair
Dr. Alex Zaporozec
Dr. Vijay Singh
Dr. Ken Brooks
Dr. Joe Rosenshein
Dr. Gerald Seaburn

Term of Committee:

The committee will be disbanded at the conclusion of the 25th Anniversary year (2006)

American Institute of Hydrology
300 Village Green Circle, Suite 201
Smyrna, GA 30080
Tel. (770) 384-1634, Fax (770) 438-6172
Email: AIHydro@aol.com Website: www.aihydro.org

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Remember the Alamo

Did you know that AIH receives a commission for all member rental of vehicles through Alamo Rent a Car? A 24-hour reservation is required and can be made by calling **1-800-354-2322** and request your membership ID No. as **93394** with the rate code **BY**.

AIH Member Registry

The 2004 issue of the AIH Registry will be mailed to the membership with the 2005 Dues Statements. In order to receive all your member benefits, it is important to keep your personal information current with AIH Headquarters. You may do so by completing the form provided with your dues statement.

AIH Office Relocated

Please note following changes to AIH Office information:

American Institute of Hydrology
300 Village Green Circle, Suite 201
Smyrna, GA 30080
Tel: (770) 384-1634
Fax: (770) 438-6172

Dues Alert and Special Assessment

Dues statements for 2005 will be mailed to the membership in November. Your dues must be paid by January 1, 2005. Late fees are assessed thereafter. The Executive Committee has elected to increase dues for 2005 to help cover the rising costs of operations.

AIH is still faced with the unbudgeted expenses incurred due to the death of Helen Klose and the subsequent transition of the Headquarters to Atlanta, Georgia. The Executive Committee authorized a request for voluntary contributions from the members in the form of a Special Assessment, to cover the costs of these unexpected expenses. The \$25 contribution - or more - was to relieve the \$22,000 needed to cover these expenses. More than 140 members generously gave a total of \$8,000. Because of this unexpected shortfall, the Executive Committee voted to include the Special Assessment, a voluntary contribution, on the 2005 dues statement. We ask that you consider including this additional contribution with your payment for your 2005 dues.

It is with sincere gratitude that the Executive Committee wants to thank you for your generous contributions, so that AIH's mission and improvements to its operation can continue.