

# AIH *news*

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*AIH is here to serve the profession and the members*

- **AIH** is the only organization that certifies professionals in the fields of surface water and groundwater hydrology, and water quality both nationally and internationally.
- **AIH** provides educational training venues to the professionals in the field of hydrologic sciences.
- **AIH** speaks to lawmakers on behalf of you and the profession as an advocacy institution.



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## 2009 AIH Conference in Arizona Shatters Attendance

We are pleased to announce the successful completion of the joint conference between American Institute of Hydrology and the Arizona Hydrologic Society. This could not have been accomplished without the dedicated efforts of the planning committee Chairpersons Keith Ross and Allen Gookin and their support staff. The symposium was held in Scottsdale, Arizona on August 30, 2009. Despite the current economic situation that might have affected the attendance, the event still attracted 270 geoscientists and hydrologists from all over the world. Technical sessions and luncheons were held at the Westin Kierland Resort and Spa. Symposium field trips included trips to the Grand Canyon, Rio Salado, and Central Arizona Project/

Lake Pleasant. The Grand Canyon trip was reportedly the best trip for the participants.

This year we had four plenary speakers. David Modeer General Manager of the CAP presented a discussion on the cost of change. David Salisbury from Resolution Copper Mining discussed the new deep mine being developed beneath the old Magma Mine in Superior, AZ. The other two speakers wrapped up the symposium on Wednesday the 2nd. Dr. Overpeck and Terry Fulp (Bureau of Reclamation) discussed climate change and water supply issues in the west and along the Colorado River. Dr. Miguel Medina, President of the AIH, provided an informative lunchtime talk on global resources. After dinner on Tuesday, Doug Wolfe provided a historical look at dinosaurs of the Zuni Basin and likely climatic conditions they lived in.

The Project WET teacher's workshop was conducted on Monday August 31. According to those taking part, it was a great workshop. During the luncheon



AIH Arizona Conference Exhibit Hall (2009)

on Monday, AHS scholarship and internship awards were presented. The two AIH awards were also presented during the Monday luncheon. Please see page 5 for further details on these awards.

AIH Executive Board also met with several hydrologists from Mexico who are interested in learning about the AIH activities with an intention of starting the International Chapter of AIH in various cities in Mexico.

An event of this size required hard work and long hours for all on the planning committee and we wish to thank everyone for their dedication and tireless efforts which contributed to the overwhelming success of the 2009 symposium despite the economic situation.



AIH Arizona Conference Lecture (2009)

## Sea Level Rise and Coastal Water Supplies

Rising sea levels may increase the salinity of both surface water and groundwater through salt water intrusion in aquifers and tidal inflows in rivers. For example New York City, Philadelphia, and much of California's Central Valley obtain a significant portion of their water from rivers that are slightly upstream from the salt water interface

point. If sea level rise pushes salty water upstream, then the existing water intakes might draw on salty water during dry periods. Salinity increases in estuaries also can harm aquatic



Coastal water supplies at risk.

plants and animals that do not tolerate high salinity.

Shallow coastal aquifers are also at risk around high density population centers such as Savannah, GA or many other cities in FL. The freshwater Everglades currently recharge Florida's Biscayne aquifer, the primary water supply to the

Florida Keys. As rising water levels submerge low-lying portions of the Everglades, portions of the aquifer would become saline. Aquifers in New Jersey east of Philadelphia are recharged by fresh water from the Delaware River which may become saline in the future.

In all of these cases, water management authorities currently prevent excessive salinity by releasing fresh water from reservoirs during droughts. One possible response to sea level rise would be to store more water during wet seasons so that more water can be released during droughts. However, other water management issues (e.g. flood prevention) may make it difficult to save extra water for the occasional drought. Thus, the impacts of climate change on local hydrology may offset or increase salinity increases due to sea level rise. These are some of the issues related to climate change which needs to be addressed by hydrologists among other specializations.

## Pipe Dreams

It is reported in the literature that about a billion people in the world lack access to freshwater. A proposed solution to this problem has been the inter-basin water transfer projects. Inter-basin water transfers — massive engineering projects that divert water from rivers with perceived surpluses (donor basins) to those with shortages (recipient basins) — have been promoted as a solution. More and more scientists, engineers and hydrologists are realizing that this may not be a good idea, says a report from WWF Germany.



Three Georges Dam, China.

The report titled "**Pipe Dreams**" first published in 2007 and second in 2009 indicate that water transfer schemes that attempt to make up for water shortages by constructing elaborate systems of canals, pipes, and dredging over long distances to convey water from one river basin to another, may create more problems than they provide answers.

What a surprise!

The problem is the environmental damage these project create. Water transfers seriously impact the environment of the donor basin. They create or escalate threats to critically endangered species, wetlands, and protected areas. Dams constructed on the river from which water is taken can devastate its ecology, disrupting environmental flows and blocking migrating fish. Thus, economic benefits generated in the recipient basin often come at the cost of those living in the donor basin.

*Stay connected to the members  
and the profession locally,  
globally, and technically through*

**AIH**

In some of these projects entire communities have been displaced. People whose livelihoods depend on the donor basin have not always been consulted on how they will be affected. In the past, this has created social conflicts between the donor and recipient basins and governments. In these projects cost overruns are common and planned benefits may fall short.

These observations are based on recent implementation of these massive projects in China which necessitated the reconfiguration of these management practices drastically.

When will we learn that it is always a zero sum game?

## Preparing for Climate Change

Our recent joint symposium with the Arizona Hydrological Society (AHS), "Managing Hydrologic Extremes," held August 30 – September 2, 2009 in Scottsdale, Arizona, highlighted the need for the hydrologic community to account for climate change uncertainty in the planning process. Our President, Miguel Medina, delivered the plenary luncheon address "Assessment of Global Water Resources," on September 1st, which was well-received. There were many other excellent technical presentations. Recent U.S. publications addressing the topic are particularly noteworthy: for example,

Global Climate Change Impacts in the United States," available online at: <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>, and,

Climate Change and Water Resources Management: A Federal Perspective," Brekke et al. (2009) is also available online at <http://pubs.usgs.gov/circ/1331/>.

Brekke et al. (2009) suggest that:

- The best available scientific evidence based on observations from long-term monitoring networks indicates that *climate change is occurring*, while rec-

ognizing that the effects differ regionally.

- Climate change *could affect all sectors of water resources management*, since this may require changed design and operational assumptions about resource supplies.
- Climate change is only one of many challenges facing water resource managers. *A holistic approach to water resources management includes all significant drivers of change.*

These points, among many others, *strongly reinforce the need for certification of qualified hydrologists, and highlight the role to be played by AIH professionals in preparing for climate change uncertainty* as part of the technical analysis. This is already being implemented by forward-looking firms employing AIH professionals [e.g., David Williams, AIH Executive Committee, with DTW & Associates, Engineers]. Their team of professionals is looking at comprehensive analysis of rainfall pattern and temperature changes, earlier spring snowmelt events, sea level rise impacts in



Temperature change is not the only problem

coastal zones, length of the growing seasons, impacts on riverine hydrology and hydraulics, and other factors besides climatic variability.

As noted previously in the *President's Message*, the demand for additional hydrologists will be fueled by: expected higher hydrologic variability attributed to global warming; ever-increasing water supply needs from population growth and movement to environmentally sensitive areas, such as coastal regions; compliance with a more complex regulatory environment, and the need to understand complex interactions across phases of the hydrologic cycle.

AIH  
membership and certification is  
the professional achievement  
that is necessary in a hydrologic  
sciences career.

complex regulatory environment, and the need to understand complex interactions across phases of the hydrologic cycle.

## Arizona's Water Supply Problems

A legislative raid on Central Arizona Project funds is not only illegal, but it also could leave state residents literally high and dry, the lawyer for the CAP is charging.

In legal papers filed with the state Supreme Court, attorney Robert Lynch said the \$13.9 million taken to balance prior and current state

budgets comes not from Arizona taxpayers but is part of a \$100 million payment from the state of Nevada in exchange for Arizona letting that state have some of its Colorado River water allocation.

The money is supposed to be used by Arizona to "bank" some of the water this state does not need now

but will require in future years.

Lynch said lawmakers do have the power to "sweep" certain special funds to balance the budget. But he said that power is limited to those accounts where the money was raised through legislation and comes from Arizona taxpayers.

## President's Corner:

As your President, I presented an overview of global water resources within the nexus of climate change and energy at the American Geological Institute (AGI) Leadership Forum on Monday, September 14, 2009 in Washington, D.C.

In my presentation, I emphasized the need to train more hydrologists and certify them and emphasized the role of AIH in this training and certification process. The forum focused on the role of the geosciences in dealing with climate change and energy. The audience was composed of more than 50 top geoscientists who represent the leadership of AGI's 45 geosciences societies.

The event included speakers from the Executive and Legislative branches of the U.S. government and the geosciences community. This included U.S. EPA, U.S. Geological Survey and NOAA adminis-



Miguel Medina flanked on the left by Brad Worley (Geotechnical Engineer, State of North Carolina) and on the right by Alan Huber (Wind Engineer, formerly with U.S. EPA)

trators. The forum was followed by briefings at AGU Headquarters on Tuesday the 15<sup>th</sup> from AGI and American Geophysical Union (AGU) government affairs staff on proposed Congressional bills to support research in the geosciences at key federal agencies. On Wednesday the 16<sup>th</sup>, I was joined by two other geoscientists from North Carolina on visits to Capitol Hill: we met with North

Carolina Senator Kay Hagan and Representative David Price (Appropriations Committee), and their legislative staff members, as well as legislative staff for Senator Burr and Congressmen Bob Etheridge and Heath Shuler. The visits were very successful, but Congress has many priorities, and our impact is yet to be evaluated.

Prof. Miguel Medina  
President

## A New AIH Chapter in the Works

During its annual meeting in Arizona, the AIH Executive Committee discussed the possibility of the formation of a new chapter within AIH which will coordinate the international activities in the institute. The new chapter, which maybe identi-

fied as International Institute of Hydrology (IIH), will primarily focus on the needs of the international membership which is expected to grow in

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A source of knowledge,  
information and  
professional recognition.

the near future. One of the needs of the international membership is the international certification of the members. Membership views on this subject are welcome.

## Q & A: What are some indicators of a healthy stream or river?

**Water pH** is an important indicator of river and ecosystem health. Most species prefer pH in specific and narrow ranges, although there are exceptions to this.

**Temperature** can be a good indicator to the health of a stream. Streams with healthy plant communities, including trees along their banks will tend to have

lower temperatures than streams that are open to sunlight. Typically, the cooler the stream more likely it is to support a diverse habitat. Most species of game fishes prefer cooler waters, although there are exceptions to this.

**Conductivity** is an indicator of the amount of dissolved ions (i.e., salt, metals, toxins) present in the water This is

measured with a conductivity meter. For natural streams the average conductivity is around 800 microSiemens ( $\mu\text{S}$ ) or less. A conductivity above 800  $\mu\text{S}$  is considered excessive and may indicate an unhealthy stream.

**Aquatic insects and stream habitat** is also a good indicator of the health of a stream. Diversity is the key.

## Transition in AIH Management

*AIH advances the profession by consistently acting to promote highest standards for the profession.*

In spite of the economic downturn, the employment forecast for U.S. hydrologists is a 24 percent increase over the decade from 2006-2016 (Bureau of Labor Statistics). Job growth for hydrologists is expected to be strongest in private-sector consulting firms: this is a component of our membership that deserves particular attention and greater recruitment efforts on our part. The demand will be fueled by: expected higher hydrologic variability attributed to global warming; ever-increasing water supply needs from population growth and movement to environmentally sensitive areas, such as coastal regions; compliance with a more complex regulatory environment, and the need to understand complex interactions across phases of the hydrologic cycle. This presents an opportunity for growth for AIH.

The AIH move to the campus at Southern Illinois University was prompted by both economics and visibility. We have learned important lessons from past mistakes that have led to a much more disciplined approach towards management of the Institute: rigorous checks and balances on the financial operation have been instituted. The current Executive Committee is working to improve the Bylaws and incorporate the new Hydrologic Technician Division. Our Annual Meeting and Conference on "Managing Hydrologic Extremes," was recently held at The Westin Kierland Resort & Spa, August 30 – September 2, 2009 in Scottsdale, Arizona. This joint symposium between the American Institute of Hydrology and the Arizona Hydrological Society (AHS) was a great success when compared to earlier similar activities of AIH. The venue was outstanding, as well as the technical program: our thanks are extended to the hard work of our conference co-chairman, Allen Gookin, and his wife Sandy (who volunteered her time and organizational skills). Nevertheless, it is important to emphasize that we need even greater enthusiasm from the membership to attend these conferences. The executive committee is marching forward from this point of transition, encouraged with the positive signals we are receiving through significantly increased membership and reduced management costs.



Dr. Peter E. Black receiving the Ray K. Linsley Award from AIH President Elect Emmitt C. Witt at the AIH Conference in Scottsdale, Arizona (2009).

## AIH Honors Members

During the 2009 AIH Conference at Scottsdale Arizona Prof. Vijay Singh was presented with the Founders award (right) and Dr. Peter E. Black was presented with the Ray K. Linsley award (above).

The Ray K. Linsley Award was established in 1986 to recognize individuals who have made outstanding contributions in the surface water hydrology area. The selection of this award is based on a nomination process and the AIH awards committee decision.

The Founders Award was established in 1990 to recognize individuals who have made outstanding, long and dedicated service to the institute. It was established to honor the founders of the AIH who are Sandor Csallany, Alex Zaporozec and Roman Kanivetsky. The award is given at the discretion of the AIH Executive Board to a member in good standing. In 2008 the Founders award was presented to Mr. Emmitt C. Witt III, who is the current President Elect of the AIH. AIH Executive Board and the AIH Awards committee is looking forward to receiving nominations in all award categories for the year 2010.



Dr. Vijay Singh receiving the Founders Award from AIH President Dr. Miguel Medina at the AIH Conference in Scottsdale, Arizona (2009).

AIH

*is your link to members in the profession.*

# We Congratulate our New Members:

## Hydrologist Members:

Aycock, Elvin	Alpharetta,	GA
Cohen, Andrew J.B.	Westfield	NJ
Christian Sarah	Portland	ME
Gamlin, Jeff D.	Albuquerque,	NM
Gibbs, Dennis R.	Santa Maria	CA
Iblings, Michelle L.	Colorado Springs	CO
Jacobson, Brian A.	Morrisville,	NC
Knight, Everette H.	Raleigh,	NC
Kelson Victor A.	Bloomington	IN
Lu, George Yen-Hsu	Alexandria	VA
Lu, Jiambiao	Raleigh	NC
McAlexander, Benjamin L.	Ann Arbor	MI
Moore, Rhett C.	Bloomington	IN
Murphy, Brain	Denver,	CO
Preusch, David P.	Alexandria	VA
Romero, Dave	Albuquerque,	NM
Towler, Brett W.	Portland	ME
Trefry, Christopher M.	Rock Island	IL
Wittman, John F.	Bloomington	IN
Whitney, Daniel C.	Boise,	ID
Yeakley, Alan	Portland,	OR

## Hydrologic Technicians:

Burleson, Larry Dion	Tulsa,	OK
Christensen, Lynda	Ukiah,	CA
Cruise, Paulette R.	Santa Maria,	CA
Deloache, David Corey	Athens,	GA
Dornier, Gregory B.	Laplace,	LA
Edwards, Amy E.	Moncks Corner,	SC
Erickson, Jessica L.	Colfax	CA
Fletcher, William L.	Tampa,	FL
French, Henry	Auberry,	CA
Gipson, Marsha L.	Little Road,	AR
Gray Debra	Oakland,	OR
Hazelett, Charlotte Linda	Huntington,	WV
Kellman, Orlin N.	West Palm Beach,	FL
Kennedy, Blair	West Palm Beach,	FL
Martin, Renne H.	Columbia,	MO
Miller, Darrin A.	Sedro-Woolley,	WA
Muenks, Nicholas W.	Columbia,	MO
Nudd Colt	Baker City,	OR
Paz, Lucas W.	Emeryville,	CA
Pointon, Thomas A.	Riverton,	WY
Reboulet, Edward C.	Lawrence,	KS
Sanderson, Chris N.	Clovis,	CA
Sarmiento, Michael	Lakewood,	CO
Scrudato, Matthew C.	Grover Beach,	CA
Svingen Rye	Billings,	MT
Webster, Michael D.	Ukiah,	CA
Williams, William J.	St. Louis,	MO
Wright, Kevin	West Richland	WA

## 2009 –2010 Examination Fee Structure

Application fee = \$100  
(\$50 for charter member period)

Test fee = \$200 Principles and Practice Exam;

Test fee = \$150 Fundamentals Exam;

Test is Waived in 2009-10 for HT Charter Members

Certification dues for each HT level = \$90

## Annual Membership Fees

Professional Membership = \$150

Emeritus Membership = \$75

HIT Membership = \$100

Hydrologic Technician Membership = \$90

Associate Member = \$35



Niagara Falls, NY

## AIH Membership, Application and Review Processes

**From August 1, 2009 through September 1, 2010, AIH is offering for all qualified Hydrologic Technicians to join as Charter Members.** Level I

applicants will now be required to pass a 100 question multiple-choice question test to become certified. The purpose of this extension is to enhance the membership with qualified Hydrologic Technicians that can begin to manage a program. Charter Membership entitles individuals to be certified based on qualifications, education, and references. No testing is required during this period. During this period all applicants will be required to submit a \$50 application fee to help defray the cost of processing and review of their application. AIH is the only organization to certify the qualifications of Hydrologic Technicians at three experience levels and within each of the disciplines of surface water, ground water, and water quality.

### The review process:

- Upon receipt of an application we will check it for completeness and, if necessary, notify you of additional information that may be needed.
- The completed application will be submitted to two members of the Board of Registration for review and evaluation, who make independent recommendations that are sent to the Board of Registration.
- The candidate must pass a 100-question multiple choice examination. Examinations are offered in each discipline level for the certification of Hydrologic Technician. The exams are offered twice a year on the second Friday of May and November. All exams are closed book and no papers, books or computers will be allowed in the test room. Calculators are allowed and are recommended. All tests are waived through the charter member period.
- The results of the examination and the recommendations are reviewed by the Chairman and Secretary of the Board of Registration, who in turn send their recommendation to the Executive Committee for approval, who in turn send their recommendation to the Executive Committee for approval.

### The Certification Program Examination Structures

#### Level I Test Structure:

General Surface Water Techniques 30%  
General Ground Water Techniques 30%  
General Water Quality Techniques 30%  
Basic Electronics 5%; Field Safety 5%

#### Level II - Surface Water Test Structure:

Surface Water Techniques 50%  
Specialized Techniques Not Related to In-stream Flow 20%  
Electronics/Field Repair 10%; Safety 20%

#### Level II - Ground Water Test Structure:

Ground Water Field Techniques 50%  
Ground Water Data Review 15%  
Ground Water Measurement Equipment 20%; Safety 15%

#### Level II - Water Quality Test Structure:

Water Quality Field Techniques 50%  
Water Quality Data Review and Validation 15%  
Field Measurement Equipment 25%  
Safety (HAZWOPER focused) 10%

#### Level III - Surface Water Test Structure:

Advanced surface water techniques 60%  
Specialized techniques not related to in-stream flow 10%  
Electronic/Field Repair 10%; Safety 15%; Public Relations 5%

#### Level III - Ground Water Test Structure:

Advanced ground water concepts 60%  
Resource knowledge 15%; Safety 15%; Public relations 5%  
Network design and decision-making 5%

#### Level III - Water Quality Test Structure:

Water quality concepts 60%  
Resource knowledge 15%; Public Relations 5%; Safety 10%  
Network design and decision-making 10%

For more information please consult AIH web site at:  
<http://www.aihydrology.org>

## AIH newsletter information

### Editorial Board/Publications Manager

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Material published in this newsletter may be reprinted with proper references. AIH is a professional organization providing certification of competent professionals, in all fields of the hydrologic sciences. The Institute is dedicated to the advancement of hydrology and hydrogeology as a science and profession, and to the professional education and advancement of its members. Contributions and articles of interest to the general membership of AIH are welcomed and should be submitted to the AIH office.

Advertisements should be submitted  
to the AIH office.

#### SPACE RATE and SIZE

1 page \$595 9½ x 7½"  
1/2 page \$349 9½ x 3½" (1 column)  
1/2 page \$349 4½ x 7½" (1 banner)  
1/4 page \$199 4½ x 3½" (1/2 column)  
1/8 page \$125 2¼ x 3½" (1/4 column)  
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## AIH is your future in HYDROLOGIC SCIENCES



### Some field and professional activities a hydrologic technician performs:

Stream gage operation, maintenance, and data retrieval; Discharge measurement; Instrument calibration; Site characterization; Record keeping; Water quality sample collection; Instrument repair and troubleshooting; Surveying; Well drilling and well log data maintenance and analysis; Hydrologic data compilation, review and analysis; Database management; Website maintenance; Publish data reports; Evaluate new instrumentation; Develop new instrumentation; and, Ground water level monitoring.



Hydrology is a profession that will be always in demand.

### HOW TO JOIN AIH

- Obtain an application by downloading it from the web site at: [www.aih.engr.siu.edu/forms.htm](http://www.aih.engr.siu.edu/forms.htm)
- Or call (618) 453-7809 and ask to have it mailed or emailed to you.
- Or send an email request to: [aih@engr.siu.edu](mailto:aih@engr.siu.edu)

### Complete the Application Form.

- Fill the application with as much information as you can.
- Provide us with one original of the application and all

supporting documents.

- Identify three References that can vouch for your work experience, ethics and character.
- Send to each person a reference form, which can also be downloaded at the web page given above. As a courtesy, also provide them with an addressed stamped envelope for mailing directly to AIH.
- Include your application fee of \$100 (\$50 for charter member period\*), made out to the American Institute of Hydrology,
- Mail your application to: 1230 Lincoln Drive, Carbondale, IL 62901-6603, USA.