

# AIH *news*

Volume 26, Issue 2 (Spring)

June 1, 2010

*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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## AIH Community Sends Best Wishes to Steve Burges

Steve Burges began his academic training with undergraduate degrees in Physics and Mathematics, as well as Engineering, from Newcastle, Australia. He completed both M.S. and Ph.D. studies in Civil Engineering at Stanford University. His academic career started in 1970 as Assistant Professor of Civil Engineering at the University of Washington, Seattle, Washington. He retired this year, and is currently Professor Emeritus of Civil and Environmental Engineering at the same institution. His service to the hydrology and water resources communities across different organizations includes chairing the Committee on Water Resource Systems, Water Resources Planning and Management Division (ASCE), the Committee on Research, Hydraulics Division (ASCE), and Editor of *Water Resources Research* (American Geophysical Union). He was a member of the Water Science and Technology Board (U.S. National Research Council). He became a Fellow of ASCE in 1988, and a Fellow of the American Geophysical Union in 1990: the citation for the latter read "for contribu-

tions to an extraordinary range of hydrologic enquiry, particularly to predictions and their uncertainties." He was certified a Professional Hydrologist by AIH in 1991, and served as Chair of the Linsley Award Committee from 1995-2002, and from 2004-2005. He received the Linsley Award from AIH in 2003, and indeed co-authored several journal articles with Ray K. Linsley (who was his PhD advisor). His scholarly productivity includes well over 75 refereed journal articles, as well as many book chapters and conference proceedings.

His consulting experience is wide-ranging, among others: a hydrologic analysis and water budget for the White River, Washington for legal services; establishment of storage-yield analysis methodologies and reservoir operation models that employed stochastic hydrology techniques for Bechtel Corporation, San Francisco; field determination of hydrologic and optimum hydraulic flow conditions to enhance

spawning and rearing of fish species found in the White River, Washington, for the Sportfish and Wildlife Service, U.S. Department of Interior, Portland, Oregon; stochastic modeling of streamflow, Feather River at Oroville Dam, CA for the California Department of Energy and Linsley Kraeger Associates. He has been an expert witness several times in court, which is



the ultimate test of professional competence in hydrology.

We can certainly be proud of having Steve as an active member of the American Institute of Hydrology, and we wish him well on all his future endeavors.

## Southeast Instream Flow Network:

The Southeast Instream Flow Network (SIFN) assists 15 southeastern states in the United States in instituting protective environmental flow policies.

In the Southern US, instream flow policies are administered at the state level, thus the Southeast Aquatic Resources Partnership (SARP) envisioned a network (the Southeast Instream Flow Network – SIFN) to leverage experience and resources among state-based partnerships in the 15 Southeastern Association of Fish and Wildlife Agencies (SEAFWA) states – Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee,

Texas, Virginia and West Virginia.

The SIFN goal is to help the states institute protective instream flow policies. With funding from the Multi-State Conservation Grant Program of the US Fish and Wildlife Service-work follows these objectives:

- Bring state teams together to initiate and develop working relationships;
- Educate participants on the scientific basis of instream flow policy;
- Share instream flow policy-related tools & resources specific to state needs;
- Communicate among states to support and build on past experi-

ences;

- Provide training for use of assessment tools to determine environmental impacts to hydrologic regimes and develop instream flow standards; and,
- Produce guidance documents for development of effective instream flow protection policy and supporting programs.

Their new website at: <http://southeastaquatics.net/programs/sifn>.



Southeast Aquatic Resource Partnership.

*Be an active member of AIH, share your information, submit your ideas to make this organization serve you better. ([aih@engr.siu.edu](mailto:aih@engr.siu.edu))*

## Environmental Flow Standards in Mexico:

On 9 November 2009, during the World Wilderness Congress in Mérida (Mexico), the Director General of National Water Commission (CONAGUA) publicly announced his agency's commitment to promulgate the standards on environmental flows in Mexico by 2010. The technical standards are likely to prescribe a hierarchy of methods

for determining environmental flows, including the Ecological Limits of Hydrologic Alteration (ELOHA)-like

framework for regional assessment. The announcement of this standard represents an important change of the water management paradigm and an outstanding contribution to biodiversity conservation in Mexico. As part of the federal government's strategy to support sustainable development in water resources management, this commitment places Mexico in a globally advanced position in recognizing nature's role as main water supplier.

The draft proposes a four-level approach to estimate environmental flows depending on the water availability, ecological importance and conservation condition. The first and second levels, based on desk-top methods, are applied to water

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

planning; the third and fourth levels, based on holistic methods, and are focused on specific ecosystems, such as wetlands, and large water infrastructure projects. The draft will be discussed in the following months, and the final version is expected by the second half of 2010.

**For more information** contact Eugenio Barrios, Director of Freshwater Program, WWF-Mexico at [ebarrios@wwfmex.org](mailto:ebarrios@wwfmex.org)



National Water Commission, Mexico.

## Eradicate CONGRESS WEED!!!

An alien species is a taxon that finds itself in a new geographic location or habitat. Many of these species arrive in the new location due to inadvertent human activities such as shipping or agriculture, although many are purposefully introduced for food cultivation or for attempts (usually misguided) at ecological intervention (kudzu). Some of these species reproduce and flourish in their new environment. This success is due largely to the absence of natural predators and parasites, and this may allow alien species to out-compete native species, usurping a habitat previously populated by native species within their niches. Alien species that have negative effects on native species, or cause economic or environmental problems are generally referred to as "invasive" species. An alien species is most commonly thought of as a macroscopic or obviously visible plant or animal; however, some of the most significant alien species are micro-organisms which have conveyed diseases or parasites to distant lands, where there may be insufficient endemic defenses or immunities.

In many cases the conduct of humanitarian programs has led to introduction of alien species which in turn can depress the long term capability of a region to sustain its own agricultural productivity. For example the United Nations has documented that certain food aid tactics in **Ethiopia** have led to wide scale introductions of the alien species **CONGRESS Weed** (*Parthenium hysterophorus*), imported as seed admixed with food grain; in turn the propagation of this invasive species has led not only to massive ecosystem disturbance but also to reduced Ethiopian agricultural productivity. (United Nations Environment Program. 2006). **CONGRESS Weed** is an invasive grass that is toxic to most livestock, and has also led to epidemic level reduction of crop productivity and adverse human health impacts. Horn of Africa Regional Environmental Centre and Network, (2008) indicate that Alien Species in Africa have led to significant declines in agricultural productivity and been contributory to food shortages in many parts of Africa.



**Congress Weed**, an alien species to much of northeastern Africa introduced by food aid programs, with resultant long term reduction in regional agricultural productivity.

This seems to be a major problem. Do we have **CONGRESS WEED** to eradicate in North America? If we do, let's get to work... It just takes a vote.

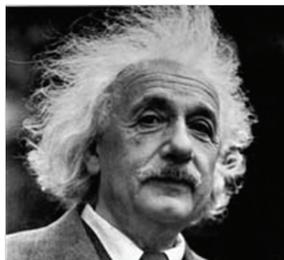
AIH

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

## Why scientists do what they do?

**Einsteinium** (pronounced in-STEINE-i-em) is a metallic man-made element. On the periodic table, it is represented by the symbol Es and atomic number 99. Einsteinium is the seventh transuranic element, and an actinide. The actinides are the elements found in the last row of the periodic table, having atomic numbers between 89 and 103, and a transuranic element is one that has a higher atomic number than uranium, and is man-made and not found in nature. It was named in honor of Albert Einstein.

According to tracer studies conducted by Los Alamos National Laboratory using the isotope <sup>253</sup>Es, this element has chemical properties typical of a heavy trivalent actinide element. All isotopes of einsteinium are radioactive, and are



considered to be **potentially toxic**.

In addition to its role in basic scientific research in which einsteinium is used to produce other elements, such as mendelevium, this man-made element has **no known uses**. Only a few compounds of einsteinium have ever been discovered, and **none of them have any commercial uses or biological roles**. In large amounts, the production of **einsteinium could pose a radiation threat**. Great! Another chemical exposure problem to avoid...

## President's Corner:

U.S. News & World Report lists the profession of "Hydrologist" as one of the top 10 best careers [<http://money.usnews.com/money/careers/articles/2009/12/28/hydrologist.html>], and we can tell you that AIH is growing its membership to reflect the need for certifying the educational and on-the-job training experience of a greater number of hydrologists. In a recent article entitled "Land Use and Climate Variability Amplify Contaminant Pulses" by Kaushal, et al. [EOS, Transactions, American Geophysical Union, 22 June 2010], the authors discuss how humans have altered hydrologic connectivity between landscapes, groundwater and streams via engineered flow paths. They suggest that this accelerated transport from landscapes to streams may amplify variability generated by climatic extremes. The authors present these interacting effects of land use and climate change on contaminant pulses with examples (e.g., the Potomac River), and conclude that watershed exports of nitrogen and other water quality parameters are indeed amplified. It seems that professional hydrologists with expertise in surface, subsurface and water quality processes are uniquely prepared to handle these com-

plex interactions: through modeling, monitoring and experience; and the topic is not limited to academic pursuits. Some of our AIH colleagues in consulting firms are already looking ahead: incorporating the uncertainties generated by different scenarios of climate variability into their hydrologic analysis for clients.

One of our distinguished colleagues retired from academia this year after a superb career spanning four decades: Steve Burges, University of Washington, Seattle. Australian by birth, his professional service to the U.S. and world hydrological community includes: Chief Editor of Water Resources Research, past President of the AGU Hydrology Section, and many other committees in organizations such as the American Society of Civil Engineers. He was the 2001 Langbein Lecturer of the AGU Hydrology Section, and was awarded ASCE's Ven te Chow award in 2008 for "an exceptional career in education and research in engineering hydrology and water resources management, outstanding service to the profession, and mentoring of young hydrologic engineers." He has contributed generously to AIH in many tangible and intangible

ways. We salute his many accomplishments in hydrology and water resources, and we devote greater coverage of his accomplishments in a separate section of this newsletter.

Our Board of Registration, chaired by David Williams, has been doing an outstanding job with the review process: essential for our continued growth. Our Executive Director has managed the office with efficiency, transparency and fiscal responsibility. The Executive Committee has provided me with advice in steering AIH in the right direction. Our past President, Tony Laenen, has played a key role in revising our Bylaws. Our relationship with Mexico's water experts is being strengthened, through representation on our Board of Registration [José A. Raynal, University of the Americas, Puebla] and several other initiatives.

My term as your President ends this December, and I want to thank all of you for your professionalism and loyalty to the organization. If we continue to add top quality hydrology professionals to AIH at all levels, we will succeed and play an important role in an era of climatic variability.

Prof. Miguel Medina

## Environmental Field Conference:



The Nielsen Environmental Field School is pleased to announce the Call for Presentations and Exhibitors for the 2011 North American Environmental Field Conference & Exposition, now posted on the event web site at [www.envirofieldconference.com](http://www.envirofieldconference.com). This annual Conference, which will be held

in San Diego, CA, is presented by The Nielsen Environmental Field School in cooperation with the American Institute of Hydrology, the American Institute of Professional Geologists, ASTM International, the Groundwater Resources Association of California, Princeton Groundwater, and CRC Press/Taylor & Francis Publishers.

The Conference, will be held during January 11-13, 2011 at the Hilton San Diego Resort & Spa on Mission Bay in San Diego, California. Further details on this conference can be requested from The Nielsen Environmental Field School at: [info@envirofieldschool.com](mailto:info@envirofieldschool.com).

## Q & A: What affects water quality and what is at risk?

Water quality can be affected by many different factors, such as storm water runoff containing motor oil, road salt, antifreeze, gasoline, animal wastes, fertilizers, pesticides, and other substances. Poorly maintained septic systems and household cleaning products can get rinsed down household drains or end up in landfills, contaminating our water. Precipitation may contain pollut-

ants carried in by the wind from incinerators, power generating plants, and industries hundreds of miles away.

The USEPA recommends that water quality should be measured by the abundance of chemicals and also *Escherichia coli* (*E. coli*). *E. coli* is a common intestinal organism, so the presence of *E. coli* in water indicates that

fecal pollution has occurred. While the specific kinds of *E. coli* measured in recreational water do not generally cause disease, high counts indicate that conditions are favorable for the growth of other harmful pathogens that may cause illness in humans. Similarly chemical concentrations above USEPA approved MCL levels may render water supplies unsafe for use and become health risk.

## World News Roundup:

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

**US - EPA's budget proposal seeks efficiencies, increased environmental protection:** The Obama Administration proposed a budget of \$10 billion for the U.S. Environmental Protection Agency (EPA). This budget is in line with the president's call to streamline and find efficiencies in the agency's operations while supporting the seven priority areas EPA Administrator Lisa P. Jackson outlined to guide EPA's work. [Water and Wastes Digest – Feb. 2, 2010]

**China - China attacks water pollution and plans massive investments:** China will invest 13 billion US dollars in the next three years in projects to improve the quality of water faced with serious contamination problems, reported "China Daily". Most of the money will go to sewage systems, water purifying and rainwater harvesting according to Deputy Environment minister Wu Xiaoping. [Asia Water Business – Feb. 2, 2010]

**UK - Cocker mouth coverage perpetuates thousand year flood 'myth:':** Media coverage of the Cumbrian floods in November reinforced the dangerous idea that being hit by one extreme weather event decreases the likelihood of the same thing happening again any time soon. [Edie.net – Feb. 1, 2010]

**Ireland - Minister Gormley outlines €300 million water conservation investment plan:** The Minister for the Environment, Heritage and Local Government John Gormley T.D., has said today (25 January, 10) that investment in replacing water mains will increase five-fold to €300 million over the next three years as part of a revised water investment programme. [Environmental-Expert – Feb. 1, 2010]

**Australia - Environment Protection Authority paves the way for multi-million dollar upgrades to a Bangholme treatment plant:** The EPA has granted a works approval notice for extensive upgrades, worth \$380 million at Melbourne Water's Eastern Treatment plant. [Asia Water Business – Feb. 1, 2010]

## History of Horticulture:

The history of horticulture dates to at least 3500 years before present. Egyptian tomb paintings from that time suggest gardens with lotus ponds surrounded by date palms and acacia trees. The Hanging Gardens of Babylon, in modern-day Iraq, date to about 2600 years ago, and reputedly had a lift system for irrigation water, and many ornamental plants for the pleasure of the wife of King Nebuchadnezzar. However, in spite of recorded documentation, there is some controversy concerning its actual existence, due to inconclusive archeological evidence. At any rate, the region is cited as the origin of agriculture, as it is located in the fertile valley between the Tigris and Euphrates Rivers. Another garden, the Persian garden at Pasargadae, has been identified by archeologists as the earliest garden for which there is evidence. It was built around 2530-2550 years ago, and was a large, walled garden with stone irrigation channels and orchards. In the 18th century, a number of European horticulturalists were active, including James Burnett, Lord Monboddo of Scotland.



Liberty Hyde Bailey.

In the United States, many technological advances were made following the establishment of Land Grant Colleges by Abraham Lincoln. Research and dissemination of research results were facilitated by this institution. Liberty Hyde Bailey, sometimes referred to as "The Father of American Horticulture", conducted research, authored books and scientific papers, and founded the American Society of Horticultural Science. This organization remains the major venue in the United States for disseminating horticultural research through annual conferences, and refereed publication. Three journals are published by the ASHS: Hort. Science, Hort. Technology and The Journal for the American Society for Horticultural Science. In California, Luther Burbank was another noted early horticulturalist.

AIH

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# We Congratulate our New Members:

## Hydrologist Members:

Anderson, Donald M.	Denver	CO
Arriaga, Miguel A.	Warrenville	IL
Balay, John W.	Harrisburg	PA
Bladon, Kevin D.	Kamloops, BC	Ca.
Blatchford, Douglas B.	Boulder City,	NV
Blythe, Daniel D.	Butte	MT
Bonbrake, Terry R.	Tucson	AZ
Fridley, Eric Sean	Warm Springs	VA
Gaujot, Ryan C.	Davis	WV
Hanson, Eric R.	Essex, Jct.	VT
Huang, Xiang Jiang	Fort Collins	CO
Johnson, Gabriel G.	Fort Worth	TX
Lawler David	Albuquerque	NM
Livingston, David D.	Salem	OR
Lutz, Jason E.	Denton	TX
Malca, Yigliola T.	Minneapolis	MN
Marvin Richard	Salem	OR
Massong, Tamara M.	Alburquerque	NM
Melocik, Bradley M.	Anchorage	AK
Mitisek, Mark J.	Denver	CO
Pagels, Corey R	Madison	WI
Pandey, Madhav D	W,P. Beach	FL
Rahman, Mohammad A.	Scottsdale	AZ
Rogalus III. Michael J.	Princeton	NJ
Sartori Sira	Denver	CO
Shinavski, LeeAnn	Bruceston	PA
Staggs, Karin C.	Reno	NV
Suro, Thomas P.	Troy	NY
Walker, Douglas D.	Champaign	IL
Winter, Steven M.	Seattle	WA
Chomycia, Jill C.	Sacramento	CA
Wright, Jeffrey L.	Meeting	PA
Onderdonk John	San Francisco	CA
Knapke, Karla A.	Eureka	CA

## Hydrologic Technicians:

Foreman, James R.	Tacoma	WA
Freeman Lawrence	Marina	CA
Hellman, Shane A.	North Platte	NE
McCallister, Frederick M.	Huntington	WV
Reed, Laura D.	Santa Paula	CA

## 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



Fishing frenzy before oil spill...

## 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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The AIH news letter is the official  
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**American Institute of Hydrology**

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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## AMERICAN INSTITUTE OF HYDROLOGY

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Professionals in Hydrologic  
Sciences*

## 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 always be 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.