TEXAS WATER RESOURCES INSTITUTE
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Breaking news about water resources research and education at Texas universities

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Wurbs joins Texas Water Resources Institute

Dr. Ralph Wurbs, professor in Texas A&M University's Zachry Civil Engineering Department, has joined Texas Water Resources Institute as a part-time associate director. Wurbs will work with **Dr. Allan Jones**, director, and **Dr. B.L. Harris**, associate director, to bring an engineering perspective to the institute.

Wurbs joined the Zachry Civil Engineering faculty in 1980 and has served as division head for the Department's Environmental and Water Resources Engineering Division since 1999. He will continue to devote two-thirds of his time to his engineering faculty duties.

Jones said the institute sought out Wurbs for this position because he understands water resources and the water management community of Texas and has been involved with TWRI activities for 25 years.

"Dr. Wurbs shares our vision of opportunities for greatly expanding and improving our water-related programs throughout the TAMU System," he said.

Jones said the goal of this partnership is to integrate the efforts of the diverse university research community to more effectively contribute to solving the water resources problems faced by Texas, the nation and the world.

Central Texas conference highlights water issues, legislation

By Kathy Wythe

State Sen. Kip Averitt listens as Dr. Allan Jones, TWRI director, talks about the state of Texas of water. During his talk, Averitt summarized provisions in Senate Bill 3.

With Texas predicted to have twice as many people in 2060, planning for the state's water is not a simple process, said **State Sen. Kip Averitt** at a water conference Aug. 23 in Westphalia in Central Texas. During the session that ended in May, however, the Legislature passed several pieces of legislation that will help meet those needs, he said.

Averitt along with **Jason Fenton**, legislative assistant to **Rep. John Carter**; **Dr. Allan Jones**, Texas Water Resources Institute director; **Dr. Lonnie Jones**, Texas A&M University Department of Agricultural Economics professor emeritus; and **Mike Meyer**, former Falls County judge; spoke to more than 50 people on state water legislation, water issues and the planned Brushy Creek Reservoir. Brushy Creek Reservoir in Falls County is one of 19 reservoirs designated in the state water plan as needed to meet the future water supply needs of Texas.

Averitt said the 80th Legislature approved and fully funded the state's portion of the 2007 state water plan, allocating $762 million for water infrastructure projects identified in the plan.

"The water plan was only a concept on paper until this Legislature," he said. "Now that the Legislature funded the state water plan, it will be fully implemented."

Averitt said Senate Bill 3, which he authored in the Senate, is another step in the process of ensuring Texans have enough water. The bill includes provisions protecting environmental flows, encouraging water conservation and designating the 19 reservoirs as having unique value for the state's water needs.

Dr. Allan Jones, in presenting an overview of possible solutions to water issues facing Texas, said Falls County is not the only community dealing with water issues. "Many communities are experiencing water issues," he said. "Local leadership is extremely important in analyzing the solutions."

Jones said although reservoirs are one answer, communities need to look at groundwater development, conservation, desalination and wastewater reuse as possible solutions. "Every community will go through the analysis for better solutions," he said.

Fenton, speaking on behalf of Rep. Carter, told the crowd that Central Texas is growing at a historical rate and will see a 90 percent population growth in the next 30 years. "Falls County is right in the middle of all this growth," he said, adding that the county is predicted to grow by 17 percent in the same period.

"The key to this growth is to maintain and expand the infrastructures we have," Fenton said, noting that transportation and water are the two biggest needs. "Judge Carter is committed to helping out with economic development here."

Giving an overview of possible economic impacts of building Brushy Creek Reservoir to the county, Dr. Lonnie Jones said the construction will stimulate new economic activity by possibly bringing in new businesses, real estate development and more people to enjoy the recreational aspects of the reservoir.

Meyer, who is president of the Falls County Water Improvement and Control District, gave a detailed overview and history of the Big Creek Watershed project, which includes 21 flood control lakes being constructed by the USDA Natural Resources Conservation Service and Brush Creek Reservoir.

He addressed audience concerns about sedimentation, saying that many of the lakes built in the past had a life span of 50 years. Many of these were built in the 1950s; that was the reason for their sedimentation. The proposed reservoir in Falls County would have a life span of 100 years, Meyer said.

Texas A&M holds third annual desalination conference
By Kari Miller

Texas A&M University's Food Protein Research and Development Center – Separation Sciences program presented the third annual "Water Desalination: Water and Wastewater Issues and Technologies," practical short course from August 5-7 in College Station.

Dr. David Burnett, director of technology at the A&M System's Global Petroleum Research Institute, describes the mobile reverse-osmosis desalinator during a demonstration at the workshop in College Station.

The conference featured topics such as the future of desalination in Texas, industrial treatment technologies for wastewater and compact ozonation systems.

Keynote speakers included **Jorge Arroyo** from the Texas Water Development Board, **David Burnett**, director of technology at Global Petroleum Research Institute, **Bill Irvine**, president and founder of Engineering Fluid Solutions and **Jerry Clark** of Ozone Systems. Demonstrations of pretreatment technologies, desalination equipment, membrane technologies and post treatment technologies were held at the Texas A&M Food Protein R&D Center Separation Sciences Lab.

Carl Vavra, the program coordinator for the Separation Science Group, said the conference had approximately 50 attendees, mostly from Texas. Many Texas cities are experiencing water shortages and sent personnel to the course. Several attendees were from the oil & gas industries that are looking for technologies to clean up their wastewater and reduce their water use, he said.

"The conference has been very successful. It has allowed us to market what we do because most people don't associate water with the Food Protein R&D Center," Vavra said. "We have established a large network with companies and academia from the United States and other countries for presenting papers at our short courses and working with our research and contract projects here at Texas A&M University."

The Texas Water Resources Institute helped sponsor the course. The Global Petroleum Research Institute at Texas A&M assisted with organizing and conducting the course.

TWRI awards Mills Scholarships to graduate students

The Texas Water Resources Institute (TWRI) recently awarded Mills Scholarships to 17 Texas A&M University graduate students for the 2007-08 academic year to pursue water-related research.

TWRI's Mills Scholars Program, an endowed fund that supports research in water conservation and management, provided the $1,500 scholarships to the students to use for education-related expenses. TWRI uses the Mills Scholars program to encourage and assist current and prospective graduate students to incorporate water resources studies into their graduate programs at Texas A&M University.

Students receiving the scholarships include:

- **Artie McFerrin Department of Chemical Engineering**: Rene Davina Elms
- **Department of Agricultural Economics**: Callie Rogers and Justin Baker
- **Department of Soil and Crop Sciences**: James Applewhite, Stephen Caster, Suzika Pagan-Riestra and Tim Pannkuk
- **Department of Biological and Agricultural Engineering**: Debabrata Sahoo and Deepti
- **Department of Biology**: Kranthi K. Mandadi
- **Department of Ecosystems Science and Management**: De'Etra Jenra Young
- **Department of Geography**: Lei Meng
- **Department of Geology and Geophysics**: Omar Richard Harvey
- **Department of Rangeland Ecology and Management**: Roberto A. Bazan, Jr.
- **Spatial Sciences Laboratory**: Sivarajah Mylevaganam
- **Water Degree Program**: Richard E. Rapier
- **Zachry Department of Civil Engineering**: Dong Suk Han

Some of the research being conducted by this year's Mills Scholars includes impacts of water supply contracts on Texas water use, runoff generation, effects of urbanization on water quality and desalination.

Mills Cox, a former chairman of the Texas Water Development Board, endowed the Mills Scholarships. For more information on the Mill's Scholarship Program or to learn more about the projects, contact the Texas Water Resources Institute at (979)845-1851 or twri@tamu.edu

TWRI grant recipient studies arsenic contamination in groundwater
By Kari Miller

Texas A&M University international graduate student **Dongsuk Han** is working with his advising professor **Dr. Bill Batchelor** from the Department of Civil Engineering to develop a new approach to remove inorganic arsenic contaminants from drinking water.

Han, originally from South Korea and a recipient of a $5,000 2006-2007 Texas Water Resource Institute (TWRI) research grant, said that arsenic contamination in groundwater is a threat to human health because of its toxicity and carcinogenicity and is caused by the use of arsenical pesticides, activities related to mining, fallout from the atmosphere and the natural geologic weathering process.

"Arsenic contamination in groundwater is a serious problem to many water treatment facilities around the world," Han said.

According to his final report, the commonly applied processes for arsenic removal are chemical precipitation, co-precipitation, reverse osmosis, ion exchange and oxidative filtration. However, adsorption is considered to be the most promising process because of its safety, ease of handling and set-up, high removal efficiency with low cost and potential for regeneration of materials.

Han said to improve treatment technologies for arsenic, he used a new approach called nano-environmental adsorption technology (NEAT). This method used a synthesis of nanoporous adsorbents with titania reactive sorption sites for arsenic removal. The results of this new approach seemed to be successful.

"Based on experimental results, synthesized nanoporous titania had higher sorption capacity for arsenic at natural environmental conditions," he said. "This research will contribute to enhance adsorptive filtration technology for arsenic removal."

Han said he plans to complete his doctorate and then become a research professor in the United States or Korea.

His research was funded by TWRI through the U.S. Geological Survey as part of the National Institutes for Water Research annual research program. TWRI is the designated institute for water resources research in Texas.

For more information on Han's research, visit USGS research grants at twri.tamu.edu/usgs-recipients/2006-07/

TWRI grant recipient estimates water quality parameters using remote sensing
By Kari Miller

Texas Tech international graduate student **Bassil El-Masri** worked with his advising professor **Dr. A. Faiz Rahman** from the Department of Natural Resources Management to develop spectral indices using remote sensing techniques to monitor water bodies.

El-Masri, originally from Lebanon and a recipient of a $5,000 2006-2007 Texas Water Resources Institute (TWRI) research grant, said that the traditional measurement of water quality requires in situ sampling, which is costly and time-consuming.

"It would be advantageous to watershed managers to be able to detect, maintain and improve water quality conditions at multiple river and lake sites without being dependent on field measurements," El-Masri said.

According to his final report, remote sensing techniques have the potential to overcome these limitations by providing an alternative means of studying and monitoring water quality over a wide range of both temporal and spatial scales. Several studies have confirmed that remote sensing, a technique used to acquire data from a remote location, can meet the demand for the large sample sizes required for water quality studies conducted on the watershed scale.

El-Masri's research focused on the use of remote sensing data to monitor and estimate specific water quality parameters, such as chlorophyll a, total Phosphorus and turbidity.

For more information on El-Masri's research, visit USGS research grants at twri.tamu.edu/usgs-recipients/2006-07/

Junior Master Gardener develops soil, water curriculum

The newest resource of the National Junior Master Gardener (JMG) Program—Operation W.A.T.E.R.: Dr. Thistle Goes Underground—was recently released and the program's staff is seeking groups to sponsor training workshops to educate teachers and youth leaders about using this new curriculum.

Developed by Texas Cooperative Extension, this horticulture and environmental science curriculum for students from sixth to eighth grade consists of group and individual activities and can be used for a school class, JMG club, 4-H program, kids gardening group or individual study.

Using Operation W.A.T.E.R.: Dr. Thistle Goes Underground, students can investigate a new mystery while they learn important concepts about soil and water, said **Lisa Whittlesey**, Extension program specialist and National JMG coordinator.

Topics in Operation W.A.T.E.R. include soil texture, aquifers, watersheds, wetlands, soil nutrients, the water cycle, soil improvement, soil structure and water and soil conservation. Each teaching concept includes three hands-on lessons and activities that allow the students to learn teamwork as well as soil and water concepts. An integrated Web site for students is a part of the curriculum.

The villainous character "Dr. Thistle" was originally introduced in the first curriculum developed for this age group, Operation Thistle: Seeds of Despair, Plant Growth and Development. Students use the knowledge and concepts gained in their studies to defeat Dr. Thistle.

Whittlesey said the program is more than just another school curriculum and is being well-received by teachers and students across the country.
"For students, they will learn about important concepts of soils and water, as they work together on a mission to foil the newest plans of the evil Dr. Thistle," she said. "It's a novel and engaging way to connect with these students."

For teachers, "it should be very popular in that it addresses important issues for Texas, is correlated to the Texas Essential Knowledge and Skills and is a great fit for both school and after school programs," she said.

For more information about these curricula, training opportunities or the JMG program visit the JMG Web site at www.jmgkids.us/ or call 979-845-8565.

Spatial Sciences Laboratory offers fall training courses

The Spatial Sciences Laboratory at Texas A&M University is offering several fall training courses including Combined Introductory & Advanced ArcGIS, Beginner and Advanced SWAT and Remote Sensing. These workshops will be at the Spatial Sciences Laboratory located in the Centeq Building in Research Park in Building B, Rooms 212 or 214.

Introductory & Advanced ArcGIS, October 23-25 and December 4-6, will train beginning users on the ESRI ArcGIS 9.1 software including the use of the more advanced tools and extensions. Cost for the three-day training is $450 per person/$225 for students.

Beginner SWAT, **November 12-16**, will train beginning users on the SWAT model using ArcGIS-SWAT (ArcSWAT) interface. Cost for the three-day training is $500 per person/$300 for students.

Advanced SWAT, **November 12-16**, will cover sensitivity analysis, model calibration and uncertainty analysis using the 2005 version of SWAT with an ArcGIS (ArcSWAT) interface. In addition, day three of the course will be devoted to discussion of participant's individual model issues. Cost for the two-day training is $500 per person/$300 for students. For an additional $100 per person, there will be a one-on-one project support session with the instructor.

Remote Sensing will train beginning users on the Leica ERDAS Imagine 8.7 software. Cost for the three-day training is $500 per person/$300 for students. The dates for this course are pending.

To register or for more information, visit Spatial Sciences Laboratory Web site at
http://ssl.tamu.edu/index.php

New Publications/ Papers

"Priority Groundwater Management Areas: Overview and Frequently Asked Questions"
Valeen Silvy, **Bruce J. Lesikar** and **Russell A. Persyn**, Texas Cooperative Extension publication B-6191
Water shortages and water quality problems in Texas are prompting the state to address the security of its water supplies. One approach being taken is to create priority groundwater management areas (PGMAs) in critical regions. This publication explains the process for creating a PGMA in Texas.

"Questions about Groundwater Conservation Districts in Texas"
Bruce J. Lesikar, **Ronald Kaiser** and **Valeen Silvy**, Texas Cooperative Extension publication B-6120
Groundwater conservation districts (GCDs) are being created in many parts of Texas to allow local citizens to manage and protect their groundwater. This publication answers frequently asked questions about groundwater and GCDs.

"**New Waves**," an email newsletter of Texas Water Resources Institute publishes timely information about water resources news, results of projects and programs, and new water-related research projects, publications, papers and faculty, at universities in Texas. If you have information for possible inclusion in "New Waves," please email Kathy Wythe at kwythe@tamu.edu or call 979.845.1862 and include your contact information. All submissions may be edited for grammar and style.

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