TEXAS WATER RESOURCES INSTITUTE
twri New Waves

Breaking news about water resources research and education at Texas universities

June 30, 2007

ZEROS and Texas A&M Foundation sign gift agreement

ZEROS Energy and Water Alliance signed a $2 million gift agreement with the Texas A&M Foundation on June 1 to support the enhancement and development of the teaching, research and Extension activities of the Texas Water Resources Institute.

Steve Clark, the developer of ZEROS, established the alliance to fund water and bio-energy research and education programs at The Texas A&M University System. The gift will honor Clark's long-time friend and business partner, **William A. McKenzie**, a former chairman of the Texas A&M University System Board of Regents.

"My relationship and friendship with Bill McKenzie and his encouragement in developing ZEROS and his push for tomorrow's solutions today has been a catalyst for this gift," Clark said.

(*Texas Cooperative Extension photo by Austin Moore)*

***Steve Clark** (center), with Zeros Energy & Water Alliance, signs a $2 million endowment agreement between the Texas A&M Foundation and the alliance. **Dr. Elsa Murano**, vice chancellor and dean of agriculture and life sciences for The Texas A&M University System, and **John Stropp**, interim president of the Texas A&M Foundation, look on.*

Zero-Emission Energy Recycling Oxidation System, or ZEROS, is an oxy-fuel technology which uses high temperatures to completely oxidize organic waste. It was developed to clean up oil field waste without polluting air or water.

Currently, ZEROS is being commercialized to produce electrical energy, liquid fuels, pure carbon dioxide and distilled water with a complete sequestration of carbon dioxide and other contaminants.

TWRI grant recipient studies water scarcity in Texas

Texas A&M University international graduate student **Yongxia Cai** is working with her advising professor **Dr. Bruce McCarl** from the Department of Agricultural Economics to develop an effective water model to evaluate the impact of interbasin water transfers in Texas.

Cai, originally from China and a recipient of a $5,000 2006-2007 Texas Water Resources Institute (TWRI) research grant, said that water scarcity is a problem in Texas because of rapid population growth, economic development, global warming and water pollution.

"To address the water scarcity problem, one of the water supply enhancement strategies is interbasin water transfer (IBT), shifting water from surplus to deficit regions," Cai said.

However, in Cai's final report she said water transfers can have negative impacts on the environment, and there is no comprehensive evaluation methodology proposed for them. The Texas water models have limitations that affect their usefulness in evaluating these transfers.

To continue reading this story, click here.

For more information on Cai's research, visit USGS Research Grants.

TWRI grant recipient developing 3-D model for Corpus Christi Bay

Texas A&M University international graduate student **Mohammad Shahidul Islam** is working with his advising professor **Dr. James Bonner** from the Zachry Department of Civil Engineering to develop the Coastal Margin Observation and Assessment System (CMOAS) to monitor water quality in the Corpus Christi Bay.

"The CMOAS is conceptualized as an environmental observatory that can supply surface current maps, vertical profiles of currents, meteorological observations and other real-time chemical and biological measurements within the water column," said Islam, who received a $5,000 2006-2007 Texas Water Resources Institute (TWRI) research grant.

Islam, originally from Bangladesh, found that in Corpus Christi Bay the water unexpectedly becomes stratified in the summer which causes hypoxia, a condition where the concentration of dissolved oxygen in water gets too low and aquatic life cannot survive. In his final report, Islam explained that the spatial extent, frequency and duration of hypoxia determine the level of disturbance it causes to the ecosystem. He also found that Corpus Christi Bay is a bi-directional system; wind forces move the water in one direction and tidal forces move the water in the opposite direction. Thus a three-dimensional model is necessary to accurately capture the dynamics of the bay.

To continue reading this story, click here.

For more information on Islam's research, visit USGS Research Grants.

Gray water alternative for sub-irrigating landscape plants

Dr. Bruce Lesikar, Texas Cooperative Extension agricultural engineer, said gray water is an alternative, and cheaper, source of water for landscaping in Texas.

Gray water is the water that has passed through showers, sinks, bathtubs or washing machines. It is different from black water that comes from the toilet or kitchen sink and often contains solids, therefore making it unusable without treatments.

"If you are planning on a gray-water system, you have to start by planning early," Lesikar said. "Houses that are on blocks or above the ground do have the ability to be re-plumbed to separate gray water for use. For houses that are on slabs, it is more difficult to separate the sources once the house is built."

Gray-water systems can be used on all soil types, and state regulations affect how the systems may be installed and used.

To read more about gray water and its use, read the full AgNews story.

Spatial Sciences Laboratory offers summer training courses

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

"Introductory & Advanced ArcGIS" 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 or $225 for students. The dates for this course are pending.

"Beginner SWAT," **July 16–18**, will train beginning users on the SWAT model using ArcGIS-SWAT (ArcSWAT) interface. Cost for the three-day training is $500 per person or $300 for students.

"Advanced SWAT," **July 19–20**, will cover sensitivity analysis, model calibration and uncertainty analysis using the 2003 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 or $300 for students. For an additional $100 per person, there will be a one-on-one project support session with the instructor.

"Remote Sensing," **August 7–9**, will train beginning users on the Leica ERDAS Imagine 8.7 software. Cost for the three-day training is $500 per person or $300 for students.

To register or for more information, visit the lab website.

New Mexico Water Research Symposium set

The New Mexico Water Resources Research Institute is accepting abstracts for its 2007 New Mexico Water Research Symposium, scheduled for August 14 in Socorro, New Mexico. The deadline for submitting abstracts for posters or presentations is July 6.

Abstracts related to any water research and management topics will be considered and must be submitted online via the New Mexico Water Resources Research Institute's homepage.

The symposium will cover a variety of topics such as water and wastewater treatment and reuse, erosion and sediment control and reservoir evaporation. The symposium will be held at the Macey Center at New Mexico Tech University. Registration deadline is August 3, and the registration fee is $20. The registration fee will be waived for presenting students.

For more information, go to the WRRI website.

Nonpoint Source Monitoring Workshop scheduled in Austin

The Texas Commission on Environmental Quality and Texas State University's River Systems Institute are sponsoring the 15th National NPS Monitoring Workshop **August 26–30** at the Driskill Hotel in Austin. The workshop will focus on national as well as local and regional water monitoring conditions.

The theme for the workshop is "Monitoring for Decision Making," and will include seminars on NPS pollution and karst aquifers, detecting change in water quality from BMP implementation, modeling applications for NPS pollution and control strategies, integrating social indicators monitoring with environmental monitoring, nonpoint source pollution, TMDLs and river restoration projects.

Desalination Workshop will present latest technologies

A hands-on workshop exploring the technologies of desalination is set for **August 5-7**, in College Station. "Water Desalination: Water and Wastewater Issues and Technologies" is sponsored by Texas A&M University, the Global Petroleum Research Institute, the Separation Sciences Program, Texas Water Resources Institute and the Food Protein R&D Center.

The workshop presenters will cover water and wastewater topics including pretreatment equipment, filtration technologies, economics, case studies, cleaning and sanitizing systems and post-treatment technologies. Desalination equipment will be demonstrated to familiarize attendees with the practical aspects of membrane desalination. Lectures will be complimented by several daily pilot plant demonstrations at the Separation Sciences Laboratory on the Texas A&M campus.

Texas Water Development Board's director of special projects, **Jorge Arroyo**, will speak about TWDB's desalination program.

The registration fee is $595 before July 28, and $650 after July 28.

To register or for more information, please visit www.tamu.edu/separations.

New Publications/ Papers

"Watershed Protection Plan Development for the Pecos River"
W. Belzer and **C. Hart**, TWRI publication TR-302
To identify potential salinity sources, it is necessary to locate and characterize potential impacts of perennial and intermittent tributaries into the Pecos River. A study to determine water quantity, quality and point of impacts from sources outside of the main stem was conducted in 2005. The first phase involved analyzing maps to determine potential tributary locations and to locate sampling points based on accessibility. The second phase was to acquire water and sediment samples, determine flow volume and submit samples for laboratory analysis. In the case of dry streambeds that could potentially carry water during storm events, sediment samples were collected for laboratory analysis. This report summarizes the sample collection efforts and analysis of data collected from tributaries.

"Economic and Financial Costs of Saving Water and Energy: Preliminary Analysis for Hidalgo County Irrigation District No. 2"
A. Sturdivant, M. Rister and **R. Lacewell**, TWRI publication TR-303
Initial construction costs and net annual changes in operating and maintenance expenses are identified for a three-component capital renovation project proposed by Hidalgo County Irrigation District No. 2. The proposed project primarily consists of replacing aged mortar-joint pipe in pipeline units I-7A, I-18, and I-22 with new rubber-gasketed, reinforced concrete pipe. Both nominal and real estimates of water and energy savings and expected economic and financial costs of those savings are identified throughout the anticipated useful life for the proposed project. Sensitivity results for the cost of saving water are presented for several important parameters.

"Homeland Security Challenges Facing Small Water Systems in Texas"
Monty Dozier, Gene L. Theodori and **Ricard Jensen**, Texas Cooperative Extension publication E-451
This fact sheet describes Homeland Security issues that affect Texas and the nation. It includes an overview of some of the key water resource issues associated with preventing intentional contamination of water supplies served by small water systems.

"Rainwater Harvesting: Livestock"
Billy Kniffen, Texas Cooperative Extension publication E-450
Providing enough water can be a problem when grazing livestock on rangeland. This publication identifies sources of water that are the least expensive. Authors explain how rainwater capture is done and give specific examples on how to determine the amount that you need.

"**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 or call 979.845.1862 and include your contact information. All submissions may be edited for grammar and style.

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