



Texas Water Resources Institute's E-Newsletter

Breaking news about water resources research and education at Texas universities

March 2, 2009

Harris named acting director

Dr. B.L. Harris has been named acting director of the [Texas Water Resources Institute](#).

Texas AgriLife Research Interim Director **Dr. William A. Dugas** and Texas AgriLife Extension Service Director **Dr. Ed Smith** announced the appointment, effective Feb. 1.

Harris replaces former director **Dr. C. Allan Jones**, who took a faculty position at the [Texas AgriLife Research and Extension Urban Solutions Center at Dallas](#).

Harris joined the institute in 2001 as associate director and project director for the Efficient Irrigation for Water Conservation in the Rio Grande Basin project, also known as the Rio Grande Basin Initiative. This joint federal project with New Mexico State University is implementing strategies for meeting present and future water demand in the Rio Grande Basin by expanding the efficient use of available water and creating new water supplies.

Under Harris' leadership, the Rio Grande Basin Initiative has won numerous awards recognizing its outstanding research and education activities. In 2008, the project won the Texas Environmental Excellence Award in the agriculture category. This award, the state's highest environmental honor, is presented annually by the Governor's Office and Texas Commission on Environmental Quality.

The Rio Grande project received the Outstanding Integrated Activities for Water Resources Award from the U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service National Water Program in 2007. The project was also awarded Vice Chancellor's Awards in Excellence in two categories in previous years.

Harris holds the position of professor in Texas A&M's Soil and Crop Sciences Department, having been a faculty member since 1974.

Prior to joining the water institute, Harris was associate director for agriculture and natural resources for Texas AgriLife Extension Service (then Texas Agricultural Extension Service) and associate director for Texas AgriLife Research (then Texas Agricultural Experiment Station).

Harris earned his bachelor's degree in agronomy and his master's degree in soil sciences from Texas Tech University, followed by his doctorate in soil mineralogy from Oregon State University.

Harris received the Epsilon Sigma Phi Retiree Service award in 2007, the Texas Tech University Distinguished Alumnus Award in 2003, along with numerous other individual awards.

Wagner named associate director of TWRI

Kevin Wagner has been named associate director of Texas Water Resources Institute (TWRI) by **Dr. B. L. Harris**, acting TWRI director.

Wagner has 15 years experience in watershed assessment and planning, project implementation, and program management. He has served as a project manager for TWRI since 2005 where he has planned, developed and implemented water-related research and education projects. He has managed and helped develop a watershed planning education program and served as the institute's quality assurance officer.

Prior to joining TWRI, Wagner served as nonpoint source team leader and assistant director of programs for the Texas State Soil and Water Conservation Board (TSSWCB). In these positions, he oversaw the board's Water Quality Management Plan Program, Texas Brush Control Program, and the Statewide Nonpoint Source Management Program as well as the Coastal Management, Total Maximum Daily Load, and Watershed Protection Programs.

Wagner received his bachelor's degree in biology from Howard Payne University and his master's in environmental sciences from Oklahoma State University. He is currently working on his doctorate in agronomy from Texas A&M University.

Winemiller honored with Regents, Bush awards

Dr. Kirk O. Winemiller was honored with the 2008 Regents Professor Award at the Texas A&M AgriLife conference, held in College Station in January. He is also the recipient of the Bush Excellence Award for Faculty in International Teaching.

Since 1996, the Texas A&M System Board of Regents has bestowed its regent award to honor faculty members who have made exemplary contributions to their university, agency or health science center and to the people of Texas.

The 2008 Regents Professor Award praised Winemiller as a highly productive and internationally known ecologist recognized for his scientific expertise in biodiversity conservation and management of water resources in Texas and other regions of the world.

The Bush Excellence Awards were established through the support of President and Mrs. George H. W. Bush with financial assistance from the George Bush Presidential Library Foundation.

Visit [AgNews](#) to read the complete story.

McFarland receives Regents Fellow Service Award

Dr. Mark Lee McFarland of the Department of Soil and Crops Sciences was recognized as a 2008 Regents Fellow Service Award for his work as state soil fertility specialist and state water quality coordinator. McFarland has conducted more than 250 field-applied research projects and delivered more than 520 education programs to Texas agricultural producers and land managers. Since 2000, he has coordinated the Southern Region Water Quality Program, a multi-university collaboration. His award was conferred during the December meeting of the Texas A&M System Board of Regents.

A&M students receive environmental grant

By Caitlin Churchill

Saving the planet starts at home, at least for one group of Texas A&M students who recently received an Environmental Protection Agency (EPA) grant and with it plan to improve hydrologic sustainability for the A&M campus in College Station.

The \$10,000 grant is part of the [EPA's People, Prosperity, and the Planet program \(P3\)](#), which focuses on sustainable energy solutions. The grant money provides funding for 12 A&M student researchers to travel to Washington D.C. and present their research to compete in the [EPA's Fifth Annual National Sustainable Design Expo](#) held April 18-20 on the National Mall.

EPA will have over 40 P3 teams and over 40 nonprofit and government exhibitors demonstrating their sustainable designs for alternative energy sources, agricultural applications, green chemistry, green buildings, sustainable water use, and many more sustainable technologies.

The student researchers who hope to better capture and understand the impacts of urbanization on water quality include Civil Engineering majors **Andrea Ryan, Hillary Holmes, Neetha Ravikumar, Marcio Giacomoni, Michelle Hollingswoth, Chandana Damodaram, William Saour, and Philip Bullock**; Computer Science major **Meg Davis**; Water Management and Hydrologic Sciences majors **Prakash Khedun and Allen Berthold**; and Ecosystem Science and Management major **Ross Klein**.

"The objective of this research is to better quantify and increase awareness of storm water runoff impacts to increase the hydrologic sustainability of the Texas A&M University campus," said **Dr. Emily Zechman**, assistant professor in the Zachry Department of Civil Engineering and supporting faculty for the P3 program research. "This scenario provides an ideal laboratory for students to participate in applying their skills to a local problem and to contribute solutions and improvements on their campus."

Zechman said the group is undertaking several tasks. Among the tasks are developing wireless sensor technology to collect rainfall-runoff data, evaluating water quality and the health of channel and riparian ecosystems, and developing new sustainability metrics for evaluating the relationship between increased impervious areas and the impact on downstream communities.

"This research will lead to a new metric to quantify the impact of development on stream hydrology and ecosystems that can ultimately be used in planning new land development projects," Zechman said. "We also want to demonstrate that decentralized stormwater management devices, such as pervious pavement, rainwater harvesting, and green roofs, can be strategically designed for a sustainable flow regime, or instream flow conditions that mimic predevelopment conditions."

Zechman said it is her hope that through the P3 project, students will become aware of the impact of urbanization and development on water resources quality and quantity.

Other supporting Texas A&M faculty for the P3 program include **Dr. Bryan Boulanger**, assistant professor in the Zachry Department of Civil Engineering, **Dr. Georgianne Moore**, assistant professor in the Department of Ecosystem Science and Management, and **Dr. Radu Stoleru**, assistant professor in the Department of Computer Science and Engineering. Additional financial support was received through the Texas A&M Physical Plant, and the Zachry Department of Civil Engineering supported this program by lending hydrologic equipment.

EPA awards P3 grants every year to researchers whose work is benefiting people, promoting prosperity, and protecting the planet by addressing challenges to sustainability in both the developed and developing world.

To learn more about the P3 program, Texas A&M's P3 research, or other grant winners and their projects, visit <http://es.epa.gov/ncer/p3/current/index.html>.

Irrigation Training Program successful

More than 500 participants attended 6 training events over the last 12 months as part of the Irrigation Training Program, a multi-agency project designed to help farmers and others learn about efficient tools and techniques of irrigation management to enhance water conservation.

"We successfully completed these training events and accomplished our goals of providing a cohesive program of region-specific irrigation information," said Cecilia Wagner, project manager of Texas Water Resources Institute (TWRI).

The program was a collaborative effort of TWRI, Texas AgriLife Extension Service, Texas State Soil and Water Conservation Board and USDA's Natural Resources Conservation Service. The [Texas Water Development Board](#) funded the project through its [Agricultural Water Conservation Grant](#) program.

Along with hearing experts on various aspects of irrigation practices, cropping systems, policy updates and cost-share programs available to local producers, participants received a region-specific manual of AgriLife Extension and related agencies' educational materials on such topics as determining crop water needs, using climate data for irrigation scheduling, and improving on-farm water management. The manuals are available at online at <http://twri.tamu.edu/education.php>.

Training events were held in Chillicothe, Lubbock, Mercedes, Sinton, Hondo, and Amarillo.

TWRI grant recipient studies the aquatic hazard of ionizable compounds

By Caitlin Churchill

Theodore Valenti, now earning his Ph.D. from Baylor University's Interdisciplinary Graduate Degree Program in Ecological, Earth, and Environmental Science, recently worked with his advising professor **Dr. Bryan Brooks** to determine how variability among water quality parameters of the Brazos River basin influence aquatic risk of ionizable compounds.

Valenti is a recipient of a 2007-08 Texas Water Resources Institute (TWRI) research grant. With the \$5,000 research grant, Valenti first gathered historical and current water quality data for spatial comparison among the different regions of the 42,000 square mile Brazos River Basin. Valenti then determined if site-specific water quality criteria were affected by ionizable compounds, such as pharmaceutical and personal care products, pesticides, fertilizers, ammonia, and other chemicals associated with urban development.

His interest in studying how ionization states may influence risk assessment was triggered during a toxicology class. "The distribution of drugs in the body is sometimes influenced by varying pH of different body components," he said. "This knowledge caused me to wonder whether differences in the pH of freshwater receiving systems may alter the behavior, and ultimately the risk posed to biota from exposure."

Valenti said what people put down the drain may very well make it into a river. "Sewage treatment facilities do an excellent job removing nutrients and pathogens, yet are not purposely designed to remove many organic contaminants. Advances in analytical techniques have allowed researchers to detect trace levels of various man-made contaminants in the environment, such as pharmaceutical and pesticides."

Though the presence of an ionizable compound may not result in risk, high concentrations may threaten human and ecosystem health, he said.

According to Valenti's final report, continued population growth and urbanization will likely increase the release of ionizable compounds into waterways. "It is important that best management approaches are developed at the watershed scale to decrease water quality degradation by ionizable compounds," he wrote in his report.

"A major accomplishment achieved with this research project was spurring interest from members of the scientific community," Valenti said. Besides preparing his project's results for publication, he has presented his findings at several scientific conferences, including the [American Water Resource Association's](#) 2007 summer conferences and the 2008 American Chemistry Meeting.

After Valenti completes his doctorate, he plans to remain active in research as a professor. "I hope to continue to research topics that will minimize and ameliorate damages to freshwater systems due to human activities," he said.

Research conducted by Valenti was funded by TWRI using monetary means obtained 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 Valenti's research, visit the TWRI [USGS Research Grants](#) Web page.

TWRI completes New Technologies for Animal Waste Pollution Control project

Texas Water Resources Institute (TWRI) has recently completed the [New Technologies for Animal Waste Pollution Control](#) project, which identified, evaluated, and field-tested technologies for reducing nutrient levels in wastes from concentrated animal feeding operations and other sources.

Associate Professor of Biological and Agricultural Engineering and Extension Specialist **Dr. Saqib Mukhtar** said the project was an important avenue for technology providers to have their waste treatment systems evaluated on large-scale dairies for an extended time.

"All technologies tested had some positive impact on removing several pollutants from dairy lagoon effluent, but most technologies did not have an efficient, economically viable, and comprehensive solution to reducing soluble phosphorous from the treated effluent," he said.

"The project demonstrated that just because a technology performs very well to treat a few gallons of liquid manure does not guarantee the same results when it treats millions of gallons of manure," Mukhtar said.

Over the last four years of the program, TWRI has published three fact sheets, five final demonstration reports and 19 quarterly reports pertaining to the New Technologies project.

Now that the project is complete, resulting information will be communicated to dairy managers and other stakeholders. "The most beneficial information discovered through this project was the performance data and cost information for each respective technology," said TWRI Project Manager **Lucas Gregory**. "This data will enable individual producers to make informed decisions regarding the use and cost of implementing a specific technology on their farm. "

Collaborators for the program include TWRI, Texas AgriLife Extension Service, [Brazos River Authority](#), [Texas Commission on Environmental Quality](#), [Texas Farm Bureau](#), and [USDA Natural Resources](#)

[Conservation Service](#). Funding was provided by the Texas State Soil and Water Conservation Board and U.S. Environmental Protection Agency.

[Click here](#) for more information on the Animal Waste Pollution Control program, or visit <http://twri.tamu.edu/programs.php> for a complete list of TWRI programs.

Texas Water Development Board selects Deputy Executive Administrator

[Texas Water Development Board](#) (TWDB) Executive Administrator **Kevin Ward** announced that **Dr. Robert Mace** has assumed the roll of deputy executive administrator for Water Science and Conservation, a TWDB program that includes surface water resources, groundwater resources, conservation, and innovative technologies.

Mace replaces **William F. Mullican III**, who is retiring in March to pursue new opportunities in the water resources field.

Mace joined the TWDB in 1999 to lead the Groundwater Availability Modeling Program. During his time with the board, he has progressed from a unit leader to division director for groundwater resources. Mace has published more than 200 articles, reports, papers, and abstracts, and given over 150 presentations thus far in the span of his career.

Texas AgriLife helps district evaluate water conservation

The [North Plains Groundwater Conservation District](#) is facing some critical water supply issues and has asked Texas AgriLife Extension Service to aid in a study about potential water conservation policies for the district.

"Dallam, Hartley, Sherman, and Moore counties, which lie in the western portion of the district, are currently projected to fall short of having 50 percent of their groundwater remaining in 50 years," said **Steven Walthour**, the North Plains Groundwater Conservation District general manager.

"The board of directors know that decisions to manage the district's groundwater may have profound effects on farming practices of the area and the overall economy of the area," Walthour said. "Texas AgriLife Extension has the expertise to conduct a socio-economic impact study to determine the effects of different groundwater management strategies that might be considered for implementation."

Texas AgriLife Extension economist in [Amarillo](#), **Dr. Stephen Amosson**, will lead the study with a goal to develop and update economic optimization and socio-economic models for each of the eight counties in the district.

Results of the study will provide insight into changes in producer income and saturated thickness of the aquifer as well as impacts from each conservation strategy evaluated on regional economic activity, income, and employment, Walthour said. The information gleaned from the study will aid the district's board as it manages the groundwater within the district in the future, he said.

The study is sponsored by the groundwater conservation district, [Texas Corn Producers Board](#), [Texas Farm Bureau](#), [Texas Cattle Feeders Association](#), and [Texas Association of Dairymen](#).

Managing water resources in a changing climate

In a report last year, the [Intergovernmental Panel on Climate Change](#) (IPCC) provided estimates of how climate may change in the coming decades and how changes in temperature and precipitation may change hydrologic conditions.

The [U.S. Geological Survey](#) (USGS), in collaboration with the [U.S. Army Corps of Engineers, Bureau of Reclamation](#), and [National Oceanic and Atmospheric Administration](#), has followed up with their own study.

This USGS conclusive report, titled "[Climate Change and Water Resources Management: A Federal Perspective](#)," explores strategies to improve water management by tracking, anticipating, and responding to climate change. The report describes the existing science and future science needed to address the many impacts of climate change on water resources management.

Water managers can use this report to support their efforts to provide water to communities and farms, generate power for cities, sustain ecological systems, and protect lives and homes from floods.

The USGS report is co-authored by **Levi Brekke, Julie Kiang, J. Rolf Olsen, Roger Pulwarty, David Raff, D. Phil Turnipseed, Robert Webb, and Kathleen White.**

View the USGS report at <http://pubs.usgs.gov/circ/1331/>.

TWRI Water Resources Training Courses

Modeling of Water Distribution Systems using EPANet	Mar. 16-18, 2009
Floodplain Delineation using GIS	Apr. 28-30, 2009
APEX	May 12-13, 2009

New Publications/ Papers

[Field Demonstration of the Performance of an Electrocoagulation System to Reduce Phosphorus and Other Substances from Dairy Lagoon Effluent](#), **S. Mukhtar, K. Wagner, L. Gregory**, Texas Water Resources Institute Report TR-346, 2009

Two upper North Bosque River segments were designated as impaired in 1998 due to point source and nonpoint source (NPS) pollution of phosphorus (P) to these segments in the watershed. As a result, two Total Maximum Daily Loads (TMDLs) were applied which called for the reduction of annual loading and annual average soluble reactive P (SRP) concentrations by an average of 50%. This demonstration was conducted to evaluate the efficacy of a prospective new technology, an Electrocoagulation (EC) system, to potentially aid dairy farmers in meeting goals set by TMDLs.

[Field Demonstration of the Performance of a Geotube® Dewatering System to Reduce Phosphorus and Other Substances from Dairy Lagoon Effluent](#), **S. Mukhtar, K. Wagner, L. Gregory**, Texas Water Resources Institute Report TR-345, 2009

This demonstration was conducted to evaluate the efficacy of a prospective new technology, the Geotube® dewatering system that may aid dairy farmers in reducing P from lagoon effluent to be applied to waste application fields and thus reducing NPS pollution.

Field Demonstration of the Performance of the L4DB® Microbial Treatment System to Reduce Phosphorus and Other Substances from Dairy Lagoon Effluent, S. Mukhtar, S. Rahman, L. Gregory, Texas Water Resources Institute Report TR-344, 2009

The efficacy of a prospective new technology (i.e.L4DB® microbial treatment system) was evaluated, which may aid dairy farmers in reducing P from lagoon effluent. In many cases, this effluent is applied to waste application fields (WAFs) as irrigation water; thus reducing P in the effluent can have a direct impact on NPS pollution in the watershed.

Cycling of Geotube® Solids from Dairy Lagoons Through Turfgrass Sod, R. Schnell, M. Tahboub, D. Vietor, C. Munster, T. Provin, S. Mukhtar, Texas Water Resources Institute Report TR-343, 2009

Although polyacrylamide is designated as a non-toxic additive by USDA, its building block, acrylamide, is a potential nerve toxin in humans and causes birth defects and cancer in animals. A concentration limit of 500 ppm acrylamide in polyacrylamide preparations has been established for water treatment applications.

Field Demonstration of the Performance of Wastewater Treatment Solution (WTS®) to Reduce Phosphorus and other Substances from Dairy Lagoon Effluent, S. Mukhtar, S. Rahman, L. Gregory, Texas Water Resources Institute Report TR-342, 2009

As part of this demonstration, the efficacy of a prospective new technology (i.e. wastewater treatment solution, WTS®) was evaluated, which may assist dairy farmers in reducing P from lagoon effluent.

Measuring Seepage Losses from Canals Using the Ponding Test Method, E. Leigh, G. Fipps, Texas Agrilife Extension Service publication, B-6218

The ponding test method is an accurate way to measure seepage losses from irrigation canals. This publication provides complete details for using this method, including sections on preparing for the test, constructing the dam, selecting and installing equipment, measuring canal shapes, and calculating seepage losses from data collected.

"**New Waves**," an email newsletter of Texas Water Resources Institute, Texas A&M Agrilife, 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 kpwythe@ag.tamu.edu or call 979.845.1862 and include your contact information. All submissions may be edited for grammar and style.

If you have difficulty with any links or text, please visit the online New Waves E-letter at <http://twri.tamu.edu/newsletters.php>.

To subscribe, unsubscribe or manage your personal membership options to the "New Waves" mailing list visit <http://twri.tamu.edu/subscribe.php>.