



Edwards Aquifer Research and Data Center



Newsletter

Spring 2010

The Texas Legislature established the Edwards Aquifer Research and Data Center in 1979. EARDC's mission is to promote the study, understanding and use of the Edwards Aquifer.

EARDC Staff

Director.....Dr. Glenn Longley
Hydrogeology.....Raymond Slade, Jr.
.....Rene Barker
.....Stephen Porter
Education.....Lendon Gilpin
Lab Manager.....Joe Guerrero
Biomonitoring.....Victor Castillo III
Administrative Assistant.....Gail Crews
Research Associates.....Michelle Allison
.....Michelle Guardiola
.....Cynthia Jackson
.....Barbara Porter
Student Workers.....Laura Alanis
.....Claudia Luna
.....Tiffany Mauldin
.....Alicia Williford
.....Caitlin Wright
.....Victoria Ulrich

EARDC activities are organized around a Technical Services Center, an Education Center, a Research Center and a Data Center.

Agency Interns:

EARDC has a contract to supply interns to work year-around for the Texas Commission for Environmental Quality (TCEQ). TCEQ interns mainly work in the Division of Water Hygiene. Interns also work for Texas Parks and Wildlife Department (TPWD) and the U.S. Fish and

Wildlife Service (USFWS). These internships are an excellent opportunity for students to get real-world experience and for the agencies to look at possible future employees. For information about these programs contact Dr. Glenn Longley at <mailto:GL01@txstate.edu>.

Technical Services Center Activities:



EARDC analytical lab services.

The EARDC laboratory is NELAP (National Environmental Laboratory Accreditation Program) accredited by the Texas Commission on Environmental Quality to test both drinking water and non-potable water. NELAP is a national program in which state governmental agencies serve as accreditation bodies. According to the NELAC web site (<http://www.nelac-institute.org/index.php>):

“The NELAC Institute was created on November 6, 2006 when a giant step towards achieving a long-term goal of the environmental laboratory and monitoring communities to have a national accreditation program was realized. After years of an evolving program under the auspices of the National Environmental Laboratory Accreditation Conference (NELAC) and the Institute for National Environmental Laboratory Accreditation (INELA), the respective Board of Director’s took actions to form TNI.”

“The NELAC Institute (TNI) is a 501(c)(3) non-profit organization whose mission is to foster the generation of environmental data of known and documented quality through an open, inclusive, and transparent process that is responsive to the needs of the community. The organization is managed by a Board of Directors and is governed by organizational bylaws.”

“One of the ways that TNI fosters the generation of data of known and documented quality is through the National Environmental Laboratory Accreditation Program, or NELAP.”

“TNI membership includes over 600 scientists from throughout the environmental monitoring community, including both government and private sector participants. These individuals work in many environmental disciplines that include both sampling organizations (laboratories, consulting and engineering firms, local, state and federal contractors) and environmental laboratories (large and small commercial laboratories and local, state and federal government laboratories). The membership represents municipalities and local government entities, state agencies, and federal agencies, including the Centers for Disease Control, the Department of Defense, the US Geological Survey and the US Environmental Protection Agency.”



The NELAC Institute (TNI) logo.

The EARDC laboratory is equipped with basic water quality instrumentation and more advanced instrumentation such as Gas Chromatographs, Ion Chromatograph and Atomic Absorption Spectrophotometer with Graphite Furnace and Inductively Coupled Plasma. Furthermore, EARDC has a Nikon Optiphot-2 microscope equipped with an

Episcopic-Fluorescence attachment and associated attachments for detecting *Giardia* and *Cryptosporidium*.

The EARDC Laboratory operates under a stringent Quality Assurance Program that insures that data produced is scientifically sound, legally defensible and of known documentable and verifiable quality. The quality assurance system at EARDC stresses training and planning that yields increased personal performance and improved laboratory management.

Laboratory hours are Monday-Friday 8 a.m. – 5 p.m. Containers and sampling instructions can be provided upon request. Bacteriological samples are not accepted on Friday. Special arrangements can be made to submit samples on Friday or after hours, if necessary.

For a price list or more information about laboratory services, contact Joe Guerrero at (512) 245-3545 or e-mail <mailto:JG13@txstate.edu>

EARDC offers on site composite or sequential sampling services, plus sampling for the Industrial Pretreatment Programs. EARDC has both refrigerated and portable ISCO Model 6712 samplers that are used.

For information about sampling services, contact Victor Castillo at (512) 245-3546 or e-mail <mailto:VC05@txstate.edu>.

Education Center Activities:

Aquatic Sciences Adventure Camp –

Eight week-long and two 2-day camp sessions were held during the summer of 2009. The camps were attended by 212 students and 33 teachers. The 29 teachers who attended the week-long sessions received 20 hours of Continuing Professional Education (CPE) and 20 hours of Texas Environmental education

Advisory Committee (TEEAC) credit and 6 hours of Differentiated Curriculum plus 20 hours of Biology and Chemistry credit from the Texas Association for the Gifted and Talented. The 4 teachers who attended the 2-day sessions received 16 hours of credit.

The camp provides students aged 9–15 the opportunity to learn about aquatic biology and water chemistry in a university atmosphere while also enjoying various water-oriented recreational activities. Information about the summer camp program can be found on the camp website, <http://www.eardc.txstate.edu/camp.html>.



Campers trying out scuba in the training pool.



Campers feeding the sea lions at Sea World.

We would like to thank The Edwards Aquifer Authority, Guadalupe-Blanco River Authority and the Barton Springs/Edwards Aquifer Conservation District for providing scholarships for some of our campers this past year.

Aquatic studies field days-

“Dear Mr. Gilpin,

Thank you so much for everything you exposed our students to at Aquatic Day...! It was awesome! They were so excited about sharing what they encountered in the creek!” – Teacher participant

During the past year, 800 students and 86 teachers from 33 school classes attended aquatic studies field days. The field day program gives students an opportunity to collect living aquatic organisms from a creek on the Texas State campus and observe them under a microscope. Students also learn about the Edwards Aquifer and its biota, collect organisms from a flowing artesian well and view San Marcos Springs from a glass-bottom boat at Aquarena Center. The field day website can be found at <http://www.eardc.txstate.edu/aquaticfielddays.html>.

For information about the Aquatic Sciences Adventure Camp or to schedule a field day, contact the education center at (512) 245-3541 or e-mail <mailto:LG16@txstate.edu>.



Students on a field day collecting aquatic invertebrates in Sessom Creek on the Texas State University campus.

Other education center activities during the past year included partnering with the Edwards Aquifer Authority and the Texas State University River Systems Institute to host an “Explore the Edwards Aquifer” teacher workshop at Texas State University’s Aquarena Center attended by 22 area educators; presenting a class on aquatic invertebrate identification at the San Antonio Water System’s Student Water Action Team (SWAT) kick-off rally at Stevens High School in San Antonio; presenting a class on aquatic invertebrates at the Make-A-Splash Home School Water Festival at Eisenhower Park in San Antonio (sponsored by the Edwards Aquifer Authority, San Antonio River Authority and San Antonio Water System); and giving presentations to sixty students from six local elementary school classes at Aquarena Center’s annual Groundwater Festival.

Research Center/Data Center Activities:

During early 2009, the majority of work by staff hydrogeologists Stephen Porter, Rene Barker, and Raymond Slade at the Edwards Aquifer Research & Data Center (EARDC) was focused on the Center’s cooperative studies with the Southern Plains Network (SOPN) and the Chihuahuan Desert Network (CHDN) of the National Park Service (NPS). Key objectives of these collaborative efforts were to advance the understanding of temporal trends in the water quality of streams and lakes in addition to groundwater levels in SOPN and CHDN park units. Primary accomplishments of this association during 2009 included: (1) completion of a statistical trends report entitled “Historical Perspective of Surface Water and Groundwater Resources in the Chihuahuan Desert Network, National Park Service,” by Porter and others (2009); (2) assistance to CHDN with the reviewing, editing, and revising specific sections of the Network’s Vital Signs Monitoring Plan (Reiser and others, 2009); and (3) review of representative NPS Vital Signs Monitoring Plans plus Federal and State protocols for monitoring approaches applicable for assessing long-term trends relative to water quantity, water quality, and macroinvertebrate vital-sign indicators.

The “Historical Perspective” report for CHDN describes long-term trends of water quantity (100+

years) and quality (30+ years) in the Rio Grande between Presidio and Del Rio, Texas, and surface and groundwater conditions in Big Bend National Park, Rio Grande Wild & Scenic River, Amistad National Recreational Area, Guadalupe Mountains and Carlsbad Caverns National Parks, Fort Davis National Historic Site, and White Sands National Monument. This comprehensive report updated an earlier (April 2008) compilation by EARDC hydrogeologists entitled “Progress Statement on Historical Data Summaries and Preliminary Trend Analysis.”

At CHDN’s request, Stephen attended a Rio Grande Basin conference held at Sul Ross State University in Alpine, Texas during November 2008. Following this conference, Stephen submitted a proposal to study benthic algae conditions and processes in the Rio Grande and selected riparian springs along Big Bend National Park and the Rio Grande Wild and Scenic River segment. The fate of work resulting from this proposal is pending as of early 2010.

As during past years, Stephen, Rene, and Raymond continued to maintain close relations and active dialog with several local, county, state, and federal water agencies including the Hays Trinity Groundwater Conservation District (HTGCD), Texas Parks & Wildlife, Barton Springs Edwards Aquifer Groundwater Conservation District, Texas Water Development Board, Wimberley Valley Association, Hill Country Alliance, as well as the Austin- and San Antonio-based offices of the U.S. Geological Survey.

To help the local Groundwater Conservation District better understand and more effectively manage the area’s water resources, Raymond has advised District personnel on the subjects of spatial and temporal variations in rainfall, flood-water runoff, groundwater-surface water interaction, aquifer recharge and the likely impact of a proposed wastewater discharge site near the upgradient margin of the environmentally sensitive Edwards aquifer recharge zone. Rene’s hydrogeologic input contributed toward the documentation of potentiometric conditions in the local Trinity aquifer, as well as the evaluation of rainfall distributions across western Hays County and the review of aquifer-test results and groundwater availability assessments required of applicants for new

groundwater development. During early 2009, Raymond and Rene participated as members of an expert panel convened by the Hays County Commissioner's court to evaluate proposed regulation on new groundwater development, wherein the primary topic of discussion involved lot sizing based on groundwater availability.

During 2009, Stephen, Raymond, and Rene assisted with research- and thesis-related endeavors of several Texas State graduate students, environmental groups, and local citizens including Jaimie Maher, Justin Kirk, David Baker (Executive Director Wimberley Valley Watershed Association), Eric Mendelman (Texas Watch), Nicholas Lochman (Texas Stream Team). Collaborative associations were also maintained with several Texas State professors, including Dr. Alberto Giordano, Dr. Vincent Lopes, Dr. Walter Rast, and Dr. Alan Groeger.

Together with Dr. Longley, Rene participated as a member of the Edwards Aquifer Area Expert Science Subcommittee of the Edwards Aquifer Recovery Implementation Program—a collaborative, consensus-based stakeholder process with the specific purpose of formulating guidelines to protect endangered species associated with the Edwards Aquifer while managing the aquifer for the benefit of all citizens. To aid with the effective management of the local Trinity Aquifer, Raymond and Rene contributed as members of an expert panel assembled by the Hays County Commissioner's Court to evaluate appropriate lot sizes associated with proposed regulations for new real estate development.

Cited Reports

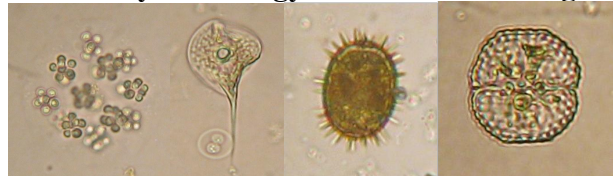
Porter, S.D. and G. Longley, July 2009. Water Quality Issues and Trends in the Pecos River and Glorieta Creek, Pecos National Historical Park, National Park Service: 1994-2009: Edwards Aquifer Research & Data Center Report R2-09, Texas State University, San Marcos, Texas, 21 p.

Porter, S.D., R.A. Barker, R.M. Slade, Jr., and G. Longley, 2009. Historical perspective of surface water and groundwater resources in the Chihuahuan Desert Network, National Park Service: Edwards Aquifer Research &

Data Center Report R1-09, Texas State University, San Marcos, Texas, 112 p.

Reiser, M. H., J. P. Ward, Jr., and J. T. Richie. 2009. Chihuahuan Desert Network Vital Signs Monitoring Plan: Draft Phase III. National Park Service, Chihuahuan Desert Network, Las Cruces, NM.

Taxonomy & Ecology of Fresh Water Algae



Three short courses on the taxonomy and ecology of freshwater algae are being offered by the Edwards Aquifer Research & Data Center during 2010. These sessions provide an introduction and overview of common algal genera and species in Texas streams, rivers, and lakes. The first course session (Part 1) covers algae exclusive of diatoms (“soft algae”); the second session (Part 2) features diatoms; and the third session (Part 3) covers algal ecology. Water-quality indicative properties of algal species will be emphasized. The short courses are designed for people with little or no experience with algal taxonomy, as well as those who want to improve their taxonomic or analysis skills. All short courses will be held at the Freeman Aquatic Biology Building at Texas State University. The cost for each session will be \$200 per person. Please contact the instructor (Stephen Porter; sp31@txstate.edu; 512-245-6176), the EARDC web page, or the laboratory (512-245-2329) for additional information about the courses, dates, and registration process.

To contact EARDC:

Phone (512) 245-2329

FAX (512) 245-2669

Website: <http://www.eardc.txstate.edu/>