



Southeastern Regional Small Public Water
Systems Technical Assistance Center

SE-TAG Five-Year Report 2000-2005

Executive Summary

This report documents SE-TAC's activities and accomplishments in its first five years, since its creation on September 1, 2000. It also corresponds with the close out of SE-TAC's initial five year Environmental Protection Agency (EPA) grant and consequently all of SE-TAC's subprojects awarded under the initial grant. The basic need to assist the region's small (10,000 or fewer customers) and smallest (3,400 or fewer customers) public water systems in developing financial, managerial and technical capacity has remained a constant priority throughout this period. Events have greatly expanded the reach of capacity development to encompass elements of system security or preparedness from intentional acts of terror and/or vandalism or natural disasters; source water protection; infrastructure maintenance; and regulatory compliance. Likewise there has been a dramatic and growing emphasis to document and measure project outcomes opposed to simple outputs. Agencies and grant recipients alike are constantly looking for new and better ways to fully and accurately document the short and long term benefits of their activities. This report helps document SE-TAC's contribution to resolving the issues faced by the region's small public water systems. The longstanding and active participation of SE-TAC's external Advisory Board and the ability to significantly leverage SE-TAC funding with cost-share are two broad indicators of the program's value to the region.

In 2000, SE-TAC's broad regional focus and reliance on a diverse multi-state, external Advisory Board was fairly unique among the seven other EPA supported, university-based small public water system Technical Assistance Centers (TACs). However, the original members of SE-TAC's Advisory Board had a shared vision that SE-TAC's activities should directly benefit the region's small public water systems. SE-TAC's main focus has been and remains to conduct an annual, regional competitive grants program. This approach has allowed SE-TAC to support

a wide range of projects and enabled technical assistance providers to try innovative methods to develop new, targeted educational and training materials; more effectively deliver training and technical support; and purchase equipment to provide additional training or services. Initially, with the Board's approval, SE-TAC funded a series of small, non-competitive sub-awards to Water Resources Research Institutes in states represented on the Advisory Board. After two years, we abandoned this activity despite some stellar projects. However, universities across the region are strongly urged to participate in SE-TAC's competitive grant program and several university projects have successfully competed. Despite the range of projects that SE-TAC supported, they are all under the capacity development umbrella and directly benefit the region's small public water systems.

SE-TAC has undergone some significant changes in its first five years. The early years were a learning experience for everyone involved with SE-TAC. However, thanks in a large part to the continuous dedication and active support of the SE-TAC's Advisory Board, we are providing an ever increasing benefit to a growing number of small public water systems throughout the region. Please contact us if you would like more information on our activities, copies of any of the publications mentioned in this report, or to be added to the distribution list for our annual Request for Proposals (RFP).



For more information on SE-TAC and other technical assistance center programs, visit the EPA Technical Assistance Center Network Web site <http://water.montana.edu/tacnet>

SE-TAC Funding Summary

Competitive Projects Funding Period	Number of Proposals	Proposals Funded	SE-TAC funding	Cost Share	Total
2000-2002	12	7	\$200,000	\$440,200	\$640,200
2001-2003	14	9	\$280,000	\$264,752	\$544,752
2002-2004	15	6	\$230,000	\$162,392	\$392,392
2003-2005	12	7	\$280,481	\$225,018	\$505,499
TOTAL	53	29	\$990,481	\$1,092,362	\$2,082,843
Non-Competitive Projects 2000-2004		12	\$157,500	\$49,105	\$206,605



5 years at a glance

97 small water systems received technical assistance

over \$3 million in water savings

64 training sessions

2,368 water system personnel trained

24 publications

Numbers reflect only reported activities

SE-TAC Funding by award year

SUB-RECEIPIENT	SE-TAC	MATCH	TOTAL
2000-2002 Project Funding			
Alabama Rural Water Association	\$43,290	\$30,000	\$73,290
Florida Rural Water Association	\$25,000	\$90,000	\$115,000
Mississippi Rural Water Association	\$14,370	\$5,100	\$19,470
North Carolina Rural Economic Development Center	\$28,704	\$186,296	\$215,000
Southeastern Rural Community Assistance Project	\$42,665	\$43,533	\$86,198
Texas Rural Water Association	\$35,000	\$74,300	\$109,300
Western Piedmont Community College	\$10,971	\$10,971	\$21,942
TOTAL	\$200,000	\$440,200	\$640,200

2001-2003 Project Funding			
Alabama Rural Water Association	\$37,145	\$15,275	\$52,420
Florida Rural Water Association	\$80,488	\$96,000	\$176,488
Mississippi Rural Water Association	\$17,367	\$6,946	\$24,313
Mississippi Water & Pollution Control Operators Association	\$45,000	\$5,000	\$50,000
Tennessee Association of Utility Districts	\$50,000	\$83,220	\$133,220
Texas Rural Water Association	\$50,000	\$58,311	\$108,311
TOTAL	\$280,000	\$264,752	\$544,752

2002-2004 Project Funding			
Alabama Rural Water Association	\$50,000	\$22,420	\$72,420
Mississippi Rural Water Association	\$50,950	\$36,512	\$87,462
Tennessee Association of Utility Districts	\$82,947	\$75,209	\$158,156
Texas Rural Water Association	\$46,103	\$28,251	\$74,354
TOTAL	\$230,000	\$162,392	\$392,392

2003-2005 Project Funding			
Alabama Rural Water Association	\$50,000	\$18,920	\$68,920
Florida Rural Water Association	\$50,000	\$80,000	\$130,000
Mississippi Rural Water Association	\$14,693	\$66,194	\$80,887
Mississippi State University Extension Service	\$74,105		\$74,105
The University of North Carolina	\$46,075	\$11,440	\$57,515
Tennessee Association of Utility Districts	\$45,608	\$48,464	\$94,072
TOTAL	\$280,481	\$225,018	\$505,499

SE-TAC Advisory board

SE-TAC works with a multi-state Advisory Board to help accomplish its goals in an eleven state region. Comprised of representatives from state drinking water primacy agencies, state rural water associations, and other technical assistance provider organizations, the SE-TAC Advisory Board is:

- A forum to annually refine and translate EPA's national small public water system priorities into SE-TAC's project priorities and provide guidance in developing the SE-TAC's regional Request for Proposals;
- A network to help broadly distribute the SE-TAC's RFP throughout the Southeast; and,
- A panel of on the ground experts to evaluate grant proposals based on their direct knowledge of the priority challenges facing the southeastern United States' small public water systems.

Representatives from Alabama, Louisiana, Mississippi, North Carolina, and Texas participate on the SE-TAC Advisory Board because the issues facing small public water systems in these states provide a cross section of common needs and priorities throughout the eleven-state region.

The 15-member advisory board has three voting members from each state, with each state's seats allocated as follows:

- One state rural water association or equivalent organization representative;
- One representative from the state's Department of Health or similar state agency with primacy or significant jurisdiction over safe drinking water programs; and,
- One technical assistance provider, (for example, a Rural Community Assistance Partnership, state section of the American Water Works Association, or similar organization active in assisting small community water systems in that state).



SE-TAC advisory board members represent state rural water associations, state agencies with primacy or significant jurisdiction over safe drinking water programs, and other technical assistance provider organizations throughout SE-TAC's 11-state region.

The regional competitive grants program is SE-TAC's main focus. Selected projects are intended to address regional small public water system priority issues identified by SE-TAC's Advisory Board. Organizations represented on the Advisory Board may submit proposals in response to the RFP. Board members may not evaluate their own proposals nor proposals from other organizations within their state.

In its first three funding cycles, SE-TAC worked closely with the Advisory Board, to fund small, non-competitive demonstration projects at university-based Water Resources Research Institutes/Centers in the five advisory board states. These projects were intended to help introduce the SE-TAC by supporting applied projects that addressed priority needs in each advisory board member's state, under the leadership of the state's Water Resources Research Institute.

SE-TAC Advisory board

Alabama

Mark Bohlin (2000–Present)*
Society of Water Professionals
Alabama Chapter

Kathy Horne (2000–Present)*
Alabama Rural Water Association

Ed Hughes (2002–Present)
Alabama Department of Environmental
Management Drinking Water Branch

Louisiana

Patrick Credeur (2000–Present)*
Louisiana Rural Water Association

Barbara Monroe
(2001–2003 TX/2003–Present LA)
Community Resource Group

Bobby Savoie (2000–Present)*
Louisiana Dept. of Health & Hospitals
Office of Public Health

Mississippi

Pete Boone (2000–Present)*
Mississippi Rural Water Association

Tom Johnson (2000–Present)*
Community Resource Group

Keith Allen (2005–Present)
Mississippi State Department of Health
Division of Water Supply

North Carolina

Brad Boris (2003–Present)
City of Asheville
North Fork Water Treatment Plant

Debbie Maner (2004–Present)
North Carolina Rural Water Association

Lee Spencer (2001–Present)
North Carolina Department of Environment
and Natural Resources
Public Water Supply Section

Texas

Tom Duck (2000–Present)*
Texas Rural Water Association

Doug Holcomb (2000–Present)*
Texas Natural Resource Conservation
Commission
Public Drinking Water

**Founding advisory board members*

The Advisory Board annually reviews and modifies SE-TAC's priorities for the regional grants program. Accordingly, SE-TAC's priorities can change from year to year. Still in its first five years, under the broad financial, managerial, and technical "Capacity Development" umbrella, SE-TAC projects addressed one of the following priorities:

1. Capacity Development
2. Training
3. Technical Assistance

Capacity development



Capacity Development Assurance Through Engineering Assistance, Phases I and II: The Alabama Rural Water Association (ARWA)

enlisted the assistance of a registered professional engineer to work with state water organizations and state and federal agencies to identify small water systems that were experiencing water system operational problems, having system expansion concerns, and/or needed assistance with drinking water treatment processes. Initially, 20 small water systems were identified. Their problems fell into five categories:

- (1) accountability of water—11 percent of the problems,
- (2) insufficient water—17 percent
- (3) hydraulic related problems—44 percent
- (4) water treatment—22 percent and
- (5) system operation—6 percent.

The overall project was extremely successful, saving the targeted systems more than \$1 million dollars collectively. At least one solution was identified and presented for each problem. More than half (55 percent) of the systems took positive action to correct their situation. Only 11 percent of the systems had minor, easily resolved problems. About 33 percent of the water systems had not yet taken steps to correct the identified problem. This, however, was not unexpected since many of these systems are small and have limited management abilities. Work with many of these systems under Phase I was completed in June 2004.

Phase II funding allowed ARWA to provide follow up assistance on long-term solutions for Phase I systems that were unable to implement recommended solutions, and expand assistance

to include an additional 20 systems. In Phase II, ARWA addressed water system operation and service issues related to water quality, low water pressure, and lack of water. Many operators lacked a complete understanding of these problems. An additional 20 water systems were provided with viable solutions to compliance and system operation problems. The project's final report and site-tracking spreadsheet documented benefits in actions taken to provide measurable economic and public health benefits. The project's strength was its comprehensive approach to identify problems, develop viable solutions to them, and use open communication and networking between the particular system, ARWA, the state primacy agency, and USDA Rural Development to implement solutions. Start/End Dates: 05/01/03 to 05/31/05.



Photo courtesy of USDA NRCS

Capacity development

Public Water System

Engineering Services, Phases I, II and III:

The Florida Rural Water Association (FRWA) partnered with the Florida Department of Environmental Protection (FDEP) to hire a professional engineer to provide on-site technical support to small public water and wastewater systems. The program was partially funded through set-asides of the Drinking Water State Revolving Fund. The original project, to assist a minimum of 35 of Florida's small public water and wastewater systems, was modified and extended in subsequent funding cycles. For over three years, the FRWA and the FDEP expanded their partnership. The project benefited many water systems through various program efforts, such as permitting assistance, preliminary design and estimating for drinking water project financing, assistance with EPA needs survey requests, securing both interim and permanent project financing, as well as other system specific engineering requests.

The PE responsibilities for Phase I included designing, signing/sealing, and assisting with simple, smaller projects for smaller water and wastewater utilities. This program was designed to help small water systems with general permits and extending distribution lines, recommend simple water treatment changes and additions, and develop design plans for financing applications and programs. Additional funding for Phase II provided systems and local communities direct assistance to identify compliance problems and alternate solutions, as well as to define their infrastructure needs and various mechanisms to meet those needs. In Phase III the project expanded again through a cooperative student program with the Florida A&M/Florida State



University College of Engineering. During the overall project period, the FRWA logged over 212 projects with 137 projects completed, 50 active projects, 10 projects in permitting phase, and 15 general engineering assistance projects of state interest. Cumulatively, the program has saved Florida's small public water systems more than \$2 million in estimated fees and project related costs, allowing utilities to invest those savings in meeting compliance related expenses and providing funds for sustainable growth and development. Start/End Dates: 11/01/01 to 05/31/05.

Hands-On Capacity Development Computer

Training: The Mississippi Rural Water Association (MSRWA) conducted statewide hands-on computer training in multiple areas of capacity development, including developing by-laws, long-range plans, emergency plans, security plans, and policies and procedures and other documents to enhance Mississippi's small

public water systems' technical, managerial, and financial capacity. The training addressed the Safe Drinking Water Act's requirement that new public water supply systems or systems applying for state revolving loan funds demonstrate certain capabilities. Specifically, water systems must have the technical, managerial, and financial capability to meet present and foreseeable state and federal regulations, provide adequate water service, and operate as financially viable entities. A total of 10 training sessions conducted throughout the state introduced the capacity development topics in a word processor format to personnel from 68 small public water systems. The instructors



Capacity development

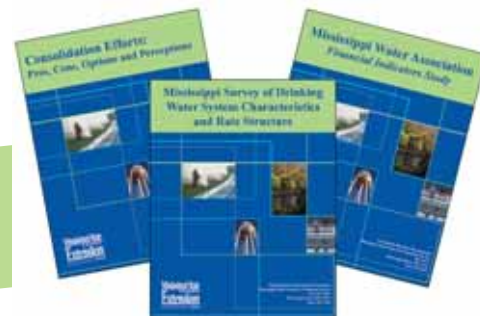
demonstrated ways to navigate in the program without losing the original forms. A capacity development handbook was developed and made available in both printed and digital format. Training materials included models for policies and procedures, by-laws, employee job descriptions, long range planning, rate setting, water-user agreement, emergency response plan, cross connection plan, and a security plan. This training was approved by the Mississippi State Department of Health and has continued to help meet small public water systems' training needs after the project period ended. Start/End Dates: 05/01/03 to 05/31/04.

Improving Financial and Managerial Capacity of Small Public Water Systems:

While there is a widespread belief that the only critical factor in providing safe drinking water to the rural public is a strong technical capacity, the fact remains that high managerial and financial capacities are, in the medium and long runs,

at least as important as the technical side. Without the ability of the rural water system

to remain financially strong with a knowledgeable board and a management structure, it cannot maintain its plant and equipment, recruit or retain quality employees, or elect quality board members. Mississippi State University Extension Service (MSU-ES), developed three publications to help rural water systems develop stronger managerial and financial capacity: *Mississippi Survey of Drinking Water System Characteristics and Rate Structure*; *Mississippi Water Association Financial Indicators Study*; and *Consolidation Efforts: Pros, Cons, Options, and Perceptions*. These publications were distributed to small public water systems and technical assistance providers, as well as submitted to SE-TAC. Start/End Dates: 01/01/04 to 05/31/05.



Computers for Training, Phases I and II:

The complexity of operating rural water systems continues to grow as the requirements of the Safe Drinking Water Act and other environmental laws increase small systems' responsibilities and liabilities. The details of managing a system and the number of required reports have more than doubled. Systems often lack the funds to hire someone to provide the necessary training to learn how to produce the required reports. This project allowed the Mississippi Rural Water Association (MsRWA) to purchase 10 computers for their training facility in Raymond, Mississippi to provide small public water system personnel basic computer training and allow them to learn how to use software to complete required annual financial reports, Consumer Confidence Reports,

Capacity development

and to record and track their system's water usage and sales.

Tracking water usage and sales records are critical for assessing water fees. The computer resources and training were valuable tools for the systems because they enabled the systems to comply with the laws in a timely manner and empowered them to produce reports. After completing the training, approximately 60-75 systems conducted rate studies. These studies resulted in rate increases, enabling them to become more self-sufficient and viable. In Phase II, the project was expanded to allow the MsRWA to address *Utilizing GPS Equipment for Leak Detection Purposes*. This expanded the original project to allow MsRWA to purchase a GPS unit, a laptop computer, two Aqua Trac 100 pipe locators, and a pipe locator with pigs and transmitters. Circuit riders used this equipment almost weekly to locate lines and leaks for small systems. Specific examples include work with Leesburg Water Association (E. coli tested positive on a new 8" pipe, leak detection and "pigging" done to clear the pipe - it tested clear and was restored to service)

and the Town of Gloster (circuit riders helped to georeference the town's valves and fire hydrants for engineering mapping). In both instances, use of the equipment saved the systems a significant amount of money in lost water while preventing damage to water lines. Start/End Dates: 05/01/01 to 04/30/03.

Planning for Regional Water

Source Alternatives—Central Coastal Plain Capacity Use Area:

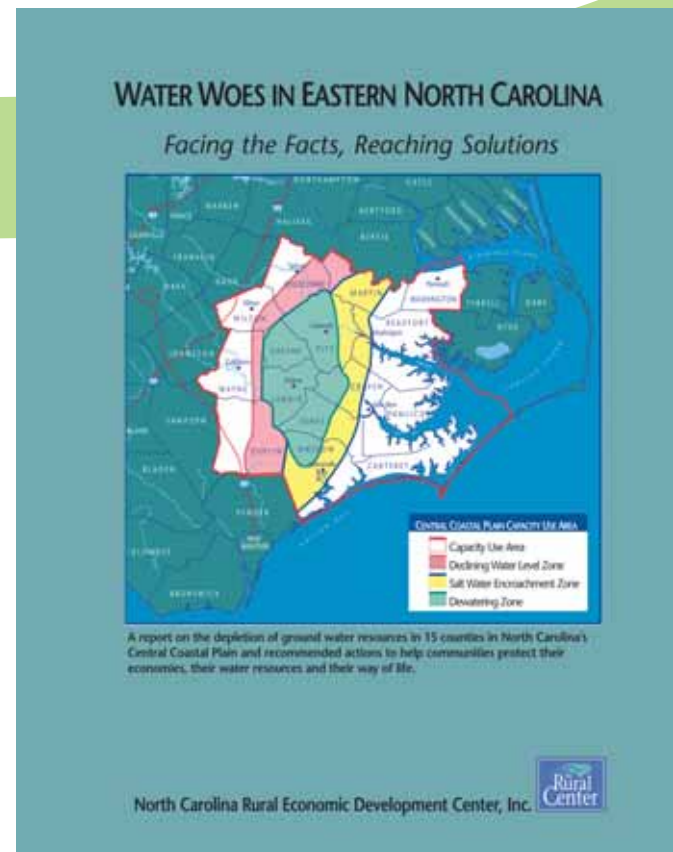
This project assisted the North Carolina Rural Economic Development Center (NCREDA) in developing the *North Carolina Central Coast Plain Capacity Use Area Regional Water Resource Study*. The project entailed a plan to identify new drinking water sources, transition to these sources, finance the transition, as well as educate the public on the true costs of safe drinking water and the need to conserve and better manage water resources. According to an inventory of public water supply systems conducted by NCREDA in 1997, over 90 percent of the water supply systems in eastern North Carolina, generally east of Interstate 95; depend upon groundwater as the water source. By comparison, nationally, about 50 percent are groundwater dependent. The water source for these groundwater systems is two Cretaceous-era, confined aquifers known as the Black Creek and Upper Cape Fear aquifers. Monitoring data from the US Geologic Survey and the Monitoring Well Network maintained by the State Department of Environment and Natural Resources (DENR) - Division of Water Resources, documented a sharp decline in the aquifer levels leading them to conclude that the withdrawal rate from this system exceeds the rate of recharge.



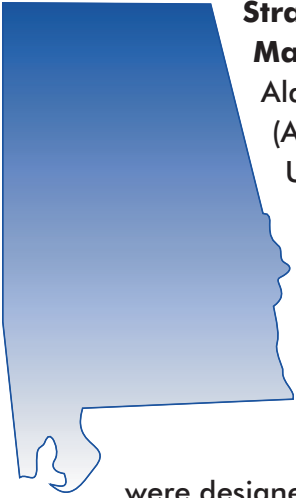
Capacity development

Through a stakeholder process, the Division developed the Central Coastal Plain Capacity Use Area Rule (CCPCUA) which included 15 counties. Representatives from public and private water systems, the League of Municipalities, the North Carolina Association of County Commissioners, as well as private businesses joined the Stakeholder's Group. The Rule requires the coordination and regulation of groundwater withdrawals from the Black Creek and Upper Cape Fear aquifers to protect the aquifers' sustainability. Water users within the 15-county area must reduce groundwater withdrawals over a 16-year period, some by as much as 75 percent.

SE-TAC funding allowed the NCREDA to assist the region's small public drinking water systems to develop a plan to support the decision-making process for continued provision of potable water. Integral to their continued operation, the plan allowed these systems to make the most cost-effective, feasible choice for the required groundwater withdrawal reductions. Public meetings, legislative briefings, and a conference were used to disseminate information. Without this assistance, alternative water supplies could be based upon a first come, first served basis, giving larger water systems with more resources access to the least expensive water supplies, leaving more expensive alternatives available to the smaller systems. Start/End Dates: 05/01/01 to 04/30/02.



Training



Strategic Planning and Management Training: The Alabama Rural Water Association (ARWA), worked with Auburn University's Center for Governmental Services to develop strategic management training materials, including the *ARWA Strategic Planning Manual*, and conducted four on-site training sessions across the state. The sessions

were designed to assist public water utilities' managers and board members to develop workable strategic plans for their respective utilities. The Alabama Department of Environmental Management approved the course for five hours of continuing education credit. Training notices were mailed to all 600 public water utilities in the state, with a total of 117 small public water system managers and board members attending training sessions. Start/End Dates: 05/01/02 to 04/30/03.

Train the Trainer: Certification Training for Instructors: Mississippi Rural Water Association hosted a 4-day "Train the Trainer" workshop for personnel from state rural water association offices in Mississippi, Alabama, Arkansas, Louisiana, and Tennessee. Representatives from the Mississippi Department of Health also participated. The *Designing and Delivering*

Effective Training Workshop responded to a need to enhance the training skills of instructors in the five-state region through the Train the Trainer program developed by the National

Environmental Training Association (NETA). The training program enhanced instructors' skills and provides credentials they need to conduct excellent and professional training sessions. Start/End Dates: 05/01/03 to 9/30/03.

Development of a Capacity Development Handbook and Training for Small Water Systems: The Mississippi Rural Water Association developed and updated a *Capacity Development Handbook* and conducted five training sessions in technical, managerial, and financial capacity. The handbook includes model policies and procedures, long range planning, rate setting, an emergency response plan, cross connection plan, by-laws, a water user agreement, employee job descriptions, and a security plan. These models are guidelines for water systems to develop their system's policies. More than 75 managers, operators, and office personnel of rural and municipal community water systems serving populations of 10,000 or less, received training at 5 locations statewide. Start/End Dates: 01/01/04 to 5/31/05.

Improving Customer Service Skills of Public Water System Officials: Mississippi State University Extension Service (MSU-ES) developed a customer service video, *Managing Difficult Customers*, to be used as a training tool to enhance the Public Water System Board Management Training Program developed by MSU-ES in cooperation with the Mississippi Department of Health, Mississippi Rural Water Association, Community Resource Group, and Mississippi Water Pollution Control Operators' Association. Customer service was one of the lowest rated subject areas covered in the curriculum by participants of the Board Member Training. The video is also distributed to water systems upon request to use as a training tool within their own system. The video is specifically

Training

designed to relate to small water system personnel and incorporates tips, strategies, and techniques for dealing with difficult customers by featuring real-life customer conflict scenarios. Board members, managers, operators, bookkeepers and other water system officials can benefit from the video. Start/End Dates: 01/01/04 to 05/31/05.

Waterworks Operator Continuing Education

Training Program: The Mississippi Water & Pollution Control Operators' Association purchased ten (10) lap top computers and six (6) video projectors to significantly enhance the level of their District offices' statewide field training program. This project allowed the Association to conduct field training with professional training materials. The Association continues to use the equipment for field training to bring quality training to field locations. Start/End Dates: 02/01/02 to 01/31/03.



Development of a D-well Correspondence / Internet course:

In North Carolina, certification of drinking water system operators is conducted

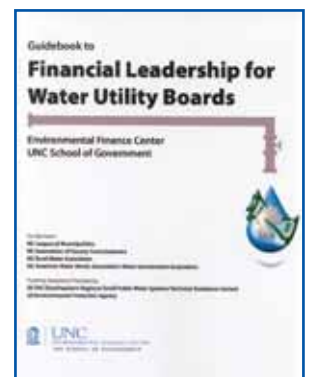
by the Public Water Supply Section of the North Carolina Department of Environment and Natural Resources (NCDENR). Western Piedmont Community College (WPCC) developed a comprehensive correspondence/internet course and training manual, *Groundwater Treatment: A Training Manual for D-Level Well Certification*, to provide small water system operators in North Carolina with D-Well training in preparation for certification from the Department of Environment and Natural Resources. This course allows operators with limited resources the opportunity

to receive the necessary training at home and on their own time and to prepare for the D-Well certification exam. Based on discussions with NCDENR staff along with a review of other similar courses offered by WPCC in the past, this program could potentially serve up to 500 operators over a 6 year period.

NCDENR identified over 1,000 small water systems that lacked a certified operator in charge of the system. The vast majority of these systems serve very small communities, and many are classified as Non-transient/Non-community water systems. These small systems are typically comprised of a groundwater supply, simple treatment processes, limited storage capacity, and small diameter distribution lines and are classified in North Carolina as "D-Well" systems. D-Wells primarily serve mobile home parks, churches, summer camps, resort areas, and small subdivisions with small distribution lines. They are often operated by grounds or maintenance personnel with other job responsibilities and limited access to resources necessary to operate a system. Start/End Dates: 05/01/01 to 04/30/02.

Financial Management Training and Support for Water Utility Governing Boards:

Recent developments across the country have reinforced the importance of financial management in assuring the ability of utilities, especially small ones, to provide high quality and safe drinking water to their customers. Assessing and strengthening financial capacity is now a formal federal and state regulatory requirement as part of the capacity development program. Assuring that utilities implement sustainable financial management is a shared responsibility between utility staff, those that provide them with



Training

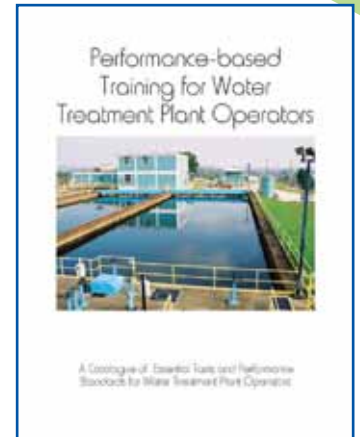
technical assistance (consultants, professional associations, etc.); and most importantly individuals on utility governing boards. The individuals on these governing boards often have very little financial management experience, yet regularly make incredibly important financial management decisions. The University of North Carolina at Chapel Hill Environmental Finance Center's project brought together organizations that provide assistance or oversight to utilities; developed a consensus on the priority financial issues facing governing boards in North Carolina; and developed a series of workshops and publications to address key issues. The *Guidebook to Financial Leadership for Water Utility Boards* presents case studies of best management practices in innovative fee systems, asset management systems, and marketing strategies. Training was customized to individual communities with 71 members representing 12 boards participating. More program information is available online at <http://www.efc.unc.edu/projects/WaterLeadership.htm>. Start/End Dates: 01/15/04 to 05/31/05.



Performance-based Training for Water Treatment Plant Operators:

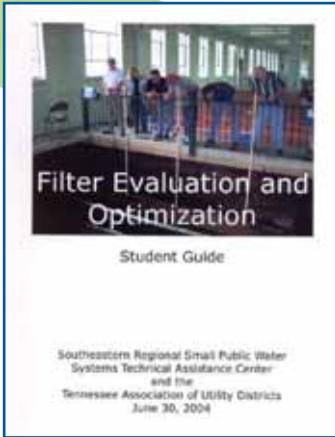
The Tennessee Association of Utility Districts (TAUD), in consultation with experienced water treatment professionals throughout the state, identified critical water treatment processes and skills, and developed a performance-based water treatment training manual to assist trainers in preparing to teach classes, help operators understand basic skills needed for efficient operations, and aid managers and utility decision makers in understanding the complexities of water treatment operations. These training materials were used to conduct five training

sessions, teaching 51 participants essential skills and tasks required to operate a treatment plant in compliance with primacy agency rules. TAUD targeted water treatment plant operators at systems serving a population of 10,000 or less. Training materials, procedures, and CDs with PowerPoint presentations were submitted to SE-TAC. The manual, *Performance-based Training for Water Treatment Plant Operators: A Catalogue of Essential Tasks and Performance Standards for Water Treatment Plant Operators*, covers a range of treatment processes and skills, including: Raw Water Pumpage Reporting, Coagulation/Flocculation, Sedimentation, Filtration, Disinfection, Corrosion Control, Taste and Odor, Aeration, Iron and Manganese Control, and Flouridation. TAUD expanded the Performance-based Training for Water Treatment Plant Operators project with additional funding in the 3rd cycle. A *Water Treatment Handbook* was developed to support six training sessions covering essential skills and tasks required for operating water treatment plants in compliance with state primacy agency rules. Start/End Dates: 07/01/02 to 06/30/03.



Optimizing Filter Performance: The Tennessee Association of Utility Districts (TAUD) developed procedures and materials for training water treatment plant operators in two areas: 1) filter performance evaluation techniques and 2) how to correct problems discovered. Eight two-day training sessions provided instruction in filter performance optimization to 138 participants. The host systems enjoyed the added benefit of the filter evaluation demonstration being conducted

Training



at their facility. The training targeted surface water treatment plant operators at systems serving a population of 10,000 or less.

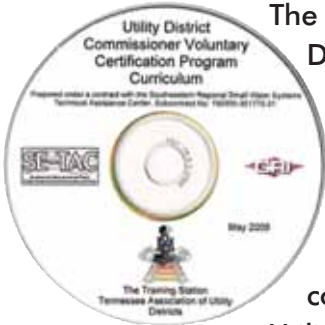
Training materials, *Filter Evaluation and Optimization Student Guide*, procedures, and CDs with PowerPoint presentations were

submitted to SE-TAC. Start/End Dates: 7/01/03 to 6/30/04.

Utility District Commissioner Voluntary Certification Program Curriculum Handbook:

The Tennessee Association of Utility Districts (TAUD) developed training materials, visual aids, and a commissioner's handbook to be used in a voluntary certification program for utility district commissioners. These materials, *Utility Commissioner's and*

Manager's Handbook and Basic Utility Leadership Training, were developed with input from the Utility Management Review Board (a board that has financial oversight responsibilities for utility districts in Tennessee) and four committees of utility district managers. The training covers topics such as Utility Rate Setting, Budgeting, Planning, Human Resources, Conducting Meetings, Customer Relations, Problem Solving, Policy Making, and an Overview of System Regulations and Operations. The curriculum requires a minimum of seven to nine contact hours, in which participants demonstrate mastery of skills and knowledge within the context of real-life utility problems. The voluntary certification program was developed in anticipation of future mandatory



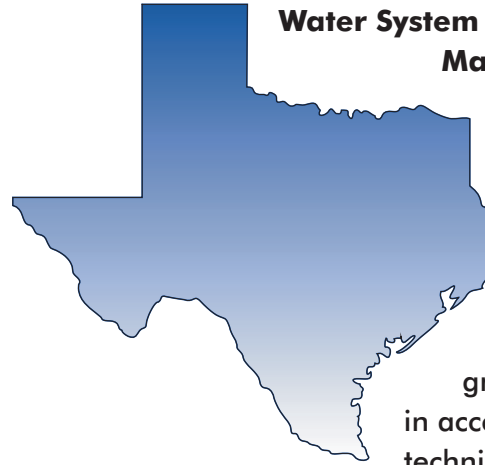
training or certification for utility district commissioners. It was implemented at TAUD's Annual Meeting in June of 2005, presented at the state's Utility Leadership Conference and Business of Running a Utility Conference, and will continue to be offered at each of these recurring annual meetings into the foreseeable future. Start/End Dates: 07/01/04 to 05/31/05.

Technical Training for Small Drinking

Water System Operators— Making Hands-On

Instruction Available at the Local Level:

Small drinking water system operators have always had great difficulties in accessing quality technical instructional



classes in their local areas. To obtain the classes they need to provide safe drinking water to their customers, small system operators in Texas have been forced to travel long distances incurring significant expenses and lost work time. In addition, traditional classes offer operators little in the way of hands-on training that they can directly apply to their day-to-day work. Operators who are experienced to run equipment, perform tests, make repairs, and monitor system performance typically can not learn these job requirements based on a standard lecture format. The Texas Rural Water Association (TRWA) was funded to initiate and expand a project to purchase, equip and use three custom-built trailers for field training.

The project received additional funding in the 2nd cycle, allowing TRWA to continue to develop and implement a variety of technical training activities by transporting the classroom to local

Training

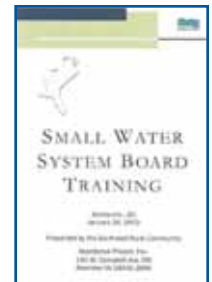
small system personnel for training seminars. Remote training includes classes on utility safety (i.e., self-contained breathing apparatuses, harnesses and other rescue equipment). More than 488 operators received hands-on training in Utility Safety and Confined Space Entry. In addition, SE-TAC funding supported the development of an *Enhanced Pump and Motor Maintenance* manual which will serve as a long-term reference document and other courses such as Surface Water Production, Chlorinator Maintenance, Water Laboratory, and Valve and Hydrant, providing training to approximately 600 additional operators. Not only do these courses meet all state operator certification requirements, they allow students to return to their water system with current and readily applicable knowledge and skills that can be used to improve the operation of their systems and promote compliance with SDWA requirements. Start/End Dates: 05/01/01 to 7/31/03.

Small System Security: The Texas Rural Water Association (TRWA) presented a series of one-day security training sessions for small public water systems across Texas. The sessions were developed in cooperation with the state primacy agency, the Texas Commission on Environmental Quality (TCEQ), to compliment the current and ongoing water utility security work of that agency.

Vulnerability assessment and emergency response plan models and templates, developed by the National Rural Water Association and the National Association of State Drinking Water Administrators, were adapted for Texas. The 15 workshops taught 460 staff members from more than 300 small water utilities how to prepare and

submit where required, vulnerability assessments and emergency response plans that were tailored for their utility. A *Security Manual*, which provides further information and guidance on preparing and implementing these assessments and plans was also developed. Start/End Dates: 05/01/03 to 3/31/04.

Board Member Training for Small Water Systems: Based on a multi-state needs survey the Southeast Rural Community Assistance Project, Inc. developed a set of customized *Small Water System Board Training Manuals* for Florida, Georgia, North



Carolina, and South Carolina, to enhance the financial, technical, and managerial expertise of small public water system board members in these states. SE RCAP delivered board member training for 60 small water systems in 47 communities. The training allowed board members to implement management practices that benefited the local small public water system and ultimately provided long-term safe and reliable drinking water to their customers. This project also enhanced current work performed in RCAP's Technitrain and Safe Drinking Water grant programs, and supported the efforts of each state's Rural Water Association. Start/End Dates: 08/01/01 to 07/31/02.

Technical assistance



Energy Efficiency in Water

Utilities: The Alabama Rural Water Association (ARWA) enhanced and expanded a Energy Conservation Program supported by the Alabama Department of Economic and Community Affairs with this project. There are approximately 600 public water utilities in Alabama. Of these 600 systems, 473 are considered

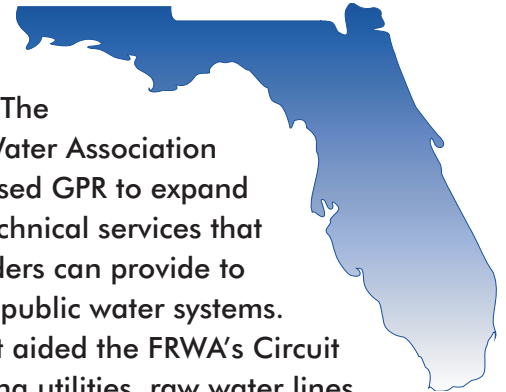
small in size, serving a customer base of 3,300 users or less. This is the equivalent to populations in the State of 10,000 people or less. Among these small utilities, the production, treatment, and distribution of potable water is an energy intensive process requiring numerous pumps and motors of high horsepower.

In Alabama, the cost of electricity to provide treated water at the tap ranges from about \$0.09/1,000 gallons to \$0.25/1,000 gallons; making utility costs the second largest operational expense for most water systems. Because of the importance of these utility costs, the Alabama Rural Water Association, with the support of the Science, Technology, and Energy Division of the Alabama Department of Economic and Community Affairs, has conducted an energy conservation program in the State since 1982. Water lost through leaks is a problem common to any water system operation and has a major effect on electric costs. Any water lost through leaks wastes the water as well as the energy required to produce and pump the water. Unfortunately, these leaks can be difficult to find and often go undetected. The costs associated with contract labor and equipment needed to detect leaks are expensive, especially for small utility budgets.

The SE-TAC project allowed ARWA to purchase leak Noise Correlators, annually conduct a minimum of 20 leak surveys, and train a minimum of 40 operators in survey techniques. This equipment allowed the ARWA to expand their technical services to Alabama's small public water systems to include faster and more conclusive leak detection service. As a result, this project directly helped many of Alabama's small public systems conserve water and reduce their energy costs to obtain and treat drinking water. For example, the detection and repair of three leaks saved one system \$6,712.50 in one month. Start/End Dates: 05/01/01 to 04/30/2002.

Ground Penetrating

Radar (GPR): The Florida Rural Water Association (FRWA) purchased GPR to expand the scope of technical services that their Circuit Riders can provide to Florida's small public water systems. This equipment aided the FRWA's Circuit Riders in locating utilities, raw water lines and distribution lines, valves, and other small public water system infrastructure, by determining location, depth, and orientation of all tanks and pipes, to facilitate regular maintenance and to avoid damage during new construction. By clearly locating water infrastructure, small systems are also better able to implement source water protection plans. Start/End Dates: 04/01/02 to 03/31/03.



SE-TAC Non-Competitive projects

Initially, SE-TAC also provided non-competitive sub-awards. Specifically, SE-TAC made two sub-awards to each Water Resources Research Institute (authorized by the Water Resources Research Act, 42 U.S.C. 10301 et seq.) in the five states represented on the advisory board. These non-competitive sub-awards were to allow each Institute to negotiate with its SE-TAC Board members to define a small project to both introduce the SE-TAC project in their state and more importantly encourage the Institutes to become more engaged in addressing small public water system needs. From 2000-2001, each Institute received a \$7,500 sub-award. Subsequently, from 2001-2003 each Institute received a \$11,000 sub-award. In addition to the Institute awards discussed above, SE-TAC funded two other non-competitive projects. First, in consultation with the Mississippi Department of Health and the Mississippi Department of Environmental Quality, SE-TAC funded a source water protection demonstration project to explore the use of remote sensing and geospatial technologies to identify failing septic systems and unsewered communities in a priority area of Mississippi. Secondly, in consultation with EPA Region IV, SE-TAC funded a project to explore the feasibility of creating a broad-based consortium to identify and prioritize regional groundwater and source water protections issues.

Energy Efficiency in Rural Water

Systems: The Alabama Water Resources Research Institute (AWRRI) collaborated with the Alabama Rural Water Association (ARWA) to help Alabama's small water systems reduce the amount of water lost through leaks and reduce their overall energy costs. Briefly, this project:

1. Enhanced/expanded an ongoing ARWA Energy Conservation Program supported by the Alabama Department of Economic and Community Affairs' Science, Technology and Energy Division;
2. Allowed the AWRRI to identify and pursue new opportunities to actively participate in resolving Alabama's small drinking water systems' priority needs.

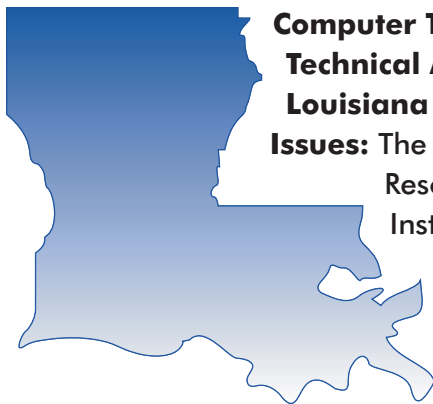
Under the existing Energy Conservation Program, ARWA personnel visit small systems to determine their water loss, review their energy costs and inform them about the energy conservation program. Annually approximately twenty small systems request the ARWA to conduct leak surveys and train their operators on

survey techniques. During the survey, systems are asked to provide one or more operators to work with the ARWA staff where they receive training on the latest leak detection technology, on-the-job training in survey techniques, and assistance in solving the system's unaccounted for water. In some instances the program's effectiveness would be enhanced by more advanced equipment such as Digital Correlating loggers (DCI) which can be attached to the distribution pipe and/or fittings to monitor flows over a designated period of time. The DCI also records data which is downloaded to a computer to determine high flow characteristics.

The Alabama Water Resources Research Institute (AWRRI) received funding for *Geographic Information System (GIS) Development for Managing Rural Water Systems*, a pilot project with the Beauregard Water Authority to develop a desktop geospatial application to map the system's utilities and identify potential source water threats. Digital images were recorded for all features mapped. Every feature in the system (i.e. wellheads, storage tanks, valves, hydrants, and pipelines) was mapped using a Global Positioning System and differentially corrected to achieve greater accuracy. Potential source water

SE-TAC Non-Competitive projects

contaminant sources were also identified and mapped. This data was imported into ArcView to create the GIS, which contained 255 water valves, 42 flushing hydrants, 139 fire hydrants, 13 pressure reducing valves, 4 wellheads, 2 storage tanks, and 17 potential contamination sources. Water lines from the existing 1"=200ft scale paper map were geo-referenced and incorporated into the digital maps. These maps can be used both in the office via a computer or accessed in the field via a PDA. ESRI ArcPad Application Builder was used to create custom buttons, toolbars, and scripts written for each button to simplify future data collection by system personnel. Utility personnel were trained to maintain and update this application. The PDA application allows personnel to easily locate features of interest and to collect additional data to update and maintain the maps. Start/End Dates: 02/01/01 to 01/31/02.



Computer Training and Technical Assistance for Louisiana Rural Watershed Issues:

The Louisiana Water Resources Research Institute (LWRRRI) established an internet-based information infrastructure to

enhance the dissemination and exchange of technical information about the Safe Drinking Water Act technology available to achieve the Act's goals, and the technical and financial assistance opportunities for small drinking water systems. LWRRRI staff attended a Louisiana Rural Water Association Conference in 2002 to identify existing impediments to using the internet for information exchange. Following that meeting, 40 small drinking water systems and 133 academic and environmental participants were invited to

participate in the technology exchange program through a funds matching RFP. Overwhelming interest in the program, requests for assistance in responding to the RFP, and interest in future RFP opportunities prompted requests for online training, saving both travel and time away costs. The project's long term goal is to build working relationships between relevant state agencies, the Louisiana Rural Water Association, other technical assistance providers, and university researchers. Start/End Dates: 03/01/01 to 02/28/03.



Enhancing Rural Public Health Protection and Water Supply Through Partnerships:

The Mississippi Water Resources Research Institute (MWRRI) undertook two distinct activities. First, the MWRRI cooperated with Mississippi State University Extension Service, Mississippi Rural Water Association, Mississippi State Department of Health, Mississippi Water

and Pollution Control Operators Association, and Community Resource Group, Inc.'s Rural Community Assistance Program to conduct *Consumer Confidence Report (CCR) Workshops* at Mississippi State University and the Mississippi Rural Water Association's office in Raymond, Mississippi. These workshops provided an overview on what CCRs are; why they are required; and helped small drinking water systems comply with CCR development and notification requirements.

Secondly, the MWRA organized and hosted a *Strategic Water Supply Workshop* for federal and state agencies and other organizations relevant to resolving Mississippi's water supply and safe drinking water issues. This workshop followed up

SE-TAC Non-Competitive projects

on the Governor's Mississippi Water and Sewer Task Force which examined Mississippi's water and wastewater needs and priorities with a focus on infrastructure development. The workshop's primary purpose was to identify and promote opportunities for partnerships to integrate isolated water supply and safe drinking water programs to promote public health for Mississippi's small drinking water systems' customers. The meeting was co-hosted by Mississippi Rural Development Council, Mississippi Water Resources Association, Mississippi Public Service Commission, and the MSU Extension Service.

With the second round of funding, the MWRRI built on these partnerships to *Utilize Geospatial Technologies for Source Water Protection*.

This allowed the MWRRI to use geospatial technologies to identify and prioritize interagency efforts for source water protection and integration of Clean Water Act and Safe Drinking Water Act programs in identified priority areas. The pilot effort used geospatial technologies to integrate source water protection into a broad-based water quality protection effort. Geospatial technologies were used to merge various water quality monitoring databases and prioritize areas within the watershed to implement best management practices (BMPs). Start/End Dates: 09/01/00 to 06/30/03.



Spatial Technologies Assessing Rural Septic Systems (STARSS): The Mississippi State University GeoResources Institute coordinated with Mississippi's Departments of Health and

Environmental Quality to develop a Geographic Information System (GIS)/Global Positioning System (GPS) field application for septic system mapping, inspection, and fault reporting. Mobile computing, field mapping, remote sensing and GIS technologies were applied to septic issues,

problems, and solutions at the development site, community, and watershed scale. Major tasks were to develop the Information Technology (IT) architecture and a functional application using Open Source technologies, GIS, and mobile computing to address septic system field problems and workflows in a source water protection context. The project developed a custom application that integrates hand-held PDA technology, GPS, and GIS software to map septic systems in rural areas; a user needs assessment; a data needs assessment; a documented example of use; an html user guide; and a conference proceeding report. Start/End Dates: 07/01/02 to 06/30/04.

Southeast Water Resources Consortium:

The University of Mississippi Department of Civil Engineering conducted a regional assessment of water supply and source water protection issues. The investigators contacted relevant governmental and academic research organizations and researchers to create a multidisciplinary network of experienced researchers available to provide applied research to support EPA's source water protection needs. The investigators interacted with federal and state agency personnel throughout the region, and attended regional conferences, workshops, and symposia to identify and begin prioritizing regional groundwater and source water protection issues in the southeastern U.S. The findings were compiled in a peer reviewed document titled *Organization Building of the Southeastern Water Resources Research and Environmental Policy Consortium*. Start/End Dates: 09/015/02 to 08/31/04.

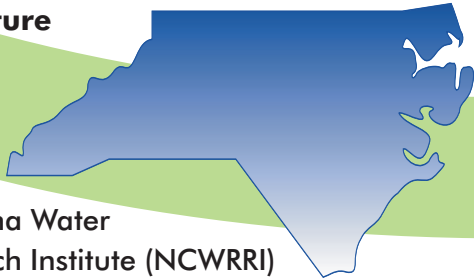
SE-TAC Non-Competitive projects

Technical Literature to Assist Rural Churches, Child Care Centers, and Schools:

The North Carolina Water Resources Research Institute (NCWRRI) used funding to develop the technical literature to assist rural churches in complying with Safe Drinking Water Act (SDWA) sampling requirements, as many of North Carolina's nearly 7,000 non-community public water systems are transient systems which have become a major regulatory burden to the state's drinking water primacy agency. Churches that provide water for their congregations are considered transient, non-community water supply systems and must sample quarterly for total coliforms and nitrate/nitrite. North Carolina has thousands of rural churches with congregations numbering approximately 50-70 members.

Rural congregations often fail to understand the necessity for drinking water sampling and are not totally convinced that it is necessary to protect their health. The sampling instructions provided by the state's Public Water Supply Branch are technical and difficult to follow for individuals unfamiliar with sampling protocols and regulatory language. This results in high rates of noncompliance, as well as frequent false positives for microbiological contaminations and subsequent additional sampling requirements for rural churches.

To address this issue, the NCWRRI partnered with the North Carolina Public Water Supply



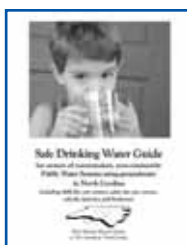
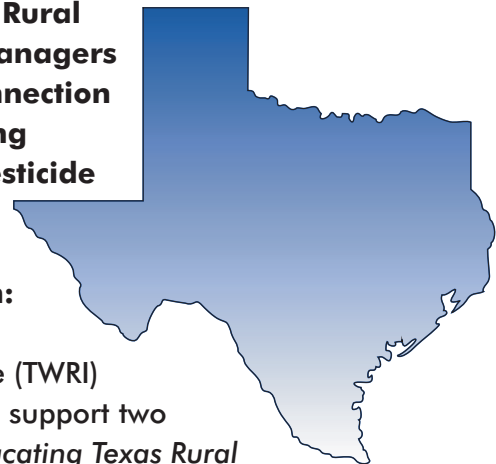
Safe Water for Your Congregation and Meet Requirements of the Safe Drinking Water Act, to help rural churches correctly perform sampling for total coliforms and nitrate/nitrite in their water supplies and to recover wells that are found to be contaminated.

With the second round of funding the NCWRRI developed technical literature to assist child care centers and schools in complying with the SDWA requirements. Experienced certified operators were consulted to identify and develop publications to inform day care center operators on how to be approved as a public water supply and stay current on sampling requirements. The publication, *Safe Drinking Water Guide for Owners of Non-transient, Non-community Public Water Systems Using Groundwater in North Carolina*, a newsletter, and Powerpoint presentation were developed. Start/End Dates: 03/01/01 to 12/31/03.

Educating Texas Rural Water System Managers About Cross-Connection Issues, Preventing Bacterial and Pesticide Contamination and Source

Water Protection:

The Texas Water Resources Institute (TWRI) utilized funding to support two projects: First, *Educating Texas Rural Water System Managers About Cross-Connection Issues*, was aimed to create new and enhance existing relationships between the TWRI, other Texas universities, the Texas Rural Water Association, and state water management agencies (i.e., Texas Natural Resources Conservation Commission and the Texas Water Development Board. As a first step, the TWRI and the TRWA collaborated in preparing training



Branch and the North Carolina Rural Water Association to develop, print, and distribute a publication, *To Help You Provide*

SE-TAC Non-Competitive projects

materials and holding a one day workshop on cross-connection issues.

A second workshop was conducted on *Small Public Water Systems Training on Preventing Bacterial and Pesticide Contamination and Source Water Protection*. More than 200 participants attended training sessions on fecal coliform, E. coli, cryptosporidium, and giardia and disinfection by-products associated with water treatment practices. Presentations on source water protection for public water supply systems, and pesticide contamination and impacts to small water systems were also included. Several one-day training workshops were conducted in west, south, and central Texas, with live video streaming over the Internet. Cooperation with the Texas Agricultural

Experiment Station provided state-of-the-art information about bacterial contamination. The Texas Cooperative Extension's presentations highlighted agency efforts to assist small water system managers in testing and protecting water supplies. Several fact sheets related to these programs were developed including the Cross-Connection Control seminar brochure. Throughout this project, the participants worked cooperatively to identify potential future research, training needs, and opportunities. Start/End Dates: 03/01/02 to 06/30/03.



Photo courtesy of USDA NRCS

SE-TAC Products

Available products are posted on the SE-TAC web site at www.wrri.msstate.edu/se-tac. Please check the Web site regularly for new additions.



Bacterial Contamination, Pesticides, and Source Water Protection. 2003. Texas Water Resources Institute.

Consolidation Efforts: Pros, Cons, Options and Perceptions. Improving Financial and Managerial Capacity of Small Public Water Systems. 2005. Mississippi State University Extension Service.

Filter Evaluation and Optimization Student Guide. 2004. Tennessee Association of Utility Districts.

Financial Leadership for Water Utility Boards Training Guidebook. Financial Management Training and Support for Water Utility Governing Boards. 2005. The University of North Carolina at Chapel Hill Environmental Finance Center.

Geospatial Technology and Source Water Protection Measures for Small Public Water Systems. 2005. Mississippi State University GeoResources Institute.

Groundwater Treatment: A Training Manual for "D" Level Well Certification. 2002. Western Piedmont Community College.

Mississippi Survey of Drinking Water System Characteristics and Rate Structure. Improving Financial and Managerial Capacity of Small Public Water Systems. 2005. Mississippi State University Extension Service.

Mississippi Water Association Financial Indicators Study. Improving Financial and Managerial Capacity of Small Public Water Systems. 2005. Mississippi State University Extension Service.

Organization Building of the Southeastern Water Resources Research and Environmental Policy Consortium. 2004. University of Mississippi.

Performance-based Training for Water Treatment Plant Operators: A Catalogue of Essential Tasks and Performance Standards for Water Treatment Plant Operators. 2003. Tennessee Association of Utility Districts.

Safe Drinking Water Guide for Owners of Non-transient, Non-community Public Water Systems Using Groundwater in North Carolina. Technical Literature for Child Care Centers and Schools. 2003. North Carolina Water Resources Research Institute.

To Help You Provide Safe Water for Your Congregation and Meet Requirements of the Safe Drinking Water Act. Technical Literature for Rural Churches. 2002. North Carolina Water Resources Research Institute.

Utility District Commissioner Voluntary Certification Program Curriculum Handbook. 2005. Tennessee Association of Utility Districts.

Water Treatment Handbook. 2004.
Tennessee Association of Utility Districts.

Water Woes in Eastern North Carolina. North Carolina Central Coastal Plain Capacity Use Area Regional Water Resource Study. April 2002. North Carolina Rural Economic Development Center.

Administrative Reports

Steil, K.M., J.A. Ballweber. 2004. Southeastern Small Drinking Water Systems Technical Assistance Center. 4th Annual Report, November 2003-October 2004.

Steil, K.M., J.A. Ballweber. 2003. Southeastern Small Drinking Water Systems Technical Assistance Center. 3rd Annual Report, November 2002-October 2003.

Ballweber, J.A., K.M. Steil. 2002. Southeastern Small Drinking Water Systems Technical Assistance Center. 2nd Annual Report, November 2001-October 2002.

Ballweber, J.A., S. Cox. 2001. Southeastern Small Drinking Water Systems Technical Assistance Center. 1st Annual Report, November 2000-October 2001.

Service Activities

National Environmental Training Institute for

Small Communities 2005 Planning Committee. Reviewer: "Safe Drinking Water Tools" Resource CD. 2005. Office of Ground Water and Drinking Water, Environmental Protection Agency.

Reviewer: Midwest Technology Assistance Center, Illinois State Water Survey, Competitive Grant Proposals

- Reviewed 2 proposals (2004).
- Reviewed 4 proposals (2003).

Professional Presentations by Invitation

Ballweber, J.A. 2005. Small Public Water System Technical Assistance Centers TACNet. Environmental Protection Agency Region I, II, III and IV. Capacity Development Workshop. Atlanta, GA.

Ballweber, J.A., K.M. Steil. 2005. Southeastern Regional Small Public Water Systems Technical Assistance Center: Progress and Impacts. Environmental Protection Agency's FY 05 TAC Planning Meeting. Washington, DC.

Ballweber, J.A. 2004. Distribution Systems and Water Conservation. Environmental Protection Agency. National Capacity Development Workshop. Denver, CO.

Ballweber, J.A. 2004. SE-TAC Accomplishments and 2004-2006 work plan. EPA's FY 04 TAC Planning Meeting. Washington, DC.

Ballweber, J.A. 2001. Implementing the Southeast Regional Small Drinking Water Technical Assistance Center (SE-TAC). National Drinking Water TAC Strategic Planning Meeting. EPA Office of Ground Water and Drinking Water. Washington, D.C.

Ballweber, J.A. 2001. An Advisory Board to Award Resources for Priority Small Drinking Water System Needs. EPA Region IV & VI Small Drinking

SE-TAC Products

Water System Capacity Development Meeting.
Atlanta, GA.

Ballweber, J.A. 2000. Strategic Plan for a Southeast Regional Small Drinking Water Technical Assistance Center (SE-TAC). National Drinking Water TAC Planning Meeting. EPA Office of Ground Water/Drinking Water. Washington, D.C.

Steil, K.M. 2003. Southeastern Regional Small Public Water Systems Technical Assistance Center: Grant Program Overview. EPA IV & VI Small Drinking Water System Capacity Development Meeting. Atlanta, GA.

Outreach Activities

Professional Presentations

Steil, K.M. July 26, 2005. Panel Organizer and Moderator: University Outreach: At the Intersection of Research and Practice. National Environmental Training Institute for Small Communities, Morgantown, WV.

University Outreach Panelists

- Dr. Andrew Ernest
Western Kentucky University
- Mr. Jeff Hughes
University of North Carolina
- Dr. Larry Oldham
Mississippi State University
- Dr. Yuefeng Xie
Pennsylvania State University
- Dr. Tamim Younos
Virginia Polytechnic Institute

Steil, K.M. July 28, 2004. SE-TAC: Developing Tools and Training to Enhance Capacity of Small Public Water Systems. National Environmental Training Institute for Small Communities, Morgantown, WV.

Ballweber, J.A. July 21, 2004. SE-TAC Source Water Protection Projects. EPA National Capacity Development Workshop, Denver, CO.

Steil, K.M., J.A. Ballweber. October 31, 2003. The Engaged University: A Model to Promote Safe Water and Public Health in the Southeastern United States' Small Rural Water Systems. International Safe Water Conference, Atlanta, GA.

Publications

Steil, Kim. 2005. Invited contributions to Safe Drinking Water Tools for Public Water Systems CD-ROM. The Office of Ground Water and Drinking Water, Environmental Protection Agency. EPA #816-C-05-003. To request a copy of the CD visit www.epa.gov/safewater/pws/tools/index.html.

Steil, K.M. Summer/Fall 2004. SE-TAC Program Begins Second 5-Year Cycle. Lakes, Oceans, Rivers, and Estuaries (LORE). Vol. 26, No. 2

Steil, K.M., J.A. Ballweber. 2003. The Engaged University: A Model to Promote Safe Water and Public Health in the Southeastern United States' Small Rural Water Systems. Journal of Environmental Monitoring and Restoration Special Issue: Proceedings of the First International Conference on Safe Water, Atlanta, GA. p. 129-137.

Steil, K.M. Nov. 2003. SE-TAC Projects Enhance Capacity of Small Public Water Systems. Lakes, Oceans, Rivers, and Estuaries (LORE). Vol. 25, No. 4.

Exhibits

National Environmental Training Center for Small Communities Institute. July 26-29, 2005. Morgantown, WV.

Louisiana Rural Water Association Annual Conference. July 11-15, 2005. Alexandria, LA.

SE-TAC Products

Georgia Rural Water Association Annual Conference. May 21-24, 2005. Jekyll Island, GA.

National Rural Water Association (NRWA) Annual Conference, October 10-13, 2004. SE-TAC co-hosted exhibit with the Western Kentucky University Technical Assistance Center for Water Quality. Biloxi, MS.

American Water Works Association (AWWA) Annual Conference, June 13-17, 2004. SE-TAC co-hosted the Technical Assistance Center (TAC) Network exhibit. Orlando, FL.

Meetings

Annual SE-TAC Advisory Board meeting, April 26-27, 2004. Biloxi, MS.

Alabama Rural Water Association Annual Conference, March 16, 2004. Montgomery, AL.

Annual SE-TAC Advisory Board meeting, June 2-3, 2003. Biloxi, MS.

Mississippi Rural Water Association Annual Conference, March 25-27, 2003. Jackson, MS.

Alabama Rural Water Association Annual Conference, March 3-5, 2003. Montgomery, AL.

Annual SE-TAC Advisory Board meeting, January 14-15, 2003. Biloxi, MS.

Environmental Protection Agency (EPA) Regions IV and VI Capacity Development Workshop. April 2, 2002. Dallas, TX.

Annual SE-TAC Advisory Board meeting, 2002. Biloxi, MS.

Annual SE-TAC Advisory Board meeting, December 13-15, 2000. Biloxi, MS.

Past Advisory Board Members

Alabama

Joe Power* (2000 -- 2002)
Alabama Department of Environmental
Management

Louisiana

Jack Nichols* (2000 – 2001)
M-N Utilities, Inc.
Prosper Toups (2001 – 2004)
American Water Works Association

Mississippi

David Mitchell* (2000 – 2003)
Mississippi State Department of Health
Bill Wall (2003 – 2004)
Mississippi State Department of Health

North Carolina

Sammy Boyette* (2000 – 2002)
North Carolina Rural Water Association
Dean Gaster (2003 – 2004)
North Carolina Rural Water Association
Jim Higdon (2002 – 2003)
North Carolina Rural Water Association
Jessica Miles* (2000 – 2001)
North Carolina Department of Environ-
ment and Natural Resources
Victor Quick* (2000 – 2003)
City of Graham

Texas

Harold Wells* (2000 – 2001)
Community Resource Group

**Special thanks to our founding advisory board members*

SE-TAC Partners and Collaborators

- Alabama Department of Environmental Management
- Alabama Emergency Management Agency
- Alabama Rural Water Association
- Alabama Water and Pollution Control Association
- American Water Works Association — AL/MS & NC Sections
- Angelina Water Supply Corporation, Lufkin TX
- Auburn University Center for Governmental Services
- Auburn University Environmental Institute
- City of Beauregard, Alabama Water Authority
- Cleary Water, Sewer & Fire District—Florence, MS
- EPA Region IV, Capacity Development Program
- EPA Region VI, Capacity Development Program
- Florida Department of Environmental Protection
- Florida Rural Water Association
- Forest and Wildlife Research Center, Mississippi State University
- GeoResources Institute, Mississippi State University
- Hwy 30 West Water Association, MS
- Louisiana Department of Health and Hospitals
- Louisiana Rural Water Association
- Louisiana State University—Water Resources Research Institute
- Mississippi Department of Environmental Quality
- Mississippi Department of Health
- Mississippi Rural Water Association
- Mississippi State University
- Mississippi State University Extension Service
- Mississippi Water & Pollution Control Operators' Association
- North Carolina Association of County Commissioners
- North Carolina Department of Environment & Natural Resources
- North Carolina League of Municipalities
- North Carolina Local Government Commission
- North Carolina Public Water Supply
- North Carolina Rural Center
- North Carolina Rural Water Association
- North Carolina State Revolving Fund
- North Carolina State University—Water Resources Research Institute
- Poorhouse Water Association, Grenada, MS
- Rose Hill Water Association MS
- Tennessee Association of Utility Districts
- Tennessee Department of Environment and Conservation
- Texas A & M University Water Resources Institute
- Texas Agricultural Experiment Station
- Texas Commission on Environmental Quality
- Texas Cooperative Extension
- Texas Rural Water Association
- Town of Drew, MS
- Town of Tylertown, MS
- University of Mississippi—Department of Civil Engineering
- USDA Rural Development

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Karen Brasher, editor*



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