Institute educates environmental professionals

More than 100 attendees from over 30 states gathered in Morgantown, West Virginia, August 5 to 9, to participate in the 2002 Environmental Training Institute for Small Communities. Sponsored by the National Environmental Training Center for Small Communities (NETCSC), this third annual training Institute for environmental professionals and local officials who work in small communities was a resounding success.

“The Institute has proved to be a tremendous opportunity for professionals who assist communities with environmental infrastructure to come together and share their experiences,” said John Hoornbeek, NETCSC director. “The result of this Institute will be improved assistance to small communities nationwide, with the long-term result being improved environmental management and public health at the local level.”

The week-long training event allowed participants the opportunity to attend workshops in four different training tracks, go on field trips to local environmental facilities, network with colleagues, interact with national experts in the environmental training field, and enjoy the beautiful mountain scenery of West Virginia.

Course offerings included:

**Drinking Water Track:**
- Preparing for the Unexpected: Security for Small Drinking Water Systems
- Building the Technical Capacity of a Small Drinking Water System
- Local Officials’ Responsibilities for Providing Safe Drinking Water
- Financial Management for Small Drinking Water Systems
- Building the Managerial Capacity of a Small Drinking Water System

**Wastewater Track:**
- Assessing Wastewater Options for Small Communities
- Alternative Onsite Wastewater Treatment Technologies
- Emerging Perspectives on Decentralized Wastewater Management
- Wastewater Treatment Plant Tour
- Alternative Onsite Wastewater Systems/Unique Drinking Water System in a Remote Area Tour

**Infrastructure Track:**
- Water and Wastewater Cost Recovery Principles
- “Small Community Needs in an Era of Change” Panel Discussion
- Regulatory Update: Recent and Upcoming Requirements for Small Communities
- GASB 34: Implications for Small Community Local Officials and Managers
- Capital Improvements Planning for Water and Wastewater Systems

**Training Assistance Track:**
- Implementing Proactive Technical Assistance in the 21st Century

Seeing a small, centralized wastewater treatment plant up close was an excellent way for Institute attendees to learn more about the wastewater treatment process. Photo by Chris Metzgar.

Security News: WEF announces wastewater security training events

Local official training improves water management

Onsite wastewater training centers break new ground

NETCSC Products List
pages 16-19
NETCSC developing security guide for small wastewater systems

The National Environmental Training Center for Small Communities (NETCSC) is developing a vulnerability assessment guide for small wastewater systems. Working with representatives of several technical assistance organizations and small community and security professionals, NETCSC is producing this guide to assist small wastewater systems in assessing their vulnerabilities to potential threats and preparing for a range of potential emergencies and security breaches, including natural disasters, intentional acts of terrorism or violence, and vandalism.

Legislation passed by Congress earlier this year made vulnerability assessments mandatory for drinking water systems serving more than 3,300 people. Although wastewater systems are not currently required by law to perform vulnerability assessments, the U.S. Environmental Protection Agency (EPA) and other organizations encourage wastewater systems to assess their security risks. For example, with support from EPA, the Association of Metropolitan Sewerage Agencies (AMSA) developed the Asset-Based Vulnerability Checklist for Wastewater Utilities. This checklist is available through AMSA’s Web site, located at www.amsa-cleanwater.org, to help utilities secure their facilities.

“However, no guide has been developed for smaller wastewater systems, which face differing circumstances as a result of their staff availability, physical size and design, customer base, resources, and technical capabilities,” says John Hoornbeek, NETCSC director. “This project will help remedy this gap in our nation’s effort to improve the security of its water and wastewater infrastructure.”

According to Hoornbeek, the guide will draw from concepts and practices developed to address vulnerability concerns at drinking water facilities and larger wastewater utilities, and adapt them to meet the needs of smaller wastewater systems. “The final product will include a set of questions designed to alert small wastewater system managers and operators to potential vulnerabilities in their systems, and will be organized in a way that makes it usable for small wastewater systems,” says Hoornbeek.

NETCSC is coordinating the development of this guide with small community officials and wastewater and security professionals affiliated with the 104(g) Wastewater Operator Training Program, the Rural Community Assistance Program, the National Small Flows Clearinghouse, AMSA, and other organizations. EPA is providing valuable funding support for the effort.

According to Hoornbeek, the guide will be made available free for small systems during the coming year. It is scheduled for release in hard copy and via the Internet later this fall.

For the latest information about the availability of the guide, visit NETCSC’s Web site at www.netc.wvu.edu, or call NETCSC at (800) 624-8301 or (304) 293-4191 and ask to speak with a training specialist.

Calendar of Events

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<tr>
<th>Event</th>
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<tbody>
<tr>
<td>Water Environment Federation &amp; U.S. Environmental Protection Agency’s</td>
<td>November 20</td>
<td>Las Vegas, NV</td>
<td>(800) 551-7379</td>
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<td>Wastewater Vulnerability Assessment Webcast</td>
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<td><a href="http://www.ngwa.org">www.ngwa.org</a></td>
</tr>
<tr>
<td>54th Annual National Ground Water Association Convention</td>
<td>December 8 – 11</td>
<td>Las Vegas, NV</td>
<td>(800) 551-7379</td>
</tr>
<tr>
<td>18th International Conference on Solid Waste and Technology Management</td>
<td>March 23 – 26</td>
<td>Philadelphia, PA</td>
<td>(610) 499-4042</td>
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<tr>
<td>National Small Flows Clearinghouse’s 5th Annual Onsite Wastewater State Regulators Conference</td>
<td>March 24 – 27</td>
<td>Laughlin, NV</td>
<td>(800) 624-8301</td>
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E-training is printed on recycled paper.
EPA notifies water systems about vulnerability assessments

Congress passed legislation earlier this year requiring community water systems serving more than 3,300 people to perform vulnerability assessments. Although most communities may be aware of this new requirement, many are probably wondering how to go about performing such an assessment and where to go for help. Some communities might even be uncertain if they are affected by the new law.

The U.S. Environmental Protection Agency (EPA) is working hard to get the necessary information to communities affected by the new requirement, says Susan Dolgin, communications director with EPA’s Water Protection Task Force.

EPA has sent a notification letter to all community water systems that will need to perform a vulnerability assessment. “This notification letter also tells systems how to access a secure Web site where they can obtain further information about vulnerability assessments,” says Dolgin.

The notification letter instructs utilities on how to access the new document prepared by EPA, Baseline Threat Information for Vulnerability Assessments of Community Water Systems, which defines the threats that systems might face. This document is available only to utilities through a secure Web site or directly from EPA, notes Dolgin.

Dolgin also emphasizes that a host of resources and information are available through EPA’s Water Protection Task Force Web site located at www.epa.gov/safewater/security. “This site provides a number of tools and training programs for both drinking water and wastewater systems. These are good resources for all communities to use,” she says.

Although systems serving fewer than 3,300 people are not required by the new law to perform vulnerability assessments, EPA recommends that these systems also take advantage of the resources available through EPA’s Web site. Specifically, Dolgin recommends the Security Vulnerability Self-Assessment Guide. Developed by the Association of State Drinking Water Administrators, this guide is designed to help systems serving fewer than 3,300 people to assess their critical components and identify security measures that should be implemented.

According to Dolgin, if a water system serving more than 3,300 people has not received a notification letter from EPA by now or if systems have questions about whether they are required to perform an assessment, they should contact their EPA regional office.

Finally, Dolgin suggests that water systems should not yet submit vulnerability assessments to EPA. “A protocol for handling this sensitive information is now under development. Utilities will be notified with instructions for how to submit vulnerability assessments in the near future,” says Dolgin.

EPA releases water infrastructure gap analysis

U.S. Environmental Protection Agency (EPA) Administrator Christie Whitman recently called for a national forum early next year that will bring together prominent experts and stakeholders so that they can have the opportunity to discuss innovative approaches on how to best meet infrastructure challenges. On September 30, EPA released the Clean Water and Drinking Water Infrastructure Gap Analysis on the estimated funding needs of the nation’s water pipes and plants.

“This report looks at infrastructure in the broad sense—everything it takes to deliver clean, safe water to America’s homes and businesses and then remove and treat the wastewater that results,” said Whitman. “From the simplest pipe to the most complex treatment system, we looked at the entire picture.”

Assuming no growth in revenues, the total need for clean water—in both capital and operations and maintenance—exceeds $270 billion over 20 years. For drinking water, the gap approaches $265 billion for the same period. The size of the gap can be reduced substantially if a real growth in revenues is projected over the same period. Assuming a three percent annual real growth in revenues, for example, the gap shrinks by nearly 90 percent on the clean water side and by about 80 percent on the drinking water side.

“The actual gap may end up somewhere in between these numbers—and there are an enormous number of considerations that will go into determining where the gap ends up. The important thing about this report is that it enables us to engage the discussion with a better understanding of what the dimensions of the challenge really are,” Whitman said.

For fiscal year 2003, the Administration has already proposed the largest combined request for the state drinking water and clean water revolving loan funds in history—$2.1 billion. Whitman said that meeting the challenge will require the harnessing of the power of the public and private sectors both for financing and for the development of new technologies and innovations.
WEF announces wastewater security training events

Wastewater facilities face unique challenges in evaluating and determining approaches for reducing their vulnerability to both intentional threats and natural disasters. The Water Environment Federation (WEF) and the Association of Metropolitan Sewerage Agencies (AMSA), in cooperation with the U.S. Environmental Protection Agency (EPA), are partnering to provide wastewater treatment facilities with the necessary tools to initiate vulnerability assessments and develop or update emergency response plans.

WEF’s wastewater training will take a three-pronged approach:

Large system training workshops

Twelve two-day training sessions conducted around the country between October 2002 and July 2003 will focus on more than 300 of the nation’s largest wastewater facilities. The experts who designed AMSA’s Vulnerability Self-Assessment Tool (VSAT) will provide hands-on training to representatives from these facilities. VSAT is designed to provide a comprehensive, intuitive system for wastewater facilities seeking to analyze their vulnerabilities and implement appropriate countermeasures.

Representatives with responsibility for security planning will bring data from their own facilities to the workshops and initiate a vulnerability assessment with VSAT designed specifically for their circumstances. Participants will then learn how to develop a vulnerability assessment and an emergency response plan that is tailored to their particular circumstances.

All training sessions are free for public wastewater facilities. Each workshop location will have a limited capacity. Confirmed registrants will receive a pre-conference information package with details about the training session upon application.

Train-the-trainer workshops

WEF will offer a one-day training workshop in each of EPA’s 10 regions to educate 150 trainers on the uses and capabilities of VSAT and on the development and upgrading of emergency response plans. These trainers will then act as resources for facilities that need training and assistance.

Train-the-trainer sessions are designed for state and local training and assistance providers and attendance is by invitation only.

Webcast

WEF, along with the American Public Works Association, is offering part one of a two-part Wastewater Vulnerability Assessment Webcast on November 20. This Web-based session will summarize general vulnerability assessment principles and provide an overview of the VSAT software.

The second part of the Webcast, which will provide more detailed training on the VSAT software, will be broadcast in March 2003.

Both Webcasts are free.

For more information and registration details about these wastewater security training events, call (703) 684-2400, extension 7090, e-mail securityreg@wef.org, or visit WEF’s Web site at www.wef.org/publicinfo/wefsecurity.jhtml.

EPA Web site provides links to security information

The U.S. Environmental Protection Agency (EPA) Water Protection Task Force, EPA’s regional offices, and many partners are working together to improve the nation’s water infrastructure security.

In an effort to help systems obtain security information, EPA’s Office of Groundwater and Drinking Water’s Web site contains a list of links to trade and industry organizations, clearinghouses and information centers, and federal government agencies that offer security information for drinking water and wastewater treatment systems.

To access this list, visit www.epa.gov/safewater/security/links.html.

Security training information available online

If you are looking for the latest information about security training events for drinking water and wastewater system personnel, be sure to check out the security training calendar on the National Environmental Training Center for Small Communities’ (NETCSC) Web site. To access the calendar, go to NETCSC’s homepage at www.netc.wvu.edu and click on the red “Security Information” graphic.

If you would like to submit information about an event to be included on the calendar, please contact Craig Mains, NETCSC training specialist, at cmains@mail.wvu.edu. Please include a description of the training event, location, date, registration fees, and contact information (including a Web address, if available).
Pipeline helps public understand wastewater treatment issues

Homeowners, local officials, and others who want to learn more about onsite and small community wastewater treatment issues will appreciate the newsletter Pipeline, a free publication of the National Small Flows Clearinghouse (NSFC).

Pipeline is written for a general audience, and each issue explains a wastewater technology or theme of interest to local officials and community residents. The articles are presented in an easy-to-read, non-technical style and each issue includes a list of contacts and resources.

The three most recent issues of Pipeline discuss onsite wastewater treatment issues. They include:

- “Soil Characteristics: Demystifying Dirt.” This issue reviews the characteristics of soil that determine the efficiency of—or choice of—dispersal methods. (Spring 2002, Item #SFPLNL29)

- “How To Keep Your Water ‘Well’.” This issue presents the special considerations that are mandatory to prevent the contamination of drinking water wells in areas where onsite treatment is employed. (Summer 2002, Item #SFPLNL30)

- “Alternative Dispersal Options.” This issue provides clear descriptions and diagrams of various subsurface dispersal methods. (Fall 2002, Item #SFPLNL31)

To request a copy of these issues or to obtain a free subscription to Pipeline, call the NSFC at (800) 624-8301 or (304) 293-4191. The Pipeline newsletter also may be downloaded from NSFC’s Web site, which is located at www.nsfc.wvu.edu.

Arsenic has long been identified as being toxic, and in drinking water it is associated with cancers and numerous other disorders. In light of the U.S. Environmental Protection Agency’s new and lower maximum contaminant level set on arsenic in drinking water, the National Drinking Water Clearinghouse (NDWC) offers several free publications about arsenic removal. These include:

- Using DWSRF Funds to Comply with the New Arsenic Rule (Item #DWFSFN32)
- Laboratory Study on the Oxidation of Arsenic III to Arsenic IV (Item #DBBKRE21)
- Treatment of Arsenic Residuals from Drinking Water Removal Processes (Item #DBBKOM18)
- Arsenic Removal from Drinking Water by Ion Exchange and Activated Alumina Plants (Item #DBBKOM12)
- Oxidation of Arsenic (III) by Aeration and Storage (Item #DBLOM13)
- Arsenic Removal from Drinking Water by Coagulation/Filtration and Lime Softening Plants (Item #DBBKOM17)
- Regulations on the Disposal of Arsenic Residuals from Drinking Water Treatment Plants (Item #DBBLRG58)
- Arsenic Removal from Drinking Water by Iron Removal Plants (Item #DBBKOM14)

To order any of these publications, call the NDWC at (800) 624-8301 or (304) 293-4191 or send an e-mail to ndwc_orders@mail.nesc.wvu.edu.

If you want to know about products and services related to small community drinking water systems, you may wish to subscribe to the National Drinking Water Clearinghouse’s (NDWC) electronic mailing list. This notification service gives subscribers the opportunity to learn about NDWC activities and announcements before the news is published in NDWC’s quarterly magazine, On Tap.

The service is for notification only, and cannot be used for posting messages.

To subscribe to the NDWC news listserv:

- Send an e-mail to macjordomo@mail.nesc.wvu.edu.
- Leave the subject line blank.
- In the message area, type: subscribe ndwcnews Firstname Lastname
- Place one space between each word (e.g., subscribe ndwcnews Tom Thumb)
- Do not add any extra text to the message.
- Send your message.

For more information about the NDWC, call (800) 624-8301 or (304) 293-4191 or visit www.ndwc.wvu.edu.
Local official training improves water management

by Jodi Collins
NETCSC Contributing Writer

Mississippi is one of a few states requiring local drinking water system board members to attend management training sessions. Perhaps surprisingly, this mandatory training has been so well received that board members have requested additional follow-up training. But did this follow-up training achieve results? Did the local officials go beyond attending the training and actually implement what they learned when they returned to their roles as guardians of their community water systems?

According to an evaluation conducted by the National Environmental Training Center for Small Communities (NETCSC) and Community Resource Group, Inc. (CRG), the answer is yes. Not only did the board members find the information to be helpful, but several communities have experienced major benefits as a result of the additional training—fewer customers receiving water illegally, increased water loss accountability, decreased system debt, updated emergency response plans and long-term plans, and grant funding sought.

These impressive results can be traced to two offerings of A Business Approach to Managing Small Water Systems, a workshop that 54 decision makers from small water systems attended in Raymond, Mississippi, in September 2001. Offered by CRG and co-sponsored by NETCSC, the National Drinking Water Clearinghouse, and the Mississippi State Department of Health (DOH), the workshop was delivered as follow-up training to the mandatory eight-hour board member training required by the state.

“This supplemental course was designed to help board members improve their management practices and processes,” says Tommy Ricks, a CRG trainer who coordinated the training workshop. “We explained the importance of mission statements, business plans, capital improvements plans, and written reports. We also informed board members about how they can benefit from working with assistance providers and consultants.”

Ricks and CRG co-trainers David Johnson and Tom Johnson based the training session on two modules from NETCSC’s curriculum, Managing a Small Drinking Water System: A Short Course for Local Officials. They presented two different offerings of the session to accommodate participants’ schedules: one all-day workshop and one workshop offered over two evenings.

Evaluation reveals successes

Even though the CRG trainers knew the training had been well received by the board members based on classroom evaluations, the workshop co-sponsors wanted to find out for certain what impact the training was having in the actual communities. In January 2002—four months after the training sessions—NETCSC staff spoke with a number of board members who had attended the training sessions about the changes they had made in the management of their drinking water systems as a result of attending the workshop.

Nearly all of the board members reported that they had made some beneficial changes to their water system as a result of the training. In fact, most of the board members were able to list a number of significant changes that were implemented as a direct result of the training session.

Several board members from the town of Sallis’ water system attended the workshop to develop a better understanding of how a small water system should operate. “Nearly 20 to 30 of our customers who were receiving water illegally prior to the training are now paying customers due to what we learned,” says Tina McLellan, Sallis town clerk. Clearly this has resulted in increased revenue for the system. “We have also updated our ordinances, which has been very helpful,” adds McLellan.

Likewise, after several board members of the Crooked Creek Water Association attended the course, the board reevaluated its mission statement, business plan, and capital improvements plan. The revised plans now include an emergency response plan. The board sees improvements in other ways as well. “We now track our inventory and expenses better than before. Our consultants are required to provide us with more of their background information,” explains J.M. Madison, board secretary.

Carol Longino, a fellow board member, believes the training led to an overall improvement in Crooked Creek’s water system. “We have been able to decrease our debt as a result of the knowledge we gained. We have also updated our long-range plans with ideas we developed in the training session. And we have created a countywide map of our water system,” says Longino.

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Lily Rose makes improvements

The Lily Rose Water Association has come a long way since being on the verge of bankruptcy in 1996, when its 15-member board was disbanded due to mismanagement. A new five-member board has since been appointed. Three of Lily Rose’s five board members attended the September training session.

Board member Joephuse Laird says the board members gained valuable information from this workshop. “As a result of the training, we have done a number of things,” he points out. “We have streamlined our manpower. We were able to eliminate one position, which has resulted in cost savings. We have also developed a system to identify and prioritize our needs for maintenance in order to meet our requirements and to improve our system.”

According to Laird, one of the association’s goals is to cut water losses. “Our objective is to sell 95 percent of the water that we pump from the ground,” he explains. “As a result of the training, we are coming closer every day. We are now rerouting lines that were previously losing water.”

Since the training workshop, the Lily Rose Water Association has also implemented a savings plan, and they now have a long-term spending plan in place.

But perhaps the biggest impact the training session had for the board members is that they learned about funding sources. According to Laird, “It was at this workshop that we learned about the valuable assistance available from the U.S. Department of Agriculture’s Rural Utilities Service [USDA RUS]. Since then, we have applied for $3.9 million from RUS. We are eligible for $2,847,000 in grant money, which means we do not have to pay it back. Knowledge is power. If it weren’t for the training, this eligibility would have gone to waste.”

Elise Rhodes, another Lily Rose Water Association board member, notes that the improvements in the water system are even being noticed by the community. “Because of the information that we received from the training, we have been able to create new solutions to our problems,” says Rhodes. “Our customers have stated improvements at a recent board meeting. This training was very helpful. I feel we have learned a lot and it shows.”

CRG’s Ricks has provided technical assistance to the Lily Rose Water Association on several occasions and has been impressed with the efforts the association has made to improve its overall capacity ratings, which are based on technical, managerial, and financial capacity scores. “Lily Rose has attended the follow-up trainings offered by CRG. I believe part of the reason for their high rating is their leadership, which has led to many improvements in the system,” says Ricks. “The Lily Rose system has come a long way in a short period of time.”

The improved condition of the water system gives long-time board member Laird peace of mind. “The training has helped the newer board members develop an awareness,” says Laird. “This will be my final term on the board. Now that the board has had the opportunity to gain such valuable skills, I feel the board is ready to move on without me.”

Training sessions continue

Ricks and his training team were pleased to learn that their efforts to train local water board members in Mississippi are producing concrete results. Because the September 2001 pilot training session was so well received and generated such positive results, CRG received $35,000 in funding from the state to offer the training throughout Mississippi.

Between January and June 2002, the CRG training team presented A Business Approach to Managing Small Water Systems to an additional 365 board members.

Although these additional board members who attended training have not yet been questioned about their implementation of the training, Ricks, his training team, and the DOH can only hope that they too will translate what they learned in the workshop into positive changes for their water systems in the same way that the pilot training group did.

For more information about NETCSC’s training evaluation efforts or Managing a Small Drinking Water System: A Short Course for Local Officials curriculum, contact Sandra Fallon, NETCSC training specialist, at (800) 624-8301 or (304) 293-4191, extension 5882, or via e-mail at sfallon@mail.wvu.edu. For more information about Mississippi’s training efforts, contact Ricks at (601) 892-9997 or via e-mail at tricks@crg.org.
Onsite wastewater training centers break new ground

by Cathleen Falvey
NETCSC Contributing Writer

Not long ago, quality onsite wastewater system training was hard to find. Onsite wastewater training just wasn’t a priority for many states, even though a quarter of homes nationwide use onsite systems, and in some states the percentage is much higher.

But times are changing. Now, many states have centers devoted to onsite wastewater education, and new training programs are popping up all over the country. Health department officials, onsite system regulators, pumpers/haulers, and system designers and installers finally have choices for continuing their professional education. Some training centers also have expanded their focus to target other small community environmental issues and additional audiences, such as homeowners, public officials, and college students.

University of Arizona Maricopa Agricultural Center Onsite Wastewater Training Center

A new onsite wastewater training center, which has yet to be officially named, is getting started in central Arizona. Kitt Farrell-Poe, associate professor with the Agricultural and Biosystems Engineering Department at the University of Arizona (UAZ) and State Cooperative Extension water quality coordinator, heads up the effort. She and her colleagues were inspired to develop the center by a regulator who visited the university looking for help with a project.

“Colin Bishop of Orenco Systems, Inc., who was a regulator for Mohave County at the time, came to the Maricopa Agricultural Center director in search of collaborators for his own training center,” says Farrell-Poe. “It was through Colin that we developed the idea for the training center at Maricopa. He had managed to successfully pull together an onsite system demonstration center on a shoe-string budget, which also describes our situation.”

Farrell-Poe has been raising money for the UAZ training center through conference registrations and by writing grant proposals. In spring 2002, she taught an onsite wastewater system design course online, and she is planning a training course on installing conventional onsite systems in Arizona for practitioners in the fall.

“Our training center site at the Maricopa Agricultural Center has electricity and water, but no technologies have been installed yet,” says Farrell-Poe. However, I received equipment already from three manufacturers—Zoeller, Inc., Tuf-Tite, and Bio-Microbics,” she says.

Farrell-Poe said the training center site also includes a building with a classroom, and the main agricultural center building, located nearby, provides additional meeting rooms. She is looking for manufacturers to install systems at the site for training purposes.

This center is Arizona’s second onsite system training center. The Onsite Wastewater Demonstration Project in Flagstaff is affiliated with Northern Arizona University. Paul Trotta, Ph.D., P.E., is director. Farrell-Poe explains that the two centers work together, but are separate. “At the northern center, they demonstrate systems in cold weather and rocky soils,” she says. “Our center will demonstrate the same technologies under warm weather and sandy soil conditions.”

Arizona Cooperative Extension recently co-sponsored a meeting with the National Association of Wastewater Transporters for onsite system inspection training and certification. Regulators and practitioners who came to the workshop said they greatly appreciated the training and are looking forward to more.

“People are getting excited about the new training center,” says Farrell-Poe. “We plan to target local practitioners and regulators through mailings and advertise the courses nationally by posting them on Web sites and bulletin boards.”

For more information about the UAZ onsite wastewater training center, contact Farrell-Poe at (928) 782-3836 or via e-mail at kittfp@ag.arizona.edu.

University of Tennessee Center for Decentralized Wastewater Management

Another new onsite system training center in the planning stages is the Center for Decentralized Wastewater Management at the University of Tennessee’s (UT) Middle Tennessee Agricultural Experiment Station. According to John Buchanan, Ph.D., P.E., director of the center and assistant professor in Biosystems Engineering at UT, the center will be funded by federal 319 Clean Water Act grant money and matching funds. In addition to the university, three partners in the project will provide the matching funds: the Tennessee Valley Authority (TVA), the Tennessee Department of Environment and Conservation, and the Tennessee Onsite Wastewater Association.

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“We’ve got this wonderful group of people who have come out and rallied around this proposal,” says Buchanan. “So I really think it’s going to be a very solid center.”

According to Buchanan, the center received funding on October 1, 2002. Although the center has not offered any training courses yet, Buchanan and others involved with the center have been busy educating themselves by visiting other onsite training centers around the country.

“So far, we’ve been to onsite training centers in Arizona, North Carolina, Florida, Massachusetts, and Texas,” says Buchanan. “We’ve been trying to get a good feel for what’s out there and what works, so we can avoid reinventing the wheel.”

Jerry Steiner, a former employee and contractor for TVA, developed a seven-page questionnaire for the group to use when visiting different training centers. TVA will compile the questionnaire results into a report that may be a valuable tool for others working to establish onsite wastewater training programs.

According to Buchanan, the group has encountered a variety of educational methods at the centers visited. For example, the North Carolina and Florida centers provide displays that allow participants to troubleshoot systems and use leveling, surveying, and flow measurement equipment. They’ve also visited sites that do not have hands-on laboratories, but instead feature static displays that “allow someone to walk off the street, take a self-guided tour, and learn quite a bit.”

Buchanan would like the UT training center to include the best of both worlds. The Middle Tennessee Experiment Station at Spring Hill has a complete classroom facility onsite. There also is land adjacent that will be available for displays and clean-water demonstration systems.

“We will be much more than static displays and a training facility, however,” says Buchanan. “Obviously, we’re going to offer adult education for onsite system installers, designers, other practitioners, and homeowners, but we’re also going to develop college-level coursework for civil and environmental engineers, environmental specialists, and soil scientists. We also anticipate doing research and purchasing a trailer and mobile displays so we can travel around the state to conduct classes.”

Many decisions concerning the future of the training center will be made with the help of an advisory board that was developed to balance the various desires and agendas of partners and other stakeholder groups. In addition to the partners, Buchanan says the advisory board will include contractors and members of the Tennessee Professional Homebuilders Association, the Tennessee Professional Realtors Association, and others with a vested interest in onsite technologies.

“Onsite systems are going to be an issue, even in communities that have sewers,” says Buchanan. “With the TMDL [total maximum daily load] program ongoing, cities are not going to be able to increase their capacity for dumping treated wastewater into receiving waters any more. So we’re going to have to learn to develop this other capacity—this wonderful device called the soil—and bring water back into the watershed from that direction.”

Buchanan also noted that the Consortium of Institutes for Decentralized Wastewater Treatment is developing excellent curriculum materials for practitioners and college-level students that will be a great help in getting UT’s onsite training center off to a running start.

For more information about the UT Center for Decentralized Wastewater Management, contact Buchanan at (865) 974-7237 or by e-mail at jbuchan7@utk.edu.

Environmental Training Center at Delaware Technical and Community College

According to Jerry Williams, Department Chair of the Environmental Training Center at Delaware Technical and Community College (DTCC), last year was a record year for his center.

“A total of 1,387 credit and non-credit students went through the center last year,” says Williams. “In many ways it was our busiest year so far.”

Onsite system practitioners, wastewater operators, and water system operators in Delaware can take courses at the DTCC center to become licensed or to maintain their licenses. In addition, the center offers a two-year associate technical degree in water and wastewater technology and has recently expanded its focus to include courses for well drillers and onsite technicians. The center also trains local elected and appointed officials. The courses for local officials include subjects such as oversight, management, and budget issues for both water and wastewater facilities.

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NETCSC thanks the following co-sponsors for their contributions to the success of the 2002 Environmental Training Institute for Small Communities:

- National Rural Community Assistance Program, Inc. (RCAP)
- West Virginia Rural Water Association (WVRWA)
- Environmental Finance Center—University of Maryland (EFC)
- Southern Rural Community Assistance Program—Community Resource Group, Inc. (CRG)
- Northeastern Rural Community Assistance Program—Rural Housing Improvement (RHI)
- Great Lakes Rural Community Assistance Program—WSOS Community Action Commission, Inc. (WSOS-CAC)
- Midwestern Rural Community Assistance Program—Midwest Assistance Program, Inc. (MAP)
- Western Rural Community Assistance Program—Rural Community Assistance Corporation (RCAC)
- West Virginia Technical Advisory Program (WVTAP)
- National Onsite Demonstration Program (NODP)
- National Small Flows Clearinghouse (NSFC)
- National Drinking Water Clearinghouse (NDWC)

Organizations interested in co-sponsoring the 2003 Environmental Training Institute for Small Communities should contact John Hoornbeek, NETCSC director, or MaryAlice Dunn, NETCSC training specialist, at (800) 624-8301 or (304) 293-4191. Hoornbeek may be reached at extension 5579 or via e-mail at jhoornbe@mail.wvu.edu; Dunn at extension 5538 or maryalice.dunn@mail.wvu.edu.
Participant Feedback

Here’s what participants had to say about the 2002 Institute.

The Program:
- “I found the information to be up-to-date and practical. I will definitely use this.”
- “The information will help me to better assist systems.”
- “The program was very easy to understand and very informative.”
- “I learned several things that will help me to answer questions and be able to explain concepts to the public.”
- “The networking sessions and roundtable discussions were great.”

The Instructors:
- “The instructor was great! He mixed up the training to make it interesting and easy to soak in.”
- “The material was relevant, the pace was good, and the instructor was outstanding!”
- “The instructor had good presentation skills. He was engaging, knowledgeable, and enthusiastic.”
- “Great workshop leader. Very enthusiastic!”
- “The instructor had a way of explaining technical terms in an understandable way.”

The Materials:
- “Excellent handouts!”
- “I now have tools that I will be able to use in the field.”
- “Good manual with great overhead notes and appendices.”
- “I’ll be passing the materials around to my staff.”
- “I can use the materials right away for training.”
- “Good resources and contacts.”

Other Comments:
- “Would I recommend this program to a colleague? You bet!”
- “Class interaction through case studies and activities was terrific.”
- “The interaction with other participants was invaluable.”
- “Listening to others talk about their solutions was very helpful.”
- “The small groups in the sessions allowed a lot of participation.”
- “A++”
- “The Institute brings a great deal of knowledgeable people together.”
Williams reports that the state increased the center’s funding by $100,000 last year, which has allowed it to expand its services. These services include free certification and recertification training for all municipal, county, and state operators. In addition, representatives from the DTCC center traveled to Turkey and Bulgaria last year to meet with educational and environmental officials. Officials from both countries have shown an interest in beginning environmental training centers.

“A technical college in Turkey has adopted our two-year degree program,” says Williams. “And with help from Senator Joseph Biden, we recently secured funding to help begin a national environmental training center in Bulgaria.”

In addition, the center has developed certification programs for onsite wastewater technicians (i.e., pumpers, contractors, and designers) and for well drillers. Williams says the center also has requested a grant from the U.S. Department of Agriculture to construct an onsite wastewater training facility. The new facility will include three classrooms, a large laboratory, and the land adjacent to the building. Examples of conventional and new onsite wastewater technologies will be installed on the land for training purposes.

For more information about the Environmental Training Center at DTCC, contact Williams at (302) 855-5900, via e-mail at awillia2@college.dtcc.edu, or visit the training center’s Web site at dtcc.edu/owens/ccp/Pages/eti1.html.

New York Onsite Wastewater Treatment Training Network

New York’s Onsite Wastewater Treatment Training Network also has been on the move, literally. The training center used to be based at the State University of New York (SUNY) campus in Morrisville but recently relocated its administrative offices to the town of Delhi, New York.

“We’re a little different than the training centers in many states,” notes Doug Nelson, network member. “We’re a diversified center, and our intent is to offer training around the state, so we don’t really have classrooms or a centralized training center.”

“However,” Nelson says, “we do have a very nicely developed demonstration site in Morrisville with onsite wastewater facilities, which will have to be moved within the next year. The university plans to build a cogeneration facility on that site, but currently, the center is still at Morrisville and available for us to use free of charge.”

According to Nelson, manufacturers helped them build the Morrisville site and either donated the systems or provided them at a substantial discount. The network also received money from the National Onsite Demonstration Project that financed other things, such as electrical services needed at the site. Nelson anticipates help again from manufacturers when it comes time to relocate the systems.

The network recently hired a new coordinator, Lorraine Keckeisen, who is reorganizing the administrative office quickly, says Nelson. The network currently recognizes three courses, which it offers around the state: the first course is “Foundations of Onsite Systems,” the second is a regulatory review for onsite systems, and the third is a three-day course, “Site Appraisal for Onsite Systems.” The site appraisal course includes one day on soils, one day of site appraisals of new systems, and one day of site appraisals for existing systems. The course follows the structure of New York State’s onsite regulations.

Nelson says that network training programs primarily target contractors and local code enforcement officers but also try to attract engineers.

Mark Noga, chair of the network’s steering committee, says that one of the most exciting things the network will be doing in the near future is developing a new demonstration site in Delhi.

“The onsite systems we have in Morrisville are cutaways that use fresh water,” explains Noga. “If we can work out all the details, the opportunity we have now is to add actual operating systems on land adjacent to Delhi’s municipal sewage treatment plant.”

For more information about the New York Onsite Wastewater Treatment Training Network, contact Keckeisen at (607) 746-4152 or via e-mail at keckeilr@delhi.edu. Noga can be contacted via e-mail at marknoga@accent.com.

continued on next page
Kentucky Onsite Wastewater Training Center

The Kentucky Onsite Wastewater Training Center was established in November 1999 and is located in Lawrenceburg at the Central Kentucky Technical College, Anderson Campus. The center is also under the guidance of the Kentucky State Onsite Association. Mike Davis, the center’s director, is the faculty and the only paid member of the staff.

“I coordinate the training at the center,” says Davis, “but we have volunteers from industry, health departments, and other educators—a wide range of folks from contractors to Ph.D.s—about 20 people in all—who come out and teach our classes for us.”

The center also offers a wide range of courses, including classes on site evaluation, soils, filters, pumps, the microbiology of onsite wastewater systems, water and wastewater characteristics, and general safety training classes for people working in trenches, confined spaces, and with pathogens. The Lawrenceburg site includes a school and a 2.3-acre demonstration site with recirculating gravel filters, peat filters, fixed media, wetlands, and an onsite lagoon system common in Kentucky.

“We’re putting in more systems all the time,” says Davis. Because the training center is partially funded with federal 319 Clean Water Act money, they charge for courses only on a cost recovery basis.

“Our installers in Kentucky have to maintain continuing education hours, so we are happy that we can offer them courses for $50 per day, which basically just recoups operating costs for the facility,” says Davis.

Davis believes that one of the most important services the center performs is outreach to educate communities and installers. “We travel and have taught classes from one end of the state to the other,” notes Davis. “As a result, I believe we get more professional installers who tend to learn more about what they do and do a better job. This keeps them in compliance, which keeps our streams, rivers, and lakes cleaner.”

The Kentucky center is beginning an interesting initiative to attract new audiences such as developers, real estate professionals, local officials, and homeowners, as well as installers, manufacturers, and health department officials.

“We’re going to start locally, first targeting a four-county area by conducting training sessions for local real estate agents, county judges and commissioners, and city mayors,” explains Davis. “We’ll be sending them letters and putting ads in newspapers. Then we will develop 30-second public service announcements to be run across the state on how to take care of your system and things to look for. We hope to generate interest among homeowners that way, and they’ll be able to contact us with questions.”

Davis says that the center is getting ready to do its first course for homeowners. With the little bit of work they’ve done to publicize the course, Davis already receives five to 10 calls per week from homeowners.

For more information about the Kentucky Onsite Wastewater Training Center, contact Davis at (502) 839-5082 or via e-mail at mike.davis@kctcs.net. You may also visit the training center’s Web site at www.kentuckyonsite.org.

Environmental Technology Students from the Environmental Technology Program, Anderson Campus, Central Kentucky Technical College, learn the function and operation of a peat-based wastewater treatment system. Photo courtesy of Mike Davis.

Institute educates environmental professionals continued from page 1

- GASB 34 for Trainers and Assistance Providers
- Training and Presentation Skills to Reach Adult Learners
- Model Environmental Training Programs that Reach Local Officials

The 2002 Institute also featured an Exhibit Hall where NETCSC, Institute co-sponsors, and other agencies from around the country showcased the products, services, publications, and resources they provide related to small community environmental infrastructure.

Additional highlights of the Institute included “An Evening with Exhibitors” reception that allowed attendees to mingle with one another and view exhibitors’ displays, a networking luncheon where participants were greeted by West Virginia University President David Hardesty, an evening cookout at Coopers Rock State Forest, and exhibitor demonstrations and resource presentations.

For more highlights and photos of the 2002 Institute and information about the 2003 Institute as it becomes available, visit NETCSC’s Web site at www.netc.wvu.edu.
Training Skills: Using creativity in the classroom

by Susan McMaster
NETCSC Contributing Writer

Why should environmental trainers be creative in the classroom? When we were in school, we sat through lots of boring classes. If that was good enough for us then, shouldn’t it be good enough for today’s students? After all, we are there to teach from our infinite wisdom; we are not there to become the most popular instructor on campus.

In reality, however, we probably remember very little of what we learned in most classes in the “old days.” Much of what we learned in school has been forgotten or no longer applies. Times change; technologies change; attitudes change. What we do remember comes from practical application of the knowledge we learned. Therefore, it is incumbent upon us as trainers to set up learning situations that capture or recreate the lessons we have learned from practical experience—and that requires creativity.

What we know about adult learners

After about age 18, some skills become more difficult. For example, adults have a harder time memorizing lists just to memorize them—like the elements on a periodic table. Frankly, I think adults have finally wised up to the fact that it is easier to look up information than to memorize it. Adults could memorize isolated facts but usually choose not to do so.

Instead, adults learn best when new learning is related to old learning. A single fact is like a single thread—easily broken, easily forgotten. However, if we weave that single thread into the rich tapestry that is our mind, it will last virtually forever. Therefore, when we teach, we have to weave new knowledge into knowledge that students have already mastered. Our favorite word should be the comparative word “like.” How is this new concept we are teaching similar to something the student has experienced or seen? Every trip to the hardware store, the grocery store, or even a toy store should be an expedition to find some simple illustration of a complex concept we are teaching.

For example, you might bring in a mixer with a single beater and cake mix ingredients. As a student mixes the batter, notice how the mix is flung up against the sides and the center sinks down. Perhaps this is similar to the way a centrifuge pump operates. Another example would be to cut the top off a two-liter soda bottle. Cut a hole in the side of the bottle for a straw and seal it with caulk. Fill the bottle with water below the straw. Use a mixer with a single beater and watch water come out of the straw to illustrate centrifugal pump action.

What we know about learning styles

Adult learners retain the most information when they learn by seeing and doing. They retain the least amount when they learn by reading and by hearing. Yet, most college classes traditionally have followed primarily a lecture format with assigned reading. Additional formats—such as guided discussions, role plays, case studies, and demonstrations—not only add interest to the course but also appeal to various learning styles.

How students can help themselves

We know that not everyone learns the same way. Students need to be given permission to discover their own learning styles. We need to suggest various possibilities to students so they can experiment with strategies that complement their learning style. Here are some options:

• Some students need to rise early in the morning and study before coming to class. Others need to take a nap in the afternoon and study late at night. Different people have their own time clocks and should be encouraged to try different study habits.

• Some students need absolute quiet in order to think. Other students seem to learn better with music, particularly baroque, which tends to mimic a heartbeat. Try an experiment by offering tests in a silent environment and one with soft music. See what works. Have students memorize lists by putting the words to a popular song.

• Some students need to try different color highlighter pens for textbooks—one for terms, one for concepts discussed in class, etc. Others need to outline the information in their own words or draw pictures or diagrams to see how concepts relate to each other.

• It is helpful for students to read assigned textbook assignments aloud. This helps them stay awake and uses the sense of hearing as well as sight to retain the information.

How instructors can be creative

Teaching never has to become boring. For every topic we teach, we should have multiple strategies for getting the point across. Here are some guidelines:

Avoid depending on a single medium. Some trainers feel very comfortable with

continued on next page
PowerPoint® presentations, so they persist in turning their whole lesson plan into slide after slide. The same is true for those who like transparencies and traditional slides. The trick is to use these wonderful media sparingly. Think of media as punctuation—not the entire essay. Twelve minutes is enough for any type of medium. If we want to show a long video, for example, we should stop the tape after a few minutes and ask a few questions about what the students have learned so far, or we can break up the video with a demonstration or written exercise.

If we tend to rely heavily on slides, we can force ourselves to break this habit by inserting review questions right on a slide. This technique forces us to break the monotony of slides and involve the group.

Allow students to fidget. Most instructors waste time cajoling students to “Sit still, and pay attention.” We should remember that some students—especially adults—need to fidget in order to pay attention. Consider having boxes on the table that contain quiet objects like rope, clay, smooth rocks, squeeze balls, etc. The only rule is that if objects disrupt the class, they disappear. This technique actually helps active students concentrate on lectures. Although some instructors are reluctant to try quiet objects, it is amazing how much they help some students to pay attention and how much easier it is on the instructor than hearing ball point pens click throughout the class.

Let students figure it out for themselves. When we are teaching adults, we are never writing on a blank wall. Many times we will be surprised to find out how much students know. Before we start spewing information, we should try to determine what students already know. In fact, we should try never to tell students things they can figure out for themselves.

For example, when I start teaching about groundwater, I often start by drawing a simple picture on the easel chart. I might include some hills with fields and a feed lot, Farmer Jones’s house, a septic tank, a leaking underground gasoline storage tank for the tractor, a well, a dump, etc. Then, I ask teams of students to draw the same picture and add in the water cycle and the groundwater. Students are often able to identify key points about groundwater contamination. The time that is spent on this group exercise is made up because I can often skip the lecture and slides that bring out the same points, and students remember the information longer if they “discover” the concepts for themselves.

How instructors can encourage critical thinking

I have done hundreds of interviews with groups of potential employers in various career fields. There is a common theme: employers want someone who can solve problems. They want someone who knows how to find information, not memorize it. They want employees who can apply what they have learned to troubleshoot problems on the job.

How can instructors use creative training methods in the classroom to encourage critical thinking? Here are a few ideas:

• Give students a scavenger list of words. Each team has to complete an assignment, such as to find out how the words relate to each other, find three facts about each word, list the words in order according to which is most effective in cleaning water and explain why, or determine the importance of each word to wastewater technology. Students should have to go to the library, use texts, use the Internet, ask an expert, etc.
• Give teams a box filled with straws, matchboxes, plastic, coffee filters, sand, etc., and have them make their own wastewater plant.
• Create a role-play scenario. Give four or five students an actual troubleshooting situation—such as a stormwater event or a mechanical failure. Each student has either seen a symptom or taken some action, and each one knows some part of what has happened. Ask another three-person team to serve as the troubleshooting team. They can ask questions and see props. The troubleshooting team has to determine the root cause and recommend solutions.
• Collect and keep broken equipment and build in “bugs” with new equipment. Have students determine what is wrong with the equipment.
• Have students make up their own tests and submit it with an answer key. Grade them on how thoroughly they covered the key points in the unit.
• Give an open book test that requires students to look up and interpret information rather than just memorize it.

Pitfalls of creativity

Sometimes creativity can be carried too far. For example, some instructors create a PowerPoint® slide with so many colors and fonts that it looks like a ransom note. Also, a few sound effects go a long way. The trick is to make sure that the medium does not overpower the message.

Slides should be simple—avoid italics and script. Never find yourself saying, “I know you continued on page 20
# NETCSC Products List

The following products are available from the National Environmental Training Center for Small Communities (NETCSC). Please note that prices are subject to change.

To place an order, write to NETCSC, West Virginia University, P.O. Box 6064, Morgantown, WV 26506-6064; call (800) 624-8301 or (304) 293-4191; fax (304) 293-3161; or e-mail netc_orders@mail.nesc.wvu.edu.

## Environmental Management

### Training Packages

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<td>WWBKDM53</td>
<td>Alternative Wastewater Collection Systems</td>
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<td>TRPKOM01</td>
<td>Analysis of Biochemical Oxygen Demand/Video and Workbook</td>
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<td>Choosing an Alternative Septic System/Video</td>
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Training Skills: Using creativity in the classroom
continued from page 15

can’t read this, but . . .”. Likewise, keep clip art to a minimum, use a simple font in 24-point type or larger, use phrases rather than paragraphs, and limit words to about 36 per slide. Add pictures, diagrams, and videos to help students visualize concepts.

Many instructors include icebreakers and games. The criterion we should use is simple: Does this game help the students understand the subject? If it is a pointless game, avoid it. However, if it is a “koosh” ball thrown from student to student as part of a question/answer exercise, it is both innovative and practical. A bingo game, a Jeopardy game, a Wheel of Fortune game, etc., can make a testing situation innovative and involve the entire class. However, all types of media and games lose their innovation if they are used over and over again.

Strive for innovation

Every activity done in a classroom should help students learn the subject matter. However, classes can be structured and organized without being boring. Lecture, guided discussions, role plays, demonstrations, and media—all have their places in the classroom, but any training method or medium can be overused. Classes do not have to be a laugh a minute, but trainers should strive to have each class include an innovative technique that surprises and delights the learners. That way, when students describe what they learned to other students, they should say, “Wow! You just had to be there to see the point.”