

The logo for the Rural Community Assistance Partnership (RCAP) is located in the top right corner. It features the letters "RCAP" in a blue, serif font, with a stylized blue wave graphic behind the letters.

RCAP

RURAL matters

The magazine of the Rural Community Assistance Partnership

2015
Issue 2

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community
mobilizes for
clean up

New centers for
innovation in
small drinking
water systems

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make impact on
national advisory
groups

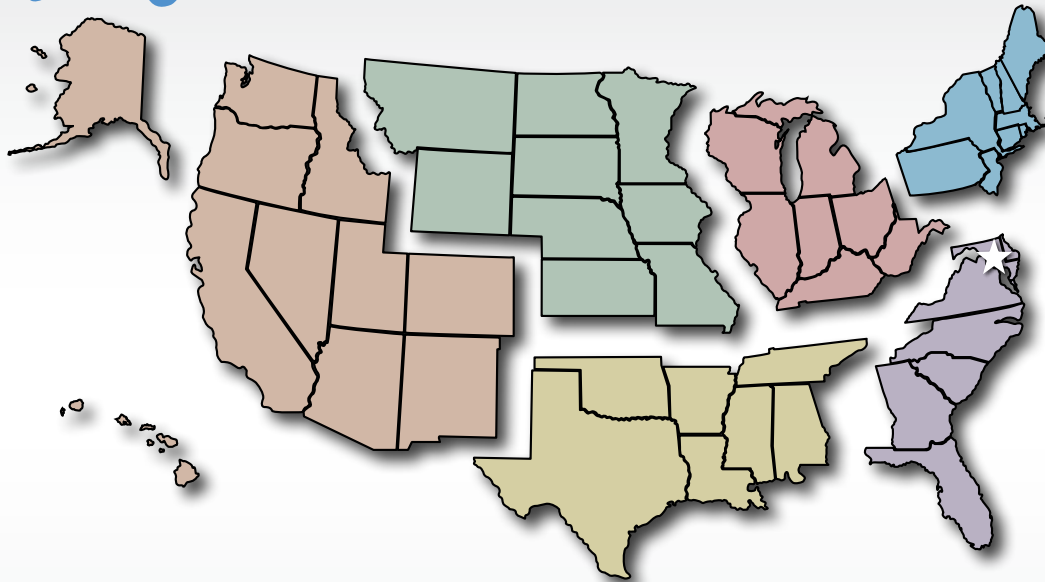
Need help with your community's water or wastewater system?

The Rural Community Assistance Partnership (RCAP) is a national network of nonprofit organizations working to ensure that rural and small communities throughout the United States have access to safe drinking water and sanitary wastewater disposal. The six regional RCAPs provide a variety of programs to accomplish this goal, such as direct training and technical assistance, leveraging millions of dollars to assist communities develop and improve their water and wastewater systems.

If you are seeking assistance in your community, contact the office for the RCAP region that your state is in, according to the map below. Work in individual communities is coordinated by these regional offices.



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(Northeast RCAP)

Great Lakes RCAP

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Photo courtesy of Deborah Patton



Practical solutions for improving rural communities

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Director's Letter



Robert Stewart
RCAP Executive Director

Every morning as I read through the Washington Post I typically encounter stories about the campaigns for next year's election, the refugee crisis in the Middle East, underfunded government programs, and typically another loss by my now-favored Washington Nationals. You cannot escape the negative news in our nation's media, especially if you live in Washington DC. So a story about Puerto Rico's latest effort to re-structure their massive public debt, reduce government services, and look at new sources of revenue reminded me of the terrific solid waste and recycling project, reported in this issue, that our staff has undertaken in Manzanilla, on the southern coast of Puerto Rico.

Through a grant from the US Department of Agriculture (USDA) Rural Development and administered onsite by our regional partner, RCAP Solutions, this project brought together an incredible array of volunteers (over 400) to clean up Manzanilla and provided educational sessions concerning waste reduction and recycling opportunities. This is an outstanding example of what local communities can accomplish when they bring together existing resources including universities, schools, civic organizations, churches, businesses, and other concerned residents to address a vital public health concern.

Oftentimes, it requires a catalyst to get these projects moving and in this case Edwin Vasquez-Asencio, our Sustainable Materials Management Specialist in Puerto Rico, and Josefa Torres, our District Director, fulfilled that critical role along with leaders within the community. For those of you who work in rural America, you understand the need for local leadership and the maximization of local resources to be brought together to solve water, wastewater, solid waste, and other development issues. I am thankful that there are federal government agencies such as USDA, the US Environmental Protection Agency (EPA), and Health and Human Services (HHS) that provide support to RCAP so that our staff can work in concert with local leaders to produce positive changes in the lives of rural Americans.

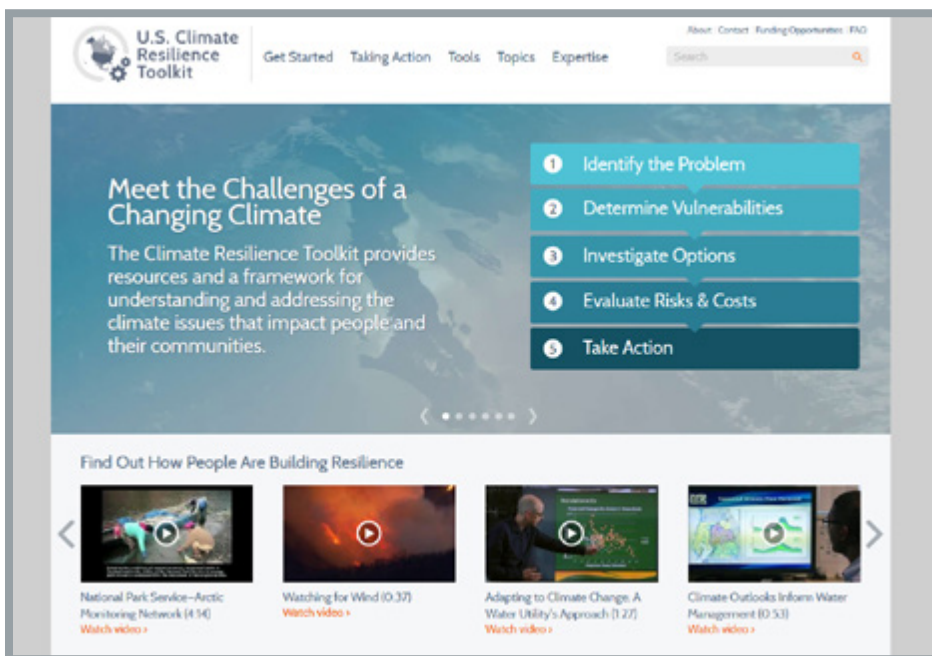
Recently RCAP started work on new projects funded by EPA to help communities with Safe Drinking Water Act (SDWA) compliance issues and to also provide training and assistance to some of the millions of homeowners who rely on individual water wells for their drinking and domestic water needs. In these projects, which will be highlighted in coming issues, I am pleased that we will be working with outstanding partners that each bring their own resources and expertise to this work, including the American Water Works Association, the University of Illinois, the Inter Tribal Council of Arizona, the United South and Eastern Tribes, the National Groundwater Association, the Water Systems Council, and the National Environmental Health Association. Working together with these professional organizations, their staff, their members, and their volunteers we will be able to multiple many times the impact that we might have otherwise realized.

During this seemingly never-ending election cycle we will all hear calls for political parties and members of Congress to work together to improve this great country. While I think we all support that idea, I already know that in rural communities across America citizens, businesses, non-profit groups, civic and religious organizations, schools, universities, and other local groups are working together, seeking to improve the economic and environmental health of their community. My admiration of these efforts and that of our staff in every state and territory is immeasurable! ■

rural developments



News and resources from the US Environmental Protection Agency



EPA Provides Training to Help Communities Prepare for Climate Change

WASHINGTON— As part of President Obama's Climate Action Plan, the U.S. Environmental Protection Agency (EPA) has released an online training module to help local government officials take actions to increase their communities' resiliency to a changing climate. The virtual training, which was informed by the National Climate Assessment released one year ago today, was developed with advice from EPA's Local Government Advisory Committee and is the latest addition to the U.S. Climate Resilience

Toolkit announced in November 2014. It includes successful examples of effective resilience strategies that have been implemented in cities and towns across the country.

"Across the country, communities are being challenged by the impacts of a changing climate," said EPA Administrator Gina McCarthy. "The Obama Administration is committed to helping communities make smart decisions in the face of those challenges. EPA's new training offers tools that can help local governments improve their ability to deliver reliable, cost-effective services even as the climate changes."

The training explains how a changing climate may affect a variety of environmental and public health services, such as providing safe drinking water and managing the effects of drought, fires, and floods. It also describes how different communities are already adapting to climate-related challenges. For example, the module describes how the Massachusetts Water Resources Authority (MWRA) designed its Deer Island sewage treatment plant in Boston to account for the risks posed by sea level rise over the lifetime of the facility. Chester, Pennsylvania's use of EPA Brownfields funds to undertake redevelopment and revitalization efforts in a way that is resilient to climate change is also presented.

The training provides links to a number of federal and state resources that can help communities assess their unique climate-related risks and opportunities to become more resilient to climate change. For example, information is provided on EPA's Climate Resiliency Evaluation and Awareness Tool (CREAT), which helps drinking water and wastewater system operators to understand, assess, and evaluate alternative strategies for delivering services even as the climate changes. Users are also directed to the wide range of data and tools available from the federal government through the U.S. Climate Data Portal and the U.S. Climate Resilience Toolkit.

Local officials can access the training online at www.epa.gov/localadaptation-training or via the Climate Resilience Toolkit at <https://toolkit.climate.gov/>. While the initial focus of the training is at the municipal level, additional training to help neighborhoods become climate resilient is planned.

For more information about EPA's climate adaptation activities, visit <http://www.epa.gov/climatechange/effects/adaptation.html>

Case Studies on Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants

Nutrient pollution is one of America's costliest and most challenging environmental problems. However, many of the nation's wastewater plants were not designed for nutrient removal and major retrofits may be a significant hurdle. This new report from EPA showcases communities where lower cost plant modifications can reduce nitrogen discharge levels (ranging from about 20% to 70%), under specific circumstances. Researchers found that in most cases, the activities' effects were positive, allowing for better energy efficiency, lower operational costs, and improved process performance. Read the report at <http://www2.epa.gov/nutrient-policy-data/reports-and-research#reports>.

EPA is interested in learning of additional communities' successes and intends to update this document to help more of the nation's wastewater treatment plants make progress towards additional nutrient reductions. Interested parties are invited to comment and recommend additional case studies by December 15, 2015 to POTWOptiNP@epa.gov.



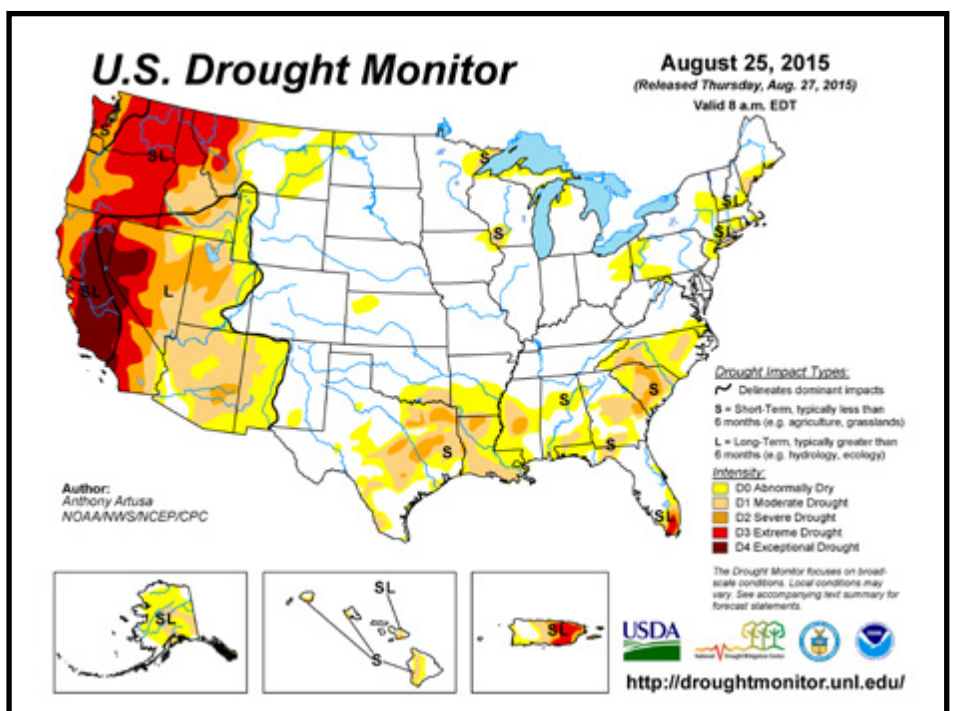
EPA Launches New CWSRF Website

Over its lifetime, EPA's Clean Water State Revolving Fund (CWSRF) has provided more than \$105 billion of financing for water infrastructure projects. This state-federal partnership program has provided almost 35,000 loans for communities of all kinds nationwide. Now the CWSRF has a new website covering all facets of the program. For example, the site includes information on types of projects eligible for funding, types of financial assistance offered, and data on the program's environmental benefits and lifetime accomplishments. Parties seeking funding can use the site to link to their state CWSRF

program. Visit the site at <http://www2.epa.gov/cwsrf>.

WaterSense Launches When In Drought Campaign

WaterSense, an EPA partnership program that offers people a simple way to use less water with water-efficient products, new homes and services, has launched its When In Drought campaign. This campaign will amplify drought messaging in western states, and will create awareness that summer time is the most critical time to save on watering. When In Drought campaign materials include an animated video featuring WaterSense spokesperson Flo and her dog. The video describes actions (plant the right plants, take a sprinkler break, switch to WaterSense products, etc.) everyone can take to save water. To coincide with this campaign, WaterSense hosted a #WaterSavingYard Photo Challenge on Twitter, Facebook, and Instagram to showcase how beautiful drought-tolerant landscapes can be. For more information, visit http://www.epa.gov/watersense/our_water/drought.html.



continued on next page

Water Utility Response On-The-Go Mobile Website Launched by EPA

EPA has launched an innovative tool that consolidates and makes accessible from the field information and tools that water utility operators and their response partners may need during an emergency. The site allows users to: identify and contact emergency response partners; monitor local and national severe weather; review and complete incident-specific checklists; and populate, save, and email generic damage assessment forms and FEMA Incident Command System forms. To learn more, visit <http://watersgeo.epa.gov/responseotg/>.

EPA Releases New Website Enabling the Public to Track Compliance Status of Public Water Systems

EPA has released the Safe Drinking Water Act (SDWA) dashboard, a user-friendly website that presents data about violations and the compliance status of public water systems. The dashboard contains interactive charts and graphs that provide information regarding the compliance of public water systems with federal drinking water regulations, as well as enforcement actions. The SDWA Dashboard provides an overview of the SDWA regulatory activities of EPA and the implementing states, tribes, and territories. The dashboard provides an easy-to-use summary of key activities to answer questions like: which public water systems are regulated, how many public water systems have been inspected, how many systems have had alleged violations identified and enforcement action taken, and how many systems have returned to compliance.

To learn more, visit <http://echo.epa.gov/trends/comparative-maps-dashboards/drinking-water-dashboard>.



EPA Documents to Assist States and Utilities in Protecting Drinking Water from Algal Toxins

EPA has published drinking water health advisories for the cyanobacterial toxins microcystin and cylindrospermopsin. The advisories identify concentrations of the two algal toxins in drinking water at or below which adverse human health effects are not anticipated to occur over a ten-day exposure period. The advisory documents also provide information about testing methods and treatment techniques. In addition, EPA published health effects support documents for these cyanobacterial toxins, as well as a third one called anatoxin-a. These three cyanotoxins were identified on EPA's most recent Candidate Contaminant List for potential regulation in drinking water. EPA found adequate health effects data to develop health advisories for microcystins and cylindrospermopsin, but inadequate data to develop an advisory for anatoxin-a. EPA has also published a cyanotoxin management document as a companion to the health advisories. It includes background information, tools to consider, and suggested management strategies, including a possible approach

public water systems can consider in their cyanotoxin risk management efforts.

View the cyanotoxin health advisory and health effects support documents here <http://water.epa.gov/drink/standards/hascience.cfm>

View the support document for managing cyanotoxins in drinking water. at <http://www2.epa.gov/nutrient-policy-data/guidelines-and-recommendations>.

EPA Releases a Progress Report on Innovations in the Water Sector

EPA has released *Promoting Innovation for a Sustainable Future – A Progress Report*, highlighting examples of innovation pioneers and their efforts toward water sustainability. This report expands upon the April 2014 *Promoting Technology Innovation for Clean and Safe Water: Water Technology Innovation Blueprint* and provides additional examples of the growing momentum exhibited across the country to address traditional and emerging threats to the nation's water resources. To view both reports, visit <http://www2.epa.gov/innovation/water-innovation-and-technology>.

Other news and resources

RCAP Community Receives USDA Earth Day Grant

USDA Announces Water Quality and Energy Efficiency Projects Across Rural America

WASHINGTON— Agriculture Secretary Tom Vilsack celebrated Earth Day by announcing support for projects to



Photo courtesy of Martha Sparks

Photo: Henderson Mayor Sandy Cook and USDA Under Secretary Lisa Mensah

improve rural water and wastewater services, promote renewable energy, and promote the efficient use of energy resources.

"I am proud to announce that USDA is providing more than \$112 million in loans and grants to help rural communities build and upgrade their water and energy infrastructure systems," said Vilsack. "Not only do projects such as these help ensure communities have access to clean water and affordable energy, they also create jobs and boost the economy."

USDA is providing the funding for water and wastewater infrastructure projects through Rural Development's Water and Environmental Program (WEP).

Under Secretary Lisa Mensah visited an Earth Day project in Henderson, Md., on the state's Eastern Shore. The town is receiving a \$175,000 grant to make emergency repairs to its water system. A combination of unusually cold temperatures in February and high demand caused the aging system to fail – leaving the town's 146 residents temporarily without water. A temporary solution is keeping the wells in operation, but significant repairs to the water supply system are needed to ensure a continued water supply. South-

east RCAP is working with Henderson on this and other projects.

In all, USDA is funding 37 water and wastewater projects and 25 renewable energy projects totaling more than \$112 million.

View the list of recipients at <http://www.rd.usda.gov/files/RD-EarthDay2015.pdf>.



RCAP Welcomes Bill Hogrewe to National Office Staff

Bill Hogrewe joined to the RCAP National Office in March 2015 after almost 12 years at the Rural Community Assistance Corporation (RCAC), the western RCAP. He provides the RCAP network with engineering and operations expertise related to drinking water and wastewater infrastructure.

"I am so pleased and excited at having Bill Hogrewe join our National Office staff! His expertise and many years of experience as a licensed professional engineer coupled with his skills in working with a large number of diverse rural communities on water and wastewater issues will be of enormous benefit to RCAP. Bill is also an excellent trainer and training developer and I am looking forward to tapping into his proficiency with various ways of



providing targeted, practical training to small utilities, their managers, and their operators," says Robert Stewart, RCAP Executive Director.

Bill leads RCAP's efforts as part of a national center for innovation in drinking water treatment for small systems (see DeRisk Center story on page 11). He also assists with the development, coordination, and implementation of nationwide training activities and optimizing treatment to achieve and exceed regulatory compliance. Bill has a B.S. in chemical engineering from Auburn University, and an M.S. and Ph.D. in environmental engineering from the University of Colorado. He has 40 years of experience working with water and wastewater infrastructure with small and large systems in the United States and abroad. He is a registered engineer in Colorado and Arizona and is a member of AWWA, WEF, and ASCE. ■

Rural Leaders Visit the Hill

Fly-In Review and Legislative Update

by Ari Neumann

Each year, a contingent of RCAP staff and rural community leaders come to Washington, DC for the RCAP network's annual Legislative Fly-In. The purpose of the fly-in is to educate members of Congress and the administration about the services that RCAP performs for their rural constituents and remind them of the importance of federal rural development programs. Despite a late-season snowfall that forced the closure of most of the federal government, this March we were able to meet with the offices of more than 100 legislators as well as Congressional committees and federal agencies.

The event helped build support on the Hill for rural development programs and for technical assistance for those programs. In the weeks following the fly-in, RCAP circulated a letter in the Senate supporting funding for technical assistance for rural water and wastewater systems that was signed by a bipartisan group of 12 Senators. As Congress contemplates funding bills later this year, this strong show of support across party lines will help to ensure that funding for these vital programs continues.

Throughout the Fly-In week, members of Congress and their staff expressed the desire to hear more about how RCAP and federal community development programs are helping their constituents. In order to maintain support for these programs, it is imperative legislators continue to hear how they benefit the people they represent, and Congressional recesses provide a great opportunity to do so. Every few weeks, Congress is out of session so they can return to their home states and spend time visiting and meeting with constituents. These breaks are a great time to reach out to your Senators and Representatives to try to schedule them for a visit to your community. Groundbreakings and ribbon-cutting ceremonies provide great opportunities for photo-ops which give members of Congress an opportunity to learn about the great work that is being done throughout rural America as a result of the federal programs that they oversee. Even if you're not planning a big event, your legislators may be interested to see the improvements your community has made as a result of the availability of water or wastewater service. Showing them the value of these programs to rural America will help keep our communities front of mind when they return to Washington and will generate support for our projects and programs. ■

Neumann is the Director of Policy at RCAP.



Photos from top: Senator Roy Blunt with Chris Fierros (MAP); Representative David E. Price with Veronica Bitting (SERCAP); Senator Mike Rounds, Jan Kittay (MAP), Senator John Thune, and Representative Kristi Noem



The DeRISK Center – From the Laboratory to Your Drinking Water System

by Bill Hogrewe, Ph.D., P.E.

Last fall the US Environmental Protection Agency's Office of Research and Development, as part of their Science to Achieve Results (STAR) program, awarded grants for two National Centers for Innovation in Small Drinking Water Systems. RCAP joins a team at the University of Colorado to create one of the two Centers. The team also includes the University of New Hampshire, University of Alaska Anchorage, and Arizona State University. The Colorado-based center has been dubbed the "DeRISK Center." DeRISK stands for: Design of Risk-reducing, Innovative-implementable Small-system Knowledge.

The Center's overall objectives focus on applying principles of risk reduction, sustainability, and new implementation approaches to innovative drinking water technologies. These technologies were selected to reduce the risk associated with key drinking water contaminant groups and the implementation approaches are designed to increase the chance of adoption and sustainable use of innovative technologies in small systems. The technologies being examined in detail by the DeRISK Center incorporate either ultraviolet light (UV), biological, or distribution system approaches. Using a new cumulative health risk assessment methodology, the Relative Health Indicator (RHI), the DeRISK Center has identified two contaminant groups: microbial and disinfection by-products (DBPs) and one inorganic compound, nitrate. These contaminants collectively pose the greatest risk to drinking water consumers.

The criteria used to select innovative technologies to be researched include:

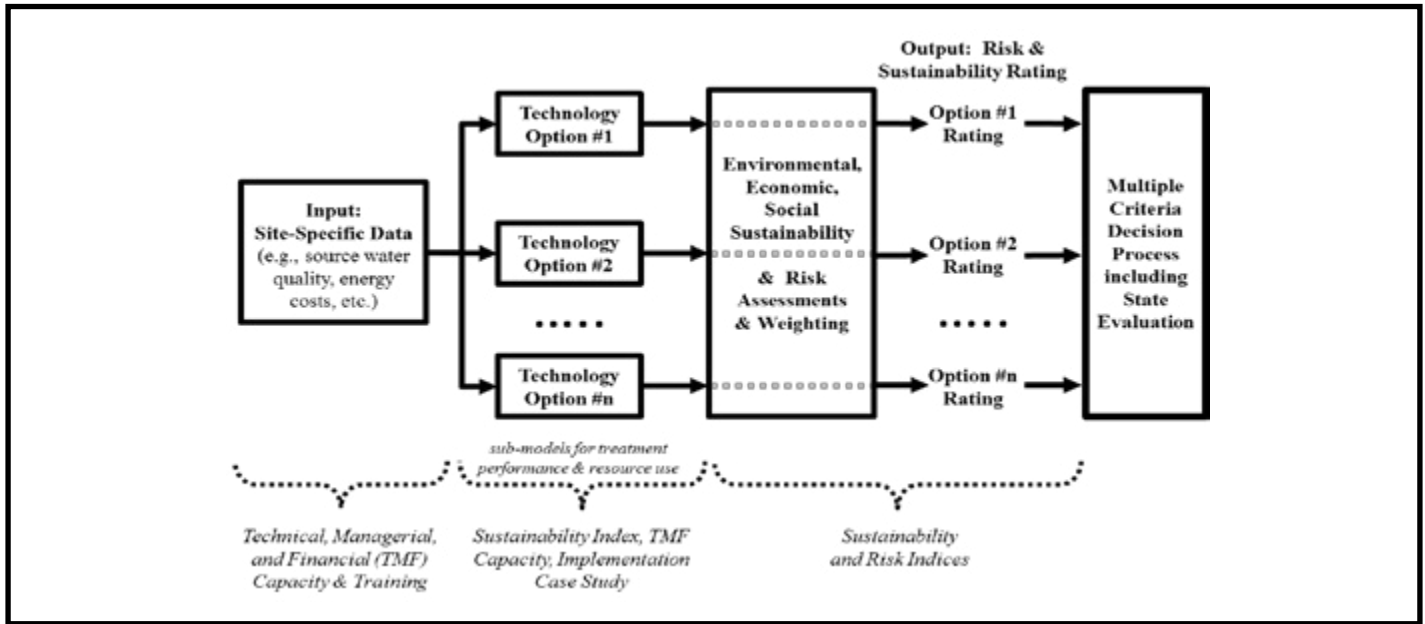
- their potential to provide quantifiable risk reduction in these key contaminant groups;
- the lack of required chemical addition; and
- the likelihood of being successfully implemented and sustained by small systems.

The university-based DeRISK team members are performing basic research to identify, develop, and demonstrate novel and innovative technologies and approaches. These technologies include photon-based treatment, extended biofiltration, and distribution system technologies. The photon-based treatment research is looking at applications of photochemical processes, including both sunlight and engineered light sources. Researchers are: evaluating shallow pretreatment basins for disinfection efficiency and control of DBP formation using sunlight; field-testing a small-system sized UV-Light Emitting Diodes (LED) disinfection module containing UV-LEDs of varying wavelengths; evaluating photocatalytic reduction of nitrate in ion exchange brines; and evaluating an innovative UV-membrane hybrid process.

Other team members are investigating the control of microbial contaminants, particles, and DBPs by novel biotreatment processes. These investigations include: evaluating novel roughing filter pretreatment configurations (horizontal and upflow) and evaluating innovative gravity sand filter modifications and operations with the goal of extending the empty bed contact time to somewhere between conventional and slow-sand.

The goal of the research into innovative distribution system technologies is to explore, develop, and model technologies that

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will offer a better understanding of the distribution system and will reduce preformed DBPs at the most problematic locations. These investigations include: evaluating the efficacy of using horizontal diffused aeration system to remove some DBPs; evaluating the use of granular activated carbon in the distribution system to adsorb and biodegrade preformed DBPs and DBP precursors; and developing real-time analytics and protocols to better manage distribution system resources, residence times, chlorine residuals, non-revenue losses and pipe break detections.

RCAP's role at the Center is to facilitate widespread acceptance and applicability of innovative technologies and approaches specifically through the inclusion of measures of relative health risk and sustainability in the selection-of-alternatives process for small water treatment system upgrade, replacement, and new construction. These measures include factors that will have an impact on the viability of a drinking water treatment system such as life-cycle costs, operability, resource efficiency, and consistency with other relevant community goals. RCAP's activities incorporate a sustainability assessment and index of individual water treatment technologies that evaluates and quantifies the three pillars of sustainability – environment, society, and economy.

RCAP is involved in developing new strategies for technology assessment and implementation through two activities:

- Multi-Criteria Decision Support Methodology: RCAP is leading the development and testing of a multi-criteria decision support methodology to reconcile the technical, managerial, and financial (TMF) capacity limitations of small drinking water systems with the requirements of conventional and innovative technologies. This methodology will incorporate health risk and sustainability into the selection-of-alternatives process for small drinking water system improvements.
- Training Design Support Tool: RCAP is developing new approaches to training that allow small system stakeholders to understand, apply, and approve innovative technologies. Stakeholders include community members, managers, operators, consulting engineers, and regulatory engineers.

The overall approach of the DeRISK team to evaluating technology options for specific small water systems is shown in the flow chart above. Site specific data such as source water quality, energy costs, and the TMF capacity for a given water system are compared with the characteristics of various conventional and innovative treatment technology options using the decision support methodology. These characteristics include treatment performance, operation and maintenance requirements, relative health index, and sustainability index. The result of the comparison is a rating for each technology option which can be used by stakeholders to choose the optimum treatment technology. The goal of this approach is to increase the acceptance of innovative technologies when and where appropriate. ■

Hogewe is the Director of Engineering Services at RCAP.



Manzanilla Residents Mobilize for Community Clean Up

by John Linehan, Maegen McCaffrey, and Edwin Vazquez-Asencio

The barrio of Manzanilla lies on the southern coast of Puerto Rico, where the Jacaguas River meets the Caribbean Sea. Manzanilla, like much of Puerto Rico, faces significant challenges with solid waste management and illegal dumping, and for Manzanilla the problem is magnified as debris washed into the river and ocean is regularly returned to the beach and community during flood events. That continuous cycle of pollution, combined with limited budgets and personnel, made the goal of cleanup seem almost out of reach. Recognizing the need for a comprehensive solution, RCAP Solutions partnered with the Solid Waste Authority of Puerto Rico and the Puerto Rico Department of Natural Resources to form a community coalition with the goal of cleaning up Manzanilla.

The initiative attracted a wide range of participants, including the state and local police, local government officials, students from the University of Puerto Rico in Ponce, high school students, teachers, Boy Scout and Cub Scout troops, church groups, and a number of other people concerned with the condition of the neighborhood and its beaches. In total, over 400 volunteers took part in the event, which took place in January, 2015 and resulted in 15 truckloads of trash, approximately 100 cubic yards, being hauled away.

“The cleanup was an inspiring event for me,” said RCAP Solutions Sustainable Materials Management Specialist Edwin Vázquez-Asencio. “We proved the importance of providing assistance to the communities that are in need, coordinating with local institutions, government agencies, municipalities, the state, and hundreds of volunteers who lined up when needed. We provided the motivation for members of the community to see a new way of thinking about their future, clean and simple.

We have a problem with improper disposal of solid waste, and now we are looking for practical and sustainable ways to deal with it.”

Edwin and his RCAP Solutions staff trained volunteers on how to handle waste and hazardous materials. Participants were given gloves, bags, and tracking sheets to map the volume, type, and location of the waste materials. The volunteers were also provided with educational information on recycling, water and wildlife conservation, and illegal dumping and burning.

The residents of the area not only gave their time, but also donated prepared snacks, drinks, and home cooked meals to volunteers throughout the course of the cleanup. Following the event, state police officers dressed in clown costumes, set up bounce houses, and provided face painting and other entertainment for the local children.

Adrian Alicea, a Park Ranger for the Department of Natural Resources, said, “This is exactly what we need, getting people to work together to protect the environment for future generations. This is part of our legacy for them and I’m glad we are a part of it. We patrol the area, try to educate people and prevent illegal dumping, but we need help. We really appreciate RCAP’s initiative to organize and coordinate this event. We need to continue this effort in other places.”

“I have a three year old girl and an eight year old son,” said Manzanilla resident, Jayline Olivencia. “When they see people like RCAP Solutions working with us, they will grow up knowing that if we work together, we can get the help we need to have a better life in our community. My son helped clean the river with his dad. It will help the next generation think differently about the community and the environment.”

continued on next page



Photos (tops to bottom): Community members sign up for clean-up duties; Volunteers clean around a building; Trucks are loaded with collected trash for disposal. Photos courtesy of Joel Vázquez

Following up on the success of the event, in March, RCAP Solutions offered a workshop focused on the creative re-use of recyclable and found objects, such as repurposing plastic containers as pots for vegetables and using toilet paper and paper towel rolls as seed pots for plants. School children and their

parents raised the plants and the plants were targeted for use in the restoration of the problem areas.

Additional support was provided by Keila Rivera, an environmental science graduate student from the Pontifical Catholic University of Puerto Rico, who assisted with the workshops and researched information about the garbage burning habits in Manzanilla Community. She said, “With this effort, we can say, today we made the change! RCAP Solutions was a helping hand, uniting people and creating an understanding about the importance of protecting and maintaining a clean environment, which will lead to a better quality of life and a better future.”

RCAP Solutions is continuing to research additional strategies that will add value to the areas that were cleaned. These include the creation of a land adoption program, where local businesses and community groups take ownership of the landscaping and continued maintenance of public areas.

Cleaning an area like Manzanilla is a just a first step toward solving the significant solid waste issue in Puerto Rico. According to the U.S. Environmental Protection Agency (EPA), the problem has reached crisis levels. The island generates more waste per person than the mainland and anywhere else in the Caribbean. Illegal dumping is common, and littering is endemic. Although 55% of Puerto Rico’s waste stream is considered recyclable, current recycling rates are between 7-10%, well below the island’s official goal of 35%, and largely limited to urban areas. There are very few drop-off locations, which makes recycling, even for the highly motivated, quite difficult. In Puerto Rico, there is also no law that requires deposits to be paid on beverages sold in recyclable bottles and cans, often known as a Bottle Bill.

Most of the landfills on the island are non-compliant, and many rural communities have transfer sites which consist of unenclosed dumpsters located on the dirt shoulders of major roads. These sites allow leachates into the aquifers and major rivers that run parallel to the roads and serve as water sources for downstream communities.

Large items, such as tires and refrigerators, act as reservoirs for rainwater and provide a breeding ground for disease vectors like mosquitoes and rats. An outbreak of Dengue Hemorrhagic Fever in 1994 and 1995, resulting in 4,660 hospitalizations and 40 deaths, was largely attributed to poor waste management practices, insufficient infrastructure, illegal dumping, and polluted cisterns.

More recently, Chikungunya, a mosquito transmitted disease causing fever and intense joint pain, has been spreading throughout the Caribbean. The virus alone is seldom fatal, but the symptoms can be severe and disabling. Chikungunya

is common in Africa, the Indian subcontinent, and Southeast Asia, but recent outbreaks have spread the disease over a wider range. In December 2013, Chikungunya was confirmed on the Caribbean island of St. Martin, and as of October 2014 there have been 18,109 suspected cases of Chikungunya in Puerto Rico, according to the Puerto Rico Department of Health.

Puerto Rico also faces numerous barriers that make it difficult for communities and the government to implement solid waste reduction initiatives. These include a lack of infrastructure, economics, startup costs, cultural issues, and a lack of capacity.

From an economic perspective, low income rural communities do not have the resources to experiment with solid waste reduction systems, and most citizens see municipal solid waste services as a free service. There is little utilization of unit-based pricing to incentivize waste reduction/recycling and the infrastructure is not yet in place to provide for these types of systems.

The only current economic mechanisms in place that could incentivize citizens to recycle are the tipping fees at the landfills. However, the fees across the island are low and do not reflect the true cost of landfill disposal. In Puerto Rico, tipping fees average \$30/ton, whereas in the Northeastern part of the United States tipping fees average over \$70/ton. Also, many worry that increasing tipping fees and initiating unit-based pricing schemes will result in an increase in illegal dumping.

The only other economic incentives for communities are non-compliance fees. However, most communities, if fined, do not have any means of paying the fines. In lieu of payment, the EPA has instead been requiring communities to develop and implement improvement plans.

There is a significant need to provide training and technical assistance for planning, financing, managing, and conducting

the community education necessary to develop and operate a successful waste reduction program.

RCAP Solutions has stepped in to try to address many of these issues with a grant from USDA Rural Development that began in October 2014. Specifically, the goals are to promote reduction, re-use, and recycling through community recycling programs; plan and implement waste reduction programming; promote the elimination/reduction of illegal dumping sites; and promote collaborative and regionalized approaches that can help address cost barriers and achieve economies of scale in solid waste reduction efforts.

According to Josefa Torres, RCAP Solutions District Director for Puerto Rico and the United States Virgin Islands, "There are many ways to solve the solid waste problem in Puerto Rico with the 3R's: Reduce, Reuse and Recycle. However, I strongly believe the educational component is necessary for the achievement and success of this important initiative."

While Puerto Rico faces a daunting task in tackling its solid waste issues, the problem must be met at the community level. Manzanilla was an example of what can be done when a community has the leadership and cooperation needed to succeed.

"Manzanilla's experience was an example of solidarity and empowerment," said Dr. Sandra Moyá of the University of Puerto Rico's Department of Biology, "a reflection on what each one can do for the collective, and a successful learning experience for both the local community and the volunteers involved."

Linehan is the Deputy Director of Rural Development at RCAP Solutions, the Northeast RCAP. McCaffery is the Chief Communications Officer at RCAP Solutions. Vazquez-Asenico is Sustainable Management Specialist with RCAP Solutions and is based in Puerto Rico.



Photo courtesy of Joel Vázquez

RCAP Staff Making a National Impact on EPA Councils

The staff at the Rural Community Assistance Corporation (RCAC), the western RCAP, keep very busy assisting rural and tribal communities in 13 western states and the Pacific islands in several program areas including homeownership and shelter, water and waste, financing, capacity and economic development.

RCAC envisions vibrant, healthy and enduring rural communities throughout the west, and, despite their busy and often hectic schedules, RCAC staff members keep an eye on the national scene as well, sharing their expertise in related program areas. Blanca Surgeon, Rural Development Specialist, and Ellen Drew, Regional Community and Environmental Services Manager, serve on national advisory boards to the Environmental Protection Agency (EPA).

Surgeon, who works in New Mexico, serves on the Environmental Finance Advisory Board (EFAB). Drew, who works in Colorado, New Mexico and Utah, serves on the National Environmental Justice Council (NEJAC).

Representing Small Community Interests

by Blanca Surgeon

I joined the Environmental Finance Advisory Board (EFAB) in 2011 to represent the RCAP network and the small communities it serves. The U.S. Environmental Protection Agency (EPA) established the EFAB in 1989 to provide policy advice to the EPA administrator on a variety of finance issues to assist EPA in carrying out its environmental mandates. EFAB's membership includes experts from all levels of government, including elected officials, the finance and banking communities, business and industry, and national organizations such as RCAP. I feel honored to be on the board, and feel that I provide valuable insight into the world of small communities and tribes. Financial issues for these groups are very different.

EFAB board members represent both major cities, such as New York, and small rural communities. All issues count and are heard. Small communities, which are the RCAP network's main customers, face critical financial issues like the rest of the nation. However, unlike large systems, small systems don't have the economies of scale to establish long-term financial options or to make use of public-private partnerships to finance projects. Small communities also often don't have the expertise and staff to implement the plans and policies of volunteer boards. Thus, long-term planning can be more challenging for small systems. But there are similarities between large system and small systems. For example, both large and small systems need

to incorporate public involvement and outreach into their planning processes.

The May EFAB meeting was hosted by the District of Columbia Water and Sewer Authority (DC Water), which provides water to the greater Washington DC area. It is one of the most advanced water utilities in the nation, using innovative technological solutions and issuing the first green bond financing in the nation. It has a great vision of where it is and needs to go. So what does it have in common with rural America's small systems? DC Water also has critical financial issues to address with its customers. Every project related decision has a financial impact on customers, thus DC Water holds public meetings to discuss each project and funding impact to customer rates.

No matter the size of the system, discussing rate increases is difficult. This year DC Water is doubling its rates, and community members attend the meetings to express their concerns about how increases impact their budget. At the May EFAB meeting, DC Water's CEO explained that in the public meeting just the night before he had to face families with children concerned about the rate increase. Even with a high median household income (MHI) customer base, affordability is an issue. It is common in small communities to hear people say, "I am waiting for my social security check to pay my water bill." RCAP's colleagues in the big cities also hear this from their customers and must address it.

The U.S. Environmental Protection Agency (EPA) established the EFAB in 1989 to provide policy advice to the EPA administrator on a variety of finance issues to assist EPA in carrying out its environmental mandates.

One issue very close to my heart is how increasing environmental regulations place significant additional resource requirements on small water systems. In EFAB I have learned this is a big issue for all systems no matter what size. In a way, the bigger the city, the bigger the impact. It is a critical situation. We see regulations increase, causing operating costs to increase. Yet revenues decrease or stay flat.

Many water systems are experiencing a customer base loss. This has especially been true in rural communities where younger people leave in search of work and other opportunities. Rural community population is also decreasing due to

other factors. There is a sector of the population aging and moving out to care facilities in cities or to cities where family members can provide care.

The big issue for me, as an assistance provider where I see these happenings, is to have the discussion with the community about investing in replacing aging infrastructure in communities where the population is dying or aging. It is a hard decision for the few who remain to decide either to let go or plan and finance a whole new project. Or to turn the focus on community revitalizing, economic development, and local wealth building. All these issues are addressed by the EFAB and very helpful to me in my work.

The EFAB has worked on significant charges and provided valuable recommendations that are now being implemented.

In 2013, the EPA's Office of Enforcement and Compliance Assurance (OECA) asked EFAB to identify options to improve the environmental compliance status of more than 240 small independent community water supply systems that provide water to more than 103,000 Puerto Rican residents. These systems are also known as "systems not served by the Puerto Rico Aqueduct and Sewer Authority (PRASA)" or "non-PRASA" systems. Specifically, OECA sought innovative ideas to leverage resources and information to influence the behavior of these small systems in Puerto Rico/Pacific Island Territories in ways that move them toward compliance with environmental regulations. Surgeon volunteered to lead a workgroup to look into this charge since this problem is not unique to Puerto Rico and the Pacific Islands Territories.

The EFAB working group engaged in multiple conversations with OECA, EPA Region II, Puerto Rico Department of Health personnel, and other stakeholders in Puerto Rico. As the group discussed solutions, mostly geared towards a regionalization approach, they also took into account customers' economic



Photo above: EPA's Environmental Finance Advisory Board

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situations. It became clear that a solution needed to include government participation. As the group coordinated, communicated, and developed recommendations, the Governor of Puerto Rico issued an Executive Order in August 2014 directed at the non-PRASA systems. The order's objective is to develop and establish strategies to strengthen operations and improve the management capacity, organization, and performance of the same systems the group was studying. Since the Executive Order was signed, the Puerto Rico Department of State developed a work plan and EFAB offered recommendations to consider for implementation.

For me, working on this charge was exciting because we got to discuss what innovative solutions exist for small systems that are out of compliance. Because of many unique factors to rural,

"I feel that I am learning as well as contributing to the EFAB goals. In the EFAB, we look at how limited budgets and economic challenges have constrained traditional funding sources, I see this in my work helping communities shop for funding and preparing funding applications."

remote, and economically challenged communities they are likely to perpetually stay noncompliance lists. It is a definitely a national issue that we must continue to explore.

In 2014, EFAB finalized and submitted a report on a funding mechanism known as the State Revolving Loan Fund (SRF) entitled "Utilizing SRF Funding for Green Infrastructure Projects." The report discusses how SRFs can provide assistance through credit guarantee programs and noted that SRFs are available to fund green infrastructure (GI), including that under private ownership. GI is being adopted as a lower-cost alternative that can also help create sustainability in communities. The report provides an opportunity to use an SRF credit guarantee to support GI solutions including those that incorporate private sector project ownership and repayment responsibility. The report recommended that the EPA take a more active role in helping states facilitate access to these funding tools.

Currently, EFAB is embarking on a new and exciting project to learn about and provide recommendations on the newly created Water Infrastructure Resiliency Financing Center at EPA. The center increases innovative financing support to help

communities finance their water, wastewater and stormwater infrastructure. The center is part of the Build America Investment Initiative to increase infrastructure investment and promote economic growth through public-private partnerships, and increase the use of federal credit programs. The charge to EFAB is to provide policy advice, review work products, and investigate a series of important questions to make the center successful.

EPA has a number of useful water tools, available at no cost, that communities could use to improve their operations. I personally hope that the center will help streamline information about the tools and offer a "one stop shop" location for easily finding them.

I feel that I am learning as well as contributing to the EFAB goals. In the EFAB, we look at how limited budgets and economic challenges have constrained traditional funding sources, I see this in my work helping communities shop for funding and preparing funding applications. The application process is



highly competitive and the more limited the funding the more conditions communities must meet just to qualify for funding. This places significant strains on the public utility sector, small and large. EFAB looks at these issues and how they challenge and impact the quality and delivery of environmental services in the nation. And we combine our diverse knowledge and expertise to work on potential solutions. Personally, I enjoy the meetings because of the powerful expertise we all bring to the table. The discussions are rich, passionate, focused, and task oriented. Every meeting moment is invested in creating great work.

The EFAB meets twice a year and welcomes public input. All meetings are open to the public. ■

Surgeon a Rural Development Specialist with the Rural Community Assistance Corporation (RCAC), the Western RCAP.

Working Toward Environmental Justice

by Ellen Drew

For more than 20 years, the National Environmental Justice Advisory Council (NEJAC) has provided valuable forums to discuss integrating environmental justice into the Environmental Protection Agency's (EPA) programs, policies, and activities. As a federal advisory council, NEJAC's duties are solely to advise the EPA.

I have served on the NEJAC since 2013. My interest in serving on the NEJAC has been to bring a voice of advocacy for rural communities, across America, who represent an invaluable resource to this country and are often disproportionately impacted by pollution because they are underrepresented. We need advocates for rural America because so many environmental injustices occur where poverty, rural communities, and under representation meet.

EPA defines environmental justice as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across the nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

To date, there is a long and troubling history of pollution disproportionately impacting people of low income and poverty and people of color. This practice of targeting some neighborhoods/communities but not others is quantifiable, blatant, and continuing in spite of NEJAC members and many others working for decades in this arena.

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Photo courtesy of Leslie Kryder



Photo above: EPA's National Environmental Justice Advisory Council

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NEJAC provides independent advice and recommendations across broad, cross-cutting issues related to environmental justice; integrating equitable perspectives from all stakeholders. NEJAC strives to address strategic, scientific, technological, regulatory, economic, and community engagement issues related to improving environmental justice. Bringing my western rural perspective is an important addition to the advisory council.

I worked in the chemistry department at Colorado State University, Fort Collins for most of my college years. Little did I

EPA defines environmental justice as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

know how valuable my chemical laboratory and stockroom knowledge would be as I entered a career focused on pollution prevention, cleaner production, zero waste, and a whole host of water, air, and soil toxins and contaminants. After working as the operations manager of an environmental analytical laboratory for many years, I worked with universities and agencies towards decreasing pollution and significant health impacts.

One such project was an emerging wood furniture industry northeast of Hanoi, Vietnam. As U.S. wood furniture industries closed, manufacturers migrated their operations to a number of Asian countries. Many small rural villages began burgeoning with manufacturing work providing 'Made In Vietnam' materi-

als to an international marketplace. However, lack of policies and knowledge about health impacts and cleaner production practices proved devastating to the people who lived in and around so many polluting chemicals.

My experience in Hanoi shaped my environmental justice work today. My personal goal on the council is to represent underserved rural environmental justice communities and to identify common ground –putting my good energies to work on collaborative actions that move us further toward healthy, diverse, unpolluted communities. I support the integration of environmental justice into EPA's programs while impacting policies and systematically decreasing the number of environmental injustices disproportionately impacting one group and not others.

NEJAC meetings give a voice to environmental injustices. The public who attend NEJAC meetings to offer testimony about experiences with environmental injustice do not know of many venues where they can tell their stories except to NEJAC. Often travelling great distances to NEJAC meetings, they comment on how they have little to no opportunity to introduce their, often horrific, stories into the public record.

NEJAC, as a council, feels a great deal of responsibility to advise EPA to include environmental justice on all EPA related topics, and to insist that an environmental justice perspective be included in decision making. The road toward eliminating environmental injustices has been a very long one. The recent advent of rulemaking for Clean Water and others is a potentially huge step forward in protecting our nation's health, water, air and soil, for all, equitably.

NEJAC is comprised of 26 members by charter and one Designated Federal Officer (DFO). With 23 members currently, the NEJAC represents academia, community groups, industry and business, non-government organizations and environmental organizations, state and local governments, and tribal and indigenous groups.

NEJAC meets twice a year in various national locations for public meetings including a day or so of content rich materials with expert speakers. There is at least one public session scheduled with as many as 50 or more presenters who have travelled across the country to tell their environmental injustice stories. The NEJAC agenda team, NEJAC chair and NEJAC DFO set the topics for the meetings, based on the previous meetings and workgroups.

NEJAC's current focus has been to recommend environmental justice inclusions to the following 2015 Rules:

- 2015 Agricultural Worker Protection Standard Rule
- 2015 Chemical Safety follow-up request
- 2015 Clean Power Plan Rule
- 2015 Goods Movement
- 2015 Refinery Rule
- 2015 Title VI Committee

Being two-thirds through my first term on the NEJAC, I continue to be impressed by the volunteer council members on the forefront of environmental justice who continue to speak

up, speak out, and step forward, taking personal responsibility to provide recommendations to EPA in the hopes that it will further turn the tide towards relief for disproportionately impacted communities. Without the NEJAC there would be very little voice for these issues. Although it is sincerely heart-breaking to witness such devastating pollution impacting so

We need advocates for rural America because so many environmental injustices occur where poverty, rural communities, and under representation meet.

many lives, we, the NEJAC members, are a hope factor amidst an overwhelming disparity of pollution impacts in our country often impacting those least able to protect themselves. This legacy of pollution can be changed and it benefits all of us to do so.

For more information about NEJAC's objectives, membership and meeting dates, visit the EPA website.■

Drew is Regional Environmental Manager at RCAC, the Western RCAP.





New RCAP Videos Highlight Drinking Water Compliance Issues

RCAP has produced 5 new short videos on drinking water operations best practices for maintaining compliance and protecting public health. These videos were produced through a US Environmental Protection Agency Cooperative Agreement with RCAP and are particularly helpful for operators of systems facing challenges with distribution system water quality, including coliform sampling and chlorine residual sampling.

Videos range from 4 to 8 minutes in length and are available online. Links to all videos can be found at www.rcap.org/DrinkingWaterVideos.

Protecting Distribution System Water Quality

Water quality in the distribution system can degrade for a variety of reasons including contamination from an uncontrolled cross connection, contamination during storage, or high water age leading to degradation of water quality. So as an operator, what should you do? This video will discuss 6 items for you to consider to protect water quality in the distribution system.

Hydrant Inspection and Flushing

This video will cover basic inspection and flushing of a fire hydrant. All fire hydrants in a water system need to be inspected on a regular basis. Inspection is needed to ensure a high degree of confidence that hydrants will perform properly in an emergency.

Measurement of Chlorine Residual

This video will cover taking a good chlorine sample and methods for analysis. Effective measurement of chlorine residual is essential for protection of public health. The presence of the residual not only provides disinfection, it also serves as an indicator of water quality. Loss of residual can be an indicator of a water quality problem.

Coliform Sampling Best Practices

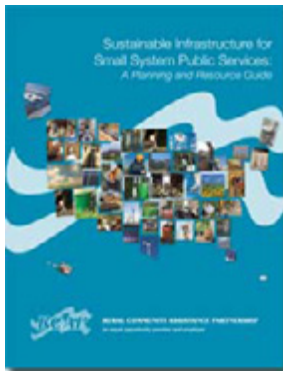
Coliform sampling is an important part of monitoring the water quality in all drinking water systems. Collecting coliform samples correctly is absolutely critical in protecting public health. In this video, we will cover 13 steps for proper coliform sampling and discuss how to find a good sampling site.

Valve Maintenance

In this video we will cover the basics of valve exercising. Exercising valves is important to: verify that valves can be found and are accurately mapped; ensure that valves operate as designed and to extend their life; check that valves are in the correct (on/off) position; have reliability that valves will operate in emergencies, such as a water main break; and lessen employee overtime in dealing with emergency repairs and build more confidence in your system. ■

Sustainable Infrastructure for Small Systems Word Search

Enjoy this sustainable infrastructure-themed word search containing 46 small system sustainability terms. Need some hints? Checkout our Sustainable Infrastructure guide! Answers at www.rcap.org/wordsearchanswers.



Sustainable Infrastructure for Small System Public Services A Planning and Resource Guide

Rather than presenting theories, this guidebook provides information, worksheets, examples, case studies and resources on water conservation, energy efficiency and renewable energy resources for small utilities. This planning and resources guide includes a step-by-step process for utility decision makers, staff and community members wanting to operate increasingly efficient utilities. It offers a flexible approach to evaluating sustainable alternatives for utility operations.

Download the PDF at <http://www.rcap.org/commpubs>.

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