

# RURAL matters



The magazine of the Rural Community Assistance Partnership

**2014**  
**Issue 1**

*In this issue:*

Rural advocacy  
in the wake of  
elections

How water  
rates can foster  
conservation

Nutrient  
Pollution 101

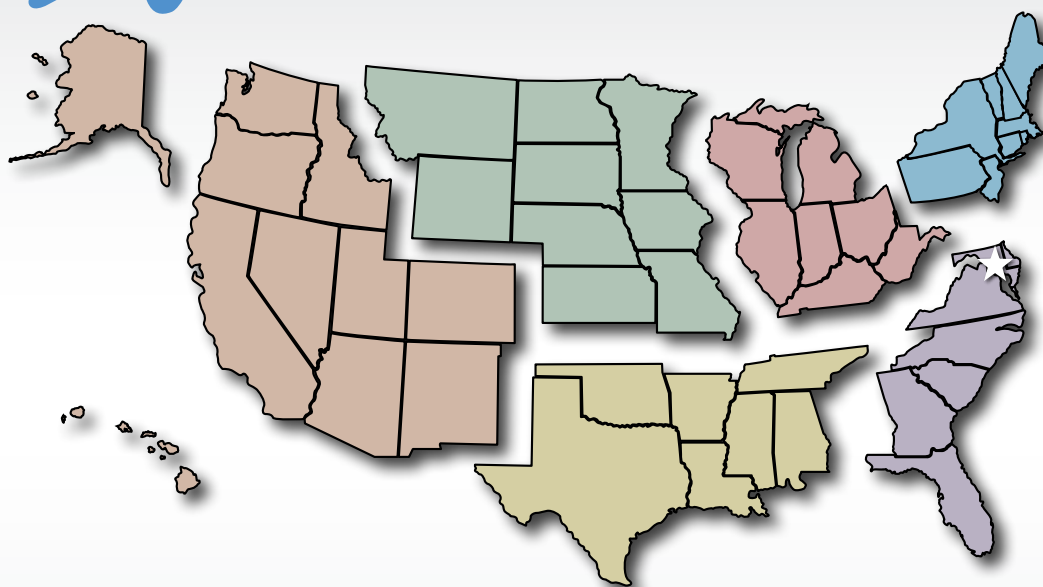
# Need help with your community's water or wastewater system?

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.



## Rural Community Assistance Partnership



### Western RCAP

#### **Rural Community Assistance Corporation**

3120 Freeboard Drive, Suite 201  
West Sacramento, CA 95691  
(916) 447-2854

[www.rcac.org](http://www.rcac.org)

### Midwest RCAP

#### **Midwest Assistance Program**

303 N. Market St., Suite 2  
Maryville, MO 64468  
(660) 562-2575

[www.map-inc.org](http://www.map-inc.org)

### Southern RCAP

#### **Communities Unlimited**

3 East Colt Square Drive  
Fayetteville, AR 72703  
(479) 443-2700

[www.communitiesu.org](http://www.communitiesu.org)

### Northeast RCAP

#### **RCAP Solutions**

P.O. Box 159  
205 School Street  
Gardner, MA 01440  
(800) 488-1969

[www.rcapsolutions.org](http://www.rcapsolutions.org)



Puerto Rico  
(Northeast RCAP)

### Great Lakes RCAP

#### **WSOS Community Action Commission**

P.O. Box 590  
219 S. Front St., 2nd Floor  
Fremont, OH 43420  
(800) 775-9767

[www.glrcap.org](http://www.glrcap.org)

### Southeast RCAP

#### **Southeast Rural Community Assistance Project**

347 Campbell Ave. SW  
Roanoke, VA 24016  
(866) 928-3731

[www.southeastrcap.org](http://www.southeastrcap.org)

### ★ RCAP National Office ★

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*Photo by Bud Mason*

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*Photo by Heather Hartly, courtesy USDA*





# Practical solutions for improving rural communities

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# Director's letter



**Robert Stewart**  
RCAP Executive Director

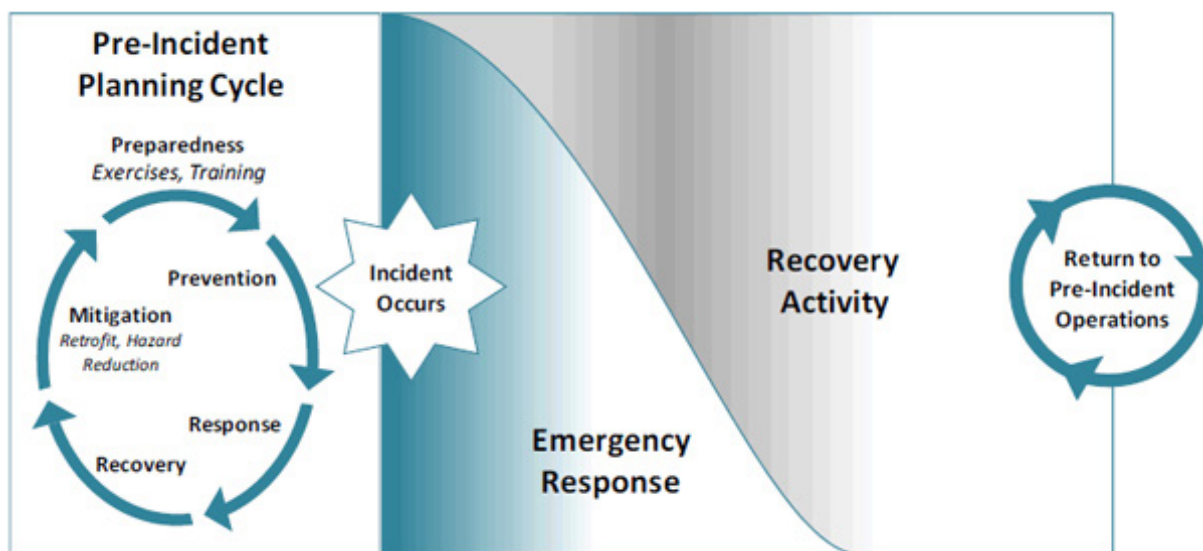
After a nearly one year hiatus, I want to welcome everyone back with this latest issue of Rural Matters. Much has happened at RCAP over this period so I only will touch on a few of the more notable events that are presented later in this issue. We welcomed two new members to our National Board of Directors, Francisco Castellanos from Weslaco, Texas and Zack Space from Columbus, Ohio and a new CEO for our southern RCAP, now called Communities Unlimited, Ines Polonius. This summer, Breanna Detwiler, our new Director of Communications joined the national office and was responsible for helping us hold a very successful national training conference in Madison, Wisconsin, among a variety of other notable accomplishments. Jeff Oxenford has also joined our staff to assist with a variety of research and training development activities. RCAP was awarded new grant agreements from EPA dealing with compliance issues for small systems and for helping private water well owners. Two new USDA Rural Development initiatives are also underway conducting a comprehensive assessment of the colonias from California to Texas and assisting over forty communities, counties, and tribal reservations across the country and in Puerto Rico with solid waste and recycling issues. These initiatives allow RCAP to continue to develop new training materials and assistance tools to use on-site with rural communities. I would encourage you to regularly visit our website for updates and reports on these and other related RCAP activities. Also on our website you will find information on training opportunities across the nation, educational materials, current news of interest to rural communities, access to expert advice, and a variety of other features.

Small communities continue to face challenges as they seek to provide safe and affordable water and wastewater services, solid waste and recycling services, housing, and opportunities for economic development. RCAP and its six affiliates tackle these issues with trained and experienced staff, current technical information and educational resources, assistance in locating financial assistance and in developing internal resources, and with support for community-based initiatives. RCAP still places a special emphasis on providing first-time community water and wastewater services to rural residents. An article in this issue speaks to this work in a small town in Mississippi. For RCAP, it does not matter whether the need exists in the piney woods of the south, the hills and valleys of Appalachia, in small farming and ranching communities, on tribal lands, in the hundreds of colonias along our southern border, or even as close to Washington DC as the eastern shores of Virginia, Maryland, and Delaware. All of these areas, all of rural America, are important for America's future, for the future of us all. RCAP remains committed to rural America and accepts the challenge of providing services to rural communities wherever they are located. Importantly, RCAP cannot do this alone. Partnerships are critical – with federal, state, and local governments, with other water and housing organizations, with community development groups, with community leaders, with anyone or any group that seeks to improve life in rural communities. I would encourage you to help in this effort and to reach out to RCAP and our partners (listed inside the front cover) if there are ways we can provide you or your community assistance with activities or projects that seek to improve the quality of life in rural America. ■

# rural developments



## News and resources from the US Environmental Protection Agency



### Resources for Emergency/ Incident Planning, Response, and Recovery from EPA

As demonstrated by the graphic above, being ready to respond to an incident requires a continuous cycle of activities. To support drinking water and wastewater utility preparedness, response, and recovery, the EPA has developed a variety of guidance documents and other informative resources. View their complete list of emergency/incident planning resources at: <http://water.epa.gov/infrastructure/watersecurity/emergencyplan/#area>.

### EPA Announces Funding to Create Two New Drinking Water Innovation Centers

WASHINGTON (EPA)-The U.S. Environmental Protection Agency (EPA) will provide over \$8 million to create two national centers for research and innovation in small to medium sized drinking water systems.

"These centers will help to develop innovative and practical solutions for challenges faced by smaller drinking water systems, which make up the majority of public water systems in the United States," said Lek Kadeli, Acting Assistant Admin-

istrator for EPA's Office of Research and Development. "Providing cost effective solutions to help these systems deliver safe, high quality drinking water will help improve the health, economy, and security of our nation's communities."

The recipients are the University of Colorado Boulder's Design of Risk Reducing, Innovative Implementable Small System Knowledge (DeRISK) Center, and the University of Massachusetts Amherst's Water Innovation Network for Sustainable Small Systems (WINSSS) Center. These two EPA funded centers will develop and test advanced, low cost methods to reduce, control, and eliminate groups



of water contaminants that present challenges to communities worldwide. RCAP will partner with the University of Colorado Boulder's DeRISK Center on new strategies for technology assessment and implementation in small drinking water systems.

These centers will help strengthen the technical, managerial, and financial capacities of drinking water providers throughout the country. Both centers will collaborate with a range of stakeholders to support problem-oriented research on groups of water contaminants and their origins. This research marks a move towards developing transdisciplinary results that will be nationally acceptable and applicable.

For more information on the grant recipients and centers, visit <http://www.epa.gov/ncer/smalldw>.

## Other news and resources

### USDA Announces Funding to Improve Rural Water Systems

USDA has announced more than \$352 million in loans and grants to upgrade rural water and wastewater systems nationwide as well as make improvements in rural Alaskan villages. Many grant and loan recipients are communities in which RCAP has provided technical assistance, including Clifton Forge in Virginia, Lower Rio Grande Public Water Works Authority in New Mexico, and the White Earth Band of Minnesota Chippewa. Since 2009, USDA Rural Development has invested nearly \$11 billion in new and improved water and wastewater

infrastructure that has benefited nearly 15 million rural residents and almost 6 million households and businesses. For the full list of recipients and more information about USDA's Water and Environment Program, visit [http://www.rurdev.usda.gov/UWEP\\_HomePage.html](http://www.rurdev.usda.gov/UWEP_HomePage.html).

### Johnson Foundation Report Assesses the Condition of US Water Systems and Recommends Course of Action

"Without significant changes, existing water systems will soon no longer be able to provide the services that citizens have come to expect. Recent water crises have illustrated that the economic and social consequences of inaction are far too great for this country and its communities. It is time to accelerate the adoption and implementation of the transformative solutions we know are possible," reads a report recently released by the Johnson Foundation. The Wisconsin-based foundation spent six-years convening over 600 experts on US freshwater issues as part of their Charting New Waters initiative, the culmination of which this report represents. The report outlines

their vision for what is necessary for the country to meet water challenges and contains a set of principles to guide the efforts of those working to address water system and infrastructure issues.

To read the full Navigating to New Shores report, visit [http://www.johnsonfdn.org/sites/default/files/reports\\_publications/CNW\\_NavigatingToNewShoresFullReport.pdf](http://www.johnsonfdn.org/sites/default/files/reports_publications/CNW_NavigatingToNewShoresFullReport.pdf)

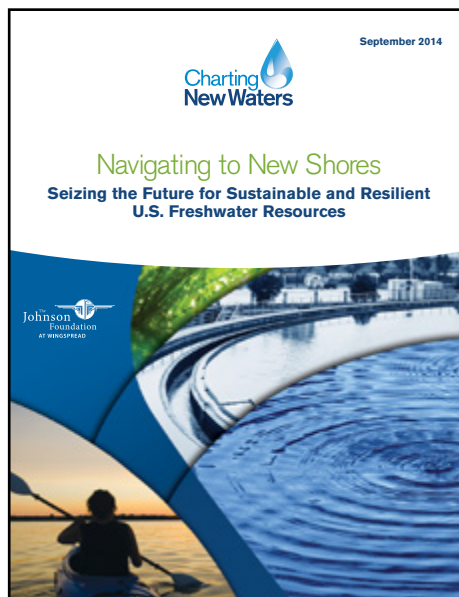
### Community Resource Group and alt.Consulting Merge

Community Resource Group (CRG), the Southern RCAP, and alt.Consulting, two nonprofits that work annually in hundreds of persistently poor communities across the South, have merged to create Communities Unlimited. The new entity will launch a long-term initiative to build sustainable prosperity in communities across the region, using what its leaders call "place-based strategies."

Communities Unlimited will continue the founding organizations' work with small businesses, entrepreneurs, and community water and wastewater systems. "Bringing infrastructure expertise and local business development skills together in a single organization offers a new model for changing the economic trajectory of communities across the South," says Ines Polonius, Executive Director of alt.Consulting and the new Chief Executive Officer of Communities Unlimited.

"Safe drinking water and local commerce are two fundamental building blocks of economic development, but alone they cannot lift a regional economy. By combining our skills and 55 years of combined hands-on experience in a single entity, we can bring more innovation and work more deeply with communities," Polonius says. "We will also collaborate with additional partners who focus on education, health care, and other

*continued on next page*





strategies that are essential for strong, sustainable communities."

"Those who are working with alt. Consulting or CRG today will not see anything different tomorrow. As we look further ahead, we see great opportunity to do even more with our valuable partners on the ground," says Polonius. Communities Unlimited will work in Arkansas, Louisiana, Texas, Oklahoma, Tennessee, Mississippi, and Alabama and will be headquartered in Fayetteville.

CRG, a member of the national Rural Community Assistance Partnership, was created in 1975 and each year it works with more than 500 communities across a seven-state service area. The nonprofit provides lending, training, and on-site technical assistance for public water and wastewater systems in small communities. CRG also builds affordable homes and provides low-cost loans for home improvement along the Texas-Mexico border.

Since its launch in 1998, alt.Consulting has focused on training, managerial consulting and lending for small firms, along with developing "communities of innovation" in the Delta. It has assisted more than 3,800 small businesses, and it has designed and implemented customized entrepreneurship strategies in two communities.

Both organizations are certified as Community Development Finance Institutions by the U.S. Department of the Treasury, allowing them to provide credit

and financial services to underserved markets and populations. In the past 24 years, CRG has made 3,200 loans valued at \$42 million while alt.Consulting made 51 small business loans totaling \$700,000 in four years.

### About Communities Unlimited

**Mission:** Moving rural and under-resourced communities in areas of persistent poverty to sustainable prosperity.

**Vision:** Communities Unlimited works deeply in both rural and under-resourced communities located in areas of persistent poverty to combine fundamental infrastructure with economic/entrepreneurial growth strategies to move rural places along a trajectory toward prosperity. We create strong urban-rural connectedness for communities and their entrepreneurs because we recognize that

rural communities grow as part of a thriving regional economy. For more information, visit the Communities Unlimited website at [www.communitiesU.org](http://www.communitiesU.org).



## RCAP Board Welcomes New Members

We are excited to welcome two new members to the RCAP Board, Frank Castellanos and Zack Space and a new CEO to Communities Unlimited, the Southern RCAP.

Frank Castellanos brings a wealth of experience in city management, economic development, and housing assistance to the RCAP Board. "While growing up as the youngest of a large migrant family, my family traveled extensively throughout the United States following the crops. That experience motivated me to choose a career-path that would allow me to improve people's living and working con-



Ines Polonius



Zack Space



ditions,” says Castellanos. Now in retirement, Frank Castellanos is the CEO of Cast Consulting, a management, marketing, training, and technical assistance firm. The Cast Consulting portfolio includes legal firms, faith-based organizations, local governments, and housing authorities. Before his retirement, he had a 40 year career as a public servant at the local, state, and national levels. He has been a city manager and a workforce board director. He has managed the economic development strategies for various counties in Texas, as well as their workforce development strategies. He served as the Deputy Director of the Housing Assistance Council in Washington, DC and as the National Director of the National Association of Farmworker Organizations, both groups recognized among the leaders in the provision of rural development strategies in the United States. Castellanos resides in Weslaco, Texas.

Former Congressman Zack Space (D-OH) is a principal for Vorys Advisors LLC, where he provides business and strategic counsel to the firm’s clients and other businesses and organizations. While representing Ohio’s 18th Congressional District, Zack served on the House Committee on Energy and Commerce and its Subcommittee on Commerce, Trade and Consumer Protection; Subcommittee on Communications, Technology and the Internet; and Subcommittee on Health. Zack is a dedicated public servant. Prior to being elected to Congress, he served as the law director for Dover, Ohio and as a board member of the Tuscarawas County Board of Mental Retardation and Developmental Disabilities. “During my work in Congress, I saw first-hand the important role RCAP plays in providing technical services and financial assistance to small, rural communities in dire need of infrastructure upgrades and development. As an RCAP board member, I am proud to be part of an organization that helps many poor, rural communities across the country invest in water and wastewater

disposal systems that are so important to enhancing quality of life and promoting sustainable economic vitality.”

Ines Polonius joins the RCAP network as Chief Executive Officer of newly formed Communities Unlimited, the Southern RCAP. Ms. Polonius previously was the founding member and Executive Director of alt.Consulting, which merged with Community Resource Group to form Communities Unlimited. Polonius joins RCAP with considerable experience in

business development, having personally worked with more than 200 small businesses in manufacturing, distribution, service, and retail. On joining RCAP, Polonius says, “It was a real treat to meet our many partners in the RCAP network during the national conference in Madison, Wisconsin in early October. This is a powerful network of organizations, who deeply understand the issues faced by rural America and serve as an important voice for those living there.” ■



On November 19th, RCAP, along with many other water and human rights groups, joined in the World Toilet Day campaign. The UN coordinated campaign seeks to bring attention to the need for improved sanitary conditions around the world. While RCAP only operates in the US, we recognize the importance of cross-cultural collaboration and knowledge sharing to tackle global issues around clean water and sanitation.

For the past several years, RCAP has welcomed groups of visiting leaders through the State Department’s Cultural Vistas program ([culturalvisitas.org](http://culturalvisitas.org)), which has used career exploration to facilitate connections between Americans and international visitors for more than 60 years. At the RCAP National Office in Washington, DC, staff host foreign delegations who have an interest in rural services. During these visits, both the RCAP staff and foreign guests share insights into the ways in which we are all trying to address the challenges of providing clean and safe drinking water and sanitation.

“By exploring our common obstacles and differences in culture and governance, we better understand the global challenges of this work and may find new solutions,” says Robert Stewart, Executive Director of RCAP. ■

*Photo above: Gathered around a board room table, community leaders from India and RCAP staff share their experiences with rural utility services.*



# News from the Regions: City of Bay View Celebrates Earth Day

by Roberta Acosta

Dating as far back as the 1970's, Village and County Officials in Bay View, located on beautiful Sandusky Bay in Lake Erie, Ohio, have been aware of the unsanitary conditions in the Village and Bay as a result of improperly treated human waste being discharged from failing onsite systems that serve residents. These systems primarily discharge to the Bay via field tiles or the Village's storm sewer system, and are directly responsible for impairment of the Bay, which drains directly into Lake Erie. Both Sandusky Bay and Lake Erie are plagued by some of the largest and most toxic algae blooms in the country, causing significant health hazards to residents and negative effects on tourism.

In early August 2014, the City of Toledo made national news with a water crisis that involved algal blooms, which are the result of a combination of factors such as the presence of nutrients (i.e. phosphorous), warm temperatures, and lots of sunlight. Toledo's drinking water is drawn from Lake Erie, treated, and distributed to its customers that are located not only in Toledo, but outlying areas (approximately 400,000 residents were affected as well as businesses, such as restaurants). An algal bloom surrounding the water intake site on Lake Erie caused a spike in toxin levels. A water usage advisory was issued to customers early Saturday morning and by noon the Governor had declared a State of Emergency. The water was not drinkable. Water was brought in from unaffected local areas and distributed to residents. The National Guard alone brought in 10,000 gallons of water. Multiple samples were drawn and tested by Ohio and USEPA throughout the weekend and the water advisory was finally lifted at 10:00 a.m. on Monday morning.

The Village of Bay Views lies approximately 50 miles southeast of Toledo. Recently, in collaboration with the Erie County Com-

missioners, a proposed 7 million dollar wastewater improvements project in the Village received almost 6 million dollars in direct loan and grant funding from USDA Rural Development and was selected as this year's Earth Day project in Ohio. USDA hosted the groundbreaking ceremony on April 22, which was attended by Tony Logan, State Director of USDA along with Village, County, and other USDA officials, U.S. Representative Marcy Kaptur, State Representative Chris Redfern, and a representative from Senator Rob Portman's office. A number of local residents were in attendance as well.

The proposed project includes the construction of a new gravity sewer wastewater collection system to serve Bay View and the adjacent unincorporated community of Bay Bridge. Wastewater will be conveyed via force main to the City of Sandusky for treatment through an existing service agreement between the City and the Erie County Department of Environmental Services. The total project cost is estimated at \$6,978,000. In addition to the USDA award of \$3,035,000 in loan funds and \$2,911,900 in grant funds, the project has received a State and Tribal Assistance Grant (STAG), which was secured through US Representative Marcy Kaptur's office for \$500,000. The Village is currently pursuing additional funds through the State Competitive Community Development Block Grant Program. If approved, an additional \$500,000 in construction grant funds and \$100,000 in low to moderate income homeowner connection assistance funds will be made available to the project, which will serve approximately 851 individuals and 17 commercial and institutional customers. Project construction is anticipated to begin mid-late fall 2014. ■

*Acosta is a Rural Development Specialist with Great Lakes RCAP.*



# RCAP Staff Meet in Madison

by Breanna Detwiler

RCAP staff from across the country gathered in Madison, Wisconsin October 6-9th to connect and learn from leaders in the field and each other at the annual RCAP National Training Conference. The program kicked off with opening remarks from Jill D. Jonas, Director of the Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources; Mindy Eisenberg, Chief of the Drinking Water Protection Branch, Office of Groundwater and Drinking Water, US EPA; and Stan Gruszynski, Wisconsin State Director of USDA Rural Development, who welcomed the group to Madison and discussed water issues in Wisconsin. Following a lively question and answer session with all the presenters, Robert Stewart, RCAP's Executive Director, welcomed new RCAP staff and reflected on the 40-year history of the organization and future plans. Ari Neuman, RCAP's Policy Director, closed the morning session with a presentation on rural advocacy and advancing the RCAP cause at the State and Federal level.

Opening remarks were followed by the annual RCAP Awards Luncheon. The following staff were recognized for their dedication and service to RCAP's mission to ensure that rural and small communities throughout the US have access to safe drinking water and sanitary wastewater disposal:

- Art Astarita (RCAP Solutions), Outstanding Service Award
- Josefa Torres Olivio (RCAP Solutions), The Bill French Bridge-Builder Award
- Holly Baker (CU), Pillar Award
- Callie McIntosh (MAP), Outstanding Mentor Award
- Marty Ostransky (MAP), Outstanding Rookie Award

Sukhwindar Singh (RCAP Solutions), Jerry Kopke (CU), and Dave Harvey (RCAC) were all inducted into the RCAP Hall of Fame (pictured below).

Over the following 3 days, 150 RCAP Technical Assistance Providers (TAPs) participated in training sessions on everything from Sanitary Surveys to Conflict Resolution. Outside of session rooms, RCAP staff enjoyed the city of Madison and shared experiences and lessons from the field over pretzels and cheese curds. On the final day of the conference, Jacqueline M. Pontilazaruk, Acting Administrator for the USDA Rural Utilities Service, spoke on the role of Rural Development in communities and where the department was a year ago, this year, and outlooks for the future.

Motivated by speakers and armed with new training information, the conference reinvigorated RCAP staff to tackle the challenges facing rural communities today. ■

*Lower Photo (from left back to front right): RCAP Hall of Fame recipients Mark Rounsavall (CU), Sukhwindar Singh (RCAP Solutions), Dave Harvey (RCAC), Jerry Kopke (CU), Deb Martin (GLRCAP), Julie Ward (GLRCAP), and Blanca Surgeon (RCAC) with RCAP Executive Director, Robert Stewart.*



*Detwiler is the Communications Director in the RCAP National Office in Washington, DC.*



# Rural Advocacy: How to Educate Our Nation's Leaders

by Ari Neumann

After nearly \$4 billion spent on advertising, get out the vote efforts, and voter education campaigns, the dust is finally settling on the 2014 midterm elections. Many of the newly elected members of Congress have little or

no experience with Community Development Block Grants, USDA's Rural Development programs, the Drinking Water and Clean Water State Revolving Funds (SRFs), and other federal assistance for community and economic development. This is especially true for Rural Utilities Service, the SRFs, and other sources of funding for water and wastewater infrastructure. To many in Congress, these programs are just line-items in a budget.

As with any election, however, this year's contest gives rural advocates a great chance to educate our nation's leaders about the importance of these federal community development programs. Through effective outreach and education, we can bring these programs to life and show our members of Congress the important role they play in improving the quality of life in rural America. Becoming an effective advocate can seem like a daunting task, but by following a few simple steps, you too can be an effective advocate for rural communities and programs that help rural communities thrive.

## When should I talk to my representatives?

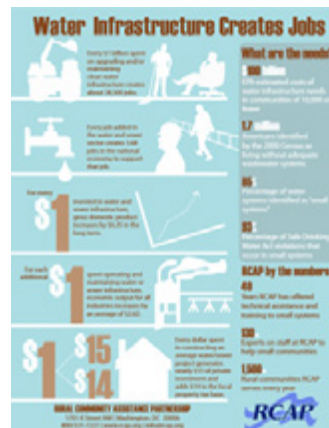
The sooner, the better. For new members of Congress, there is always a steep learning curve, as they try to get up to speed on the numerous issues they face. Most will therefore take advantage of any chance they get to hear from people who know these programs and what benefits they can provide to their constituents. Even veteran members of Congress like hearing from the communities they represent about the impact federally funded programs are having back home.

## How do I get their contact information?

If you are unsure who your representatives are, visit <http://www.opencongress.org/people/zipcodelookup> and enter your zip code to find out who they are and get contact information such as phone numbers and online comment forms.



Photo by Bud Mason



## Advocacy Tip

Bring visual materials to your meeting to help illustrate your point. Avoid lengthy reports as most members of Congress don't have time to read through them.

For materials, visit the resources section of our

## Who should I talk to?

Every member of Congress has field offices in his or her home state that employ constituent services staff whose job is to keep the member up to date on what is going on in the district or state he or she represents. These staff members love to hear from local leaders about community development projects, which they then pass up the chain to keep the Senator or Representative informed about progress at home. They can also help you to navigate the federal bureaucracy if you're having trouble finding the information you need from a federal agency. In addition, any time Congress is on recess, members travel home for constituent work periods, where they are always looking for opportunities to meet with local leaders, tour construction projects, attend ground-breaking ceremonies, or otherwise engage with constituents. These are prime opportunities to show your elected leaders how the programs that may seem like nothing more than budgetary line-items in Washington, DC actually have a positive impact in rural America.

## What do I say?

Tell your story. There are all kinds of facts and figures that rural advocates can marshal to make the case that rural community development programs are worth saving, but no numbers or charts can compare to the power of a genuine, straight-from-the-heart story of how these programs impact your life or your community. I still remember a story I heard years ago from a small business owner from rural Montana who was meeting with a staff person from his Senator's office. His tale of how the town's new drinking water system allowed him to keep his family-owned business' doors open left such an impression that the staff person asks me for an update on the business every time I meet with him, even though nearly four years have passed since our initial meeting. Members of Congress are bombarded by facts and figures from lobbyists for one cause or another on a daily basis. Genuine, personal stories from constituents cut through the clutter and make lasting impressions that can translate into support for rural community development programs.

Although pundits will devote hours upon hours of air time to debate what the election means or what the new Congress will do over the next two years, most small-town leaders are ready to move on and continue the tough work of building stronger, more sustainable communities. A little time invested in effective advocacy today can help pay off for your community in the future through continued support for federal programs that help rural communities. ■

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*Neumann is the Policy Director in the RCAP National Office in Washington, DC.*

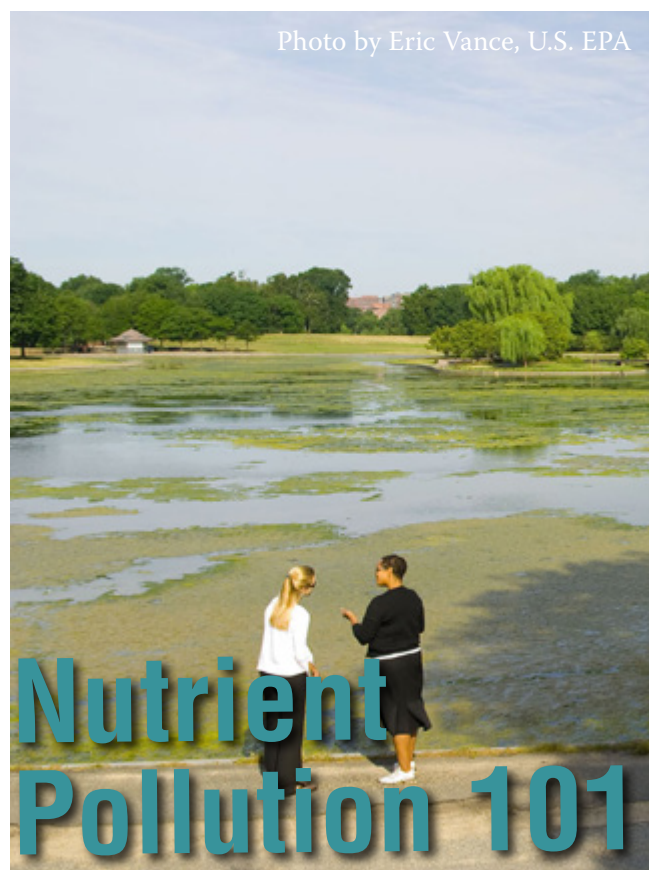


Photo by Eric Vance, U.S. EPA

by Stephanie Ross

Nutrients are needed to sustain life. Many of us take vitamins and minerals to balance our nutrient levels. That is the key with nutrients- balance. Too much of a nutrient can be toxic and too little of a nutrient will not sustain life.

When many of us think of nutrient reduction our first thought is nitrogen. Nitrogen limits are a reality for many National Pollutant Discharge Elimination System (NPDES) permits for wastewater treatment, but another emerging concern with nutrient reduction is phosphorus. It may not be part of your NPDES permit, but it likely will be soon. Let's dive a bit deeper...

## Understanding Phosphorus

Phosphorus, as an element, is part of the nitrogen family. Phosphorus is highly reactive and is not a free element so it is almost always a part of a compound in organic and inorganic forms. Phosphorus is found in liquid, gas, and solid (rock) formations, and while there is violet, red, black, scarlet, yellow, and diphosphorus phosphorus, the most common is white phosphorus (WP).

*continued on next page*



Plant life consumes phosphorus and as agriculture uptake increases we deplete the phosphorus supply in the soil. To sustain plants and crops, we add phosphorus fertilizers. We aren't just talking plant life, each molecular cell in our body contains phosphorus. Municipal wastewater averages from 5 milligrams of phosphorus per liter (mg/l) to 20 mg/L. 1 to 5 mg/L of phosphorus is organic and requires consumption of available oxygen demand to break down. The remaining phosphorus is inorganic and therefore increases solids (seen in total suspended solids and sludge). Population contributions to phosphorus average 2 grams per person per day, with some people contributing as much as 4+ grams per day. Understanding the role of phosphorus is the first step towards stewardship in nutrient management. To learn more, visit <http://www2.epa.gov/nutrientpollution>.

## History of phosphorus

Phosphorus was first identified in urine in 1669 and later it was determined that phosphorus is found in bones as well. In 1860, the invention of matches came from the discovery of the highly reactive, flammable qualities of phosphorus. Bones and urine were the source of phosphorus for the match-making industry until the 1840's when bird and bat waste were identified as a source. The Berne Convention of 1906 banned the use of phosphorus in match-making as exposure to phosphorus in manufacturing led to "Phossy Jaw," bone rot, which, when untreated, resulted in organ failure and ultimately death. The known flammability and toxicity led to phosphorus use as an

incendiary first known as "Fenian Fire." Phosphorus has been used by the military in war, where white phosphorus was often called "Willie Peter" or "Willie Pete."

There are safe and healthy uses for phosphorus when managed responsibly. We must balance phosphorus use to sustain aquatic, plant, and human lives.

## What are the risks of phosphorus overload in the ecosystem?

Eutrophication, quite simply put, is nutrient overload in a body of water. The result of too much phosphorus in water is seen in algal blooms. Blooms are often green, sometimes with red or brown hues and likely glow. Harmful Algal Blooms (HABs) increase toxins and result in a poisoned water body. Fish kills and liver damage are among the health risks to be considered. For this reason, we are responsible for maintaining a balance of phosphorus that supports life without creating toxic water that diminishes life. EPA has regional contacts to coordinate nutrient management, and you are encouraged to work with your state and local officials to develop a plan. Visit <http://www2.epa.gov/nutrient-policy-data/what-epa-doing> for more information.

EPA's Discharge Monitoring Report Pollutant Loading Tool identifies pollutants based on reporting from 2007 to 2011 and will provide historic data for planning management of not only phosphorus but other known pollutants <http://cfpub.epa.gov/dmr/>. Operators and engineers benefit from knowing the history of an area as they develop benchmarks for the future.

## Nitrogen Family

1	2											13	14	15	16	17	18				
1	H																	He			
2	Li	Be											B	C	N	O	F	Ne			
3	Na	Mg										Al	Si	P	S	Cl	Ar				
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr			
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe			
6	Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn			
7	Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt												

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr



EPA guidance on how to measure your phosphorus is available online at <http://water.epa.gov/type/rs/monitoring/vms56.cfm>.

## What is the goal?

Balance. We need phosphorus and yet we don't want to overload the watershed with nutrients. Phosphorus (P) is reported in concentrations by one of four ranges: less than 0.1 mg/L, 0.1-0.3 mg/L, 0.3-0.5 mg/L, and 0.5 mg/L or more. EPA water quality criteria states phosphates should not exceed .05 mg/L in streams that discharge into lakes or reservoirs, .025 mg/L within a lake or reservoir, and .1 mg/L in streams or flowing waters not discharging into lakes or reservoirs (USEPA, 1986). Surface waters should be maintained at .01 to .03 mg/L of total phosphorus to remain uncontaminated by algal blooms. However, even .025 mg/L provides enough nutrient for algal blooms and should be monitored and maintained.

## How do we accomplish phosphorus reduction?

The Midwest Assistance Plan, with nine states part of the Mississippi River Basin, falls within the 2008 Gulf Hypoxia Action Plan to improve water quality. Hypoxia occurs as nutrients cause the water to have reduced oxygen levels to support aquatic life. The action plan included a five-year review and the 2013 Reassessment to reduce nutrient (nitrogen and phosphorus) runoff into the Mississippi/Atchafalaya River Basin (MARB). To learn more, please visit <http://water.epa.gov/type/watersheds/named/msbasin/actionplan.cfm>.

Those who have high loads of phosphorus might treat with biological or chemical alternatives. Biological Phosphate Removal (BPR) treatment provides biomass growth, which consumes the phosphorus, but results in increased sludge and increases in costs. Alum or ferric chloride are chemical treatments to reduce the phosphorus, but also result in increased sludge and overall costs. Others use calcium, which increases the pH and requires the addition of carbon dioxide to bring pH within an acceptable range. However, operating in this type of reactive mode is not only harmful to the environment, it is also a costly and stressful approach to infrastructure management.

Instead, we need to look at opportunities to improve water quality. MAP communities are using a variety of approaches to provide a balance of phosphorus that will sustain life for years to come. Water Mixing (<http://water.epa.gov/scitech/swguidance/standards/mixingzones/about.cfm>) provides a blending opportunity for many NPDES permits. Additional information is available from EPA Water Quality Trading (<http://water.epa.gov/type/watersheds/trading.cfm>), and this provides options



Photo by Eric Vance, U.S. EPA

for watersheds where one permit may have excess credits (pounds or equivalent measure). Overall, a watershed must meet the limits established by the state agency regulating NPDES permits. Many states have or are developing programs. For example, Minnesota has a program in place for phosphorus trading, <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-projects/special-projects/pre-tmdl-phosphorus-trading.html>, and Montana has a program in place for nutrient trading that includes phosphorus, <http://www.deq.mt.gov/wqinfo/NutrientWorkGroup/PDFs/CircularDEQ13.pdf>. We encourage you to coordinate efforts with rules and regulations in place and to visit with your primacy agency as you develop a plan of action.

Take control of your nutrient situation today. You can start by educating those in your watershed in phosphorus management, measuring your phosphorus, reviewing the phosphorus load in your watershed, coordinating with groups in your watershed to reduce the load, and implementing practices to sustain the one water we all share. ■

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*Ross is a Technical Assistance Provider for Midwest RCAP.*

# Tribal Water Rate Implementation Results in Water Conservation

by Randy Vessels



Water rates are tricky, especially when a well-established water system has no rate structure in place. A rate increase is a tough sell to any community, and it often fails to win support. This article looks at how one small tribal community addressed water rates and ultimately succeeded.

***The Challenge: How do we fairly and accurately charge both businesses and private homes for water consumption?***

***The Answer: We need to perform a rate study.***

The Big Valley Rancheria is a federally recognized tribe with approximately 171 acres of land located in Lake County, California. The tribe has about 170 members who live on the reservation. The landscape includes vineyards and orchards and is set on the banks of Clear Lake, which is known for its massive black bass. The area is popular with boaters, fishers, hunters, and other nature lovers, which the tribe welcomes. Visitors can enjoy the lake and shop at the reservation, stay at the hotel or RV Park, and visit the casino. Still, providing a safe and adequate supply of drinking water comes as both an economic challenge and one of great environmental concern.

The Big Valley Rancheria Water District operates a proactive tribal water utility serving Rancheria members. The idea is to plan ahead, adjust, and adapt before problems arise. The district also monitors its sole drinking water source, the Tribal Drinking Groundwater Well, for overuse and potential environmental impacts. An overused water source can be detrimental not only to the immediate user, but also to the surrounding water users. Even prior to the present drought and prolonged hot weather, the tribe felt that it needed to limit usage and extend water conservation programs to protect its sole water well. But how would fair rates be set with so few individuals and service connections to charge? Laying the groundwork would be critical. For several years, lead operator for the tribe's water system, John C. Cruz, Jr., monitored residential water usage and offered assistance with leak repairs. "It is important to me that we set up our next generation with the tools (rate structure) and mindset (conservation) of our most precious resource for years to come," says Cruz.

This record keeping, however, didn't just stop there. For several years, the tribe kept comprehensive and accurate water usage records. These records covered the hotel, casino, RV Park, and even the water treatment facility where some of the precious water was used to backwash the filters that cleaned the well water. The tribe left no stone unturned when it came to mapping out consumption. It even closely estimated and monitored the flushing of hydrants. This was daunting work and it wasn't without trial and error, but it was understood that a rate study would be vital to conserving this precious commodity.

***The Process:*** Early in 2013, the Big Valley Rancheria Water District staff asked RCAC to help perform a rate study and together they quickly recognized that the tribe lacked economy of scale. If you understand economics, then you understand that size matters. There were simply not enough customers to fund the water utility's operation and maintenance. The tribe delivers water to approximately 38 homes and three businesses. The District's water treatment plant removes iron and manganese, which are unacceptably concentrated in the source water. Without such treatment customers can see it in the water and it will stain fixtures. This operation is expensive



to maintain and requires electricity, chemicals, filtration media, and diligent certified operators. But with so few consumers to bill, how could the tribe pay to treat the water and maintain the system?

Discussion between the Council, utility, and tribal members followed for several weeks with mixed results. RCAC completed the rate study documents and provided them to the Public Works Manager and Assistant Environmental Director, John Gichuki, but for a time, received no response. As the silence continued for some time, it was thought that perhaps the rate study had stalled somewhere in the delegation process. With the water consumption data and a rate study in hand, the tribe could now justify that a rate structure, in some form, was necessary.

**The News :** At one of the quarterly Northern California Native American Water Master's Association (NAWMA) meetings, which brings tribal operators and managers together to discuss drinking water issues, Gichuki informed RCAC that Big Valley Rancheria Water District had implemented an increasing block rate water rate.

The questions poured out: How was it received? What has happened to water usage?

Gichuki reported that the initial reaction was encouraging. Rather than opposing rates, tribal members wanted to know how they could further conserve water. They had understood the importance of conserving even prior to California's current drought, but in disseminating the study data that pointed to the benefits of a fair rate structure, there were immediate requests for low-flow toilets, shower heads, faucets, and even low flow nozzles for outside hoses. The study revealed many leaky fixtures, and the maintenance department quickly responded by

replacing the fixtures with low-flow versions. The first official reported result to RCAC was the "lowest January water usage in the tribe's recorded history." What a success for the Tribal Governance Council!

**Since the Initial Impact:** The tribe's water operator, Cruz, said recently that despite a dry and hot summer, less water is being used. The water team checks and records well drawdown and recovery levels on a regular basis. The tribe might be worse off had it not organized the tiered rate structure leading the way toward diligent water conservation.

**Looking to the Future:** With a fair rate structure in place and conservation on everybody's mind, what's next? What can the tribe do to further conservation and protect its invaluable water supply? There are no guarantees, but rates that support water conservation, along with a well-informed customer base, are an enormous step in the right direction. With no foreseeable drought relief in California, these resource-saving measures are essential.

**To the readers of this article:** If you live in any area with the potential for droughts and flooding, follow the Big Valley Rancheria model. Both the utility and its customers need to be informed and prepared well in advance of extreme weather. Planning and implementation resources are available through your regional RCAP, primacy agency, or your own personal research. Be realistic about your water usage and practices at home, at work, and during travel. Learn to conserve. ■

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*Vessels is a Technical Assistance Provider for Western RCAP.*



Big Valley Rancheria Boat Slip



# Letter from the Field



Tommy Ricks and Dessie Williams

Dear Reader;

Some people have a hard time understanding what “rural” really means, probably because they have grown up and lived in cities or suburbs all of their life. Contrary to popular belief, there are still a lot of people who live in or near small rural communities who are really not too concerned about broadband or fiber optic and certainly not concerned about the height of the sign outside the local Piggly Wiggly grocery store. They just want access to the basic utility services, safe drinking water and sanitary waste disposal.

I met a lady recently who fits into this former lot and who is still waiting after many years to become a “Modern Lady”. You may have met people who have been in similar situations. This is a driving motivation for us to continue what we do as we strive to help facilitate rural development and connectivity to basic essential utility services. I don’t know if I have ever encountered someone who has personally witnessed a town grow from a dusty logging village with no utilities and no paved roads or highways to slowly developing the basic infrastructure over her lifetime, but still not have access to these services.

I did an onsite visit down in New Augusta, Mississippi (population 644) for a needs assessment to accompany a grant application. The proposed project involves extending sewer to six households. All of these households have onsite septic systems and all but one are failing. The odor, standing water, mosquitos, and other issues common with this type of prob-

lem persist in the community. As usual, I interviewed several of the residents in the area of benefit to determine, in their own words, the severity of the problem and if they indeed want this project to go forward.

My first interview was a no-show, but the second person I met with was Mrs. Dessie Williams. Dessie is a 73 year-old widow who lives alone in the house that she and her late husband built in 1964. This house is located off of the busy 4-lane U.S. Highway 98, a major thoroughfare connecting Mississippi with South Alabama. Mrs. Williams and her neighbors, who will benefit from the extension of the town’s sewer system, all live within the municipal limits of New Augusta. When I asked when this area was annexed into the town, Public Works Superintendent Scott Extine and Mrs. Williams quickly told me that this area has always been within the city limits. I looked at Mr. Extine with a puzzled face and he clarified that indeed yes, this area has been part of the Town of New Augusta since 1907 when the town was first incorporated. Mr. Extine explained that during World War II, the town’s original water system and sewer system were constructed in the downtown area by German prisoners of war who were held at nearby Camp Shelby. Over the years, New Augusta has slowly expanded services to other parts of the town, but the area where we were evaluating has not been connected due to the topography and the need for a lift station to be installed to connect these few remaining town residents.

Where most of the urban areas in this country had paved streets and highways as well as water, sewer, electricity, and telephone within the early years of the 20th century, Mrs. Williams has witnessed each of these developments in her own small town over the years, but is still waiting on a connection to the town’s sewer system.

As part of my normal interview questions, I asked Mrs. Williams how long she had lived here and her response not only shocked me, but is the reason that I am sharing this story. Mrs. Williams asked me, “Do you remember how old that I said that I am?” I responded that I believed she had said that she was 73, and Dessie continued, “Well, that’s how long I have lived here.” I was a little confused because the house appeared to have been constructed in the 1960’s or 1970’s. She confirmed this, but explained that this was her grandparents property and her

mother and father had lived here when she was born. Dessie's mother passed away when she was young, but that after the funeral, her uncle and aunt, who had no children and lived in her grandmother's old house, had taken Dessie and her siblings in to live with them. Mrs. Williams told me that when she was a little girl, the highway out front was a gravel road. I asked her if they had electricity at her house back then and she grinned as she told me, "No, we used oil lamps until they brought electricity

**"Young man, I will finally feel like a modern lady if and when y'all finally get a sewer line run to my house!"**

here after World War II." She continued describing how a few years before that, they paved the highway, and years later they made a 4-lane super highway out of the former dirt trail. Along the way, sometime back in the 1970's, New Augusta extended water service and she was so glad that she no longer had to go out in the cold weather to use her hand-pumped water well. In the 1980's, Franklin Telephone (a USDA-RUS telecom utility) extended telephone service to the area. Mrs. Williams looked at me square in the eye concluding, "Young man, I will finally feel like a modern lady if and when y'all finally get a sewer line run to my house!"

I paused for a minute as it sunk in. This lady, who has lived in the same location in this small town all of her life, has watched progress come along at a snail's pace, actually slow enough to watch many car tags rust away. Where most of the urban areas in this country had paved streets and highways as well as water, sewer, electricity, and telephone within the early years of the 20th century, Mrs. Williams has witnessed each of these developments in her own small town over the years, but is still waiting on a connection to the town's sewer system. Yes, I can see why she will consider herself to be a "Modern Lady" if she can see this

basic municipal service extended to her home. Mrs. Williams is a recent cancer survivor and while she has lived a long life, I certainly hope that we will be able to help her obtain the last basic service to her home, a sanitary sewer connection. And no, I dared not to ask her if she desired to be connected to the world wide web through rural broadband service!

Rural America faces real problems with essential services, which many of us take for granted, and unfortunately, there are still many like Dessie Williams who are still living without the basics in the 21st Century. Listening to NPR on the drive home that afternoon, I heard a report that the wild polio virus had been eradicated in Southeast Asia after no known occurrences in the last three years, and this milestone now signifies that 80% of the world's population lives in areas without the threat of this once-dreaded disease. When I joined CRG 17 years ago, I naively believed that if I did my job right, I would probably run out of work helping unserved areas of Mississippi obtain water and wastewater services within a few years. If I am able to continue doing this another 15 or 20 years, I now understand that there will still be many areas of unserved households out there. I turn 50 this year, which also coincides with the 50th anniversary of LBJ's declaration of the War on Poverty. While tremendous strides have been made to reduce poverty, unlike polio, poverty is nowhere close to being eradicated in the United States. And similarly, the modern development of Rural America is far from complete. I hope I live long enough to see a future U.S. President declare that this War on Poverty has been won and the mission is complete, whether he is standing on an aircraft carrier or in a corn field in Iowa.■

Sincerely,

Tommy Ricks

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*Ricks is a Technical Assistance Provider for Southern RCAP.*

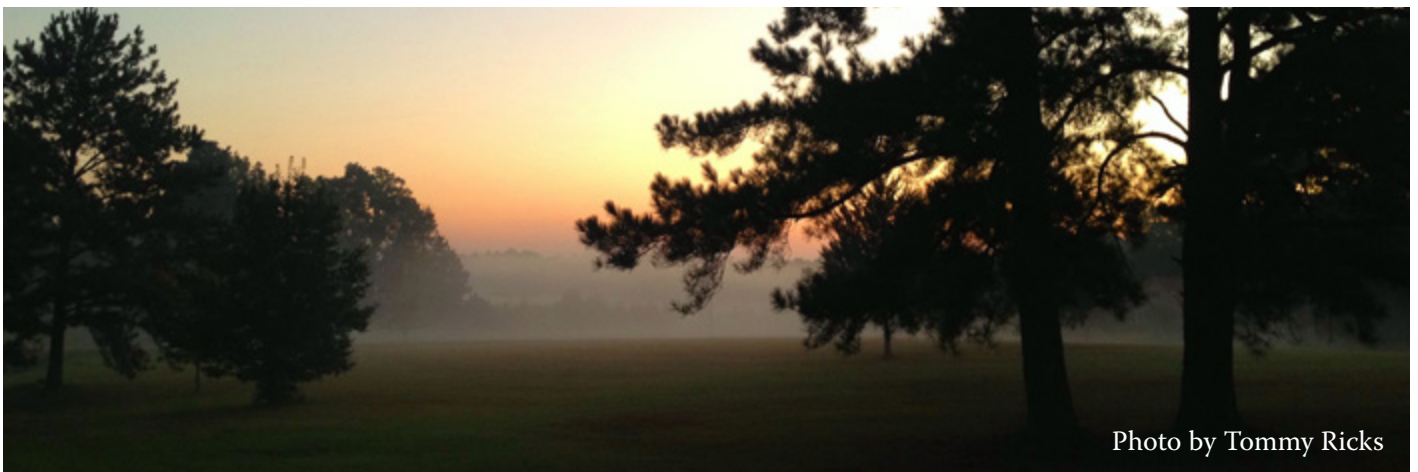


Photo by Tommy Ricks





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