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June 2017

Waste & Water

INSIDE:

Decentralized wastewater treatment systems a green option

Kinston, N.C., demos biosolids dryer

Water conservation a necessity



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20 Focus on Waste & Water Utilities: Healthier, greener water treatment systems options for the public

24 Focus on Waste & Water Utilities: Biosolids dryer demo exceeds Kinston's expectations

26 Focus on Waste & Water Utilities: Wellington, Fla., continually awarded for its reclamation facility

30 Focus on Waste & Water Utilities: Wisconsin takes on lead service lines

34 Focus on Waste & Water Utilities: No need to wait for a California-style drought

42 City & Town Management: Grant program fans community service

44 Technology: West Plains, Mo., beckons economic development with broadband

46 Streets & Snow: Pedal power: Do increased bike lanes mean increased safety?

50 Firefighting & EMS: Wash and wear: Minnesota fire departments receive funding for heavy-duty washers and dryers

52 City & Town Management: Microbreweries helping to redesign downtown areas

Pages 24, 46 and 52 photos provided; page 26 photo provided by Bryan J. Gayoso.

ON THE COVER

Thanks to a cooperative contract through the National Joint Powers Alliance, Hinckley Waterwater Treatment Plant in Ohio was able to procure a C18 generator, which will ensure its operations continue uninterrupted should there be a power outage. Ohio Cat, which had suggested NJPA to Hinckley, has been helpful throughout the process, answering any questions and getting in parts quickly. (Photo provided)





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Departments



'Houseboat Capital of the World' Lake Cumberland area, Ky.

- 10** **Editor's Note:** *Raising the grade*
- 12** **From the Cover:** *Ready to roll: C18 genset kept treatment plant online for five days*
- 14** **'World Capitals':** *'Houseboat Capital of the World' Lake Cumberland area, Ky.*
- 16** **Know your Founder:** *Samuel Goodson and Joseph R. Anderson: Bristol, Va.*
- 17** **Flag Day Tribute**
- 38** **Personality Profile:** *Jonathan Gano puts his overalls on*
- 56** **Company Profile:** *Tackling stormwater pollution is a team sport with moving targets*
- 58** **Conference Calendar**
- 59** **Product Spotlights**
- 60** **Classified Ads**
- 66** **Top 10:** *Cities where hurricanes would cause the most damage*
- 67** **Advertiser Index**

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Raising the grade



Sarah Wright | Editor

THE AMERICAN SOCIETY OF CIVIL Engineers gave the nation's drinking water an overall grade of "D," or "poor," in its 2017 infrastructure report card, which explored several segments of the U.S.'s critical infrastructure. As noted by ASCE, "Drinking water is delivered via 1 million miles of pipes across the country. Many of those pipes were laid in the early to mid-20th century with a lifespan of 75 to 100 years. The quality of drinking water in the United States remains high, but legacy and emerging contaminants continue to require close attention."

It continued to summarize, "While water consumption is down, there are still an estimated 240,000 water main breaks per year in the United States, wasting over 2 trillion gallons of treated drinking water. According to

the American Water Works Association, an estimated \$1 trillion is necessary to maintain and expand service to meet demands over the next 25 years."

Water infrastructure certainly continues to make headlines, with Flint, Mich., still serving as a poignant reminder of what can happen when it fails, causing harm to the citizens who relied on it. However, Flint, as shown in reports that soon followed, was not alone.

Many municipalities and states are moving to prevent similar crises from occurring locally. This month writer Anne Meyer Byler zooms in on efforts occurring within the state of Wisconsin to eliminate lead service lines from the local systems by giving homeowners financial resources to replace them. Madison, Wis., had a head start starting its replacements in 2001; however, other Wisconsin cities are taking advantage of a Department of Natural Resources program to aid homeowners, and there have been efforts in the Wisconsin Statehouse as well — though, nothing has passed as of press time.

While there is a lot of doom and gloom on the subject of water utilities, the ASCE report does offer a glimmer of hope: "With proper planning, education, and conservation, utilities are making strides to ensure demand

is met for decades to come. Water conservation and improvements in water-use efficiency appear to have gained a general acceptance among water utilities as a sensible practice of water management."

If any place is a pro at water conservation, it is California, and for this reason, we are highlighting Chula Vista's Water Stewardship Plan, particularly as several area regions within our coverage area, such as Georgia and Florida are faced with droughts. Hopefully, this California city's experiences will bring implementable ideas that can be adapted to your city's current needs.

Elsewhere in this "Waste & Water Utilities" issue, we have decentralized wastewater systems, biosolids dryers and a spotlight on the reclamation facility of Wellington, Fla., which has been the recipient of many awards.

We, as a country, definitely have room to improve upon our infrastructure; however, many cities and towns are already off to a good start, often proving to be the leaders in such efforts. ■

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Hinckley Wastewater Treatment Plant in Ohio utilized a cooperative contract through the National Joint Powers Alliance to secure a 600 kW Cat generator. The genset came in handy during a power outage (Photo provided)



Ready to roll:

C18 genset kept treatment plant online for five days

Nestled in a wooded valley about 30 miles south of Cleveland, Ohio, the Hinckley Wastewater Treatment Plant provides a tranquil setting for ongoing sewage treatment. Originally constructed in 1976, the inconspicuous plant is set back from Ridge Road, processing an average of 1.7 million gallons of sewage per day. The facility is fed by 50 miles of sewer lines that come from the suburban communities of Brunswick, as well as parts of North Royalton, Strongsville and Broadview Heights.

"In keeping with the somewhat out-of-the-way nature of our facility, we like to maintain a low profile," said plant Superintendent Robert Elmerick, adding that he can't recall an instance where sewage has backed up into the basements of the plant's customers.

However, in spring 2016, the plant's stellar performance history faced a serious threat during a 114-hour unscheduled power outage. On a Monday evening in March, the Hinckley facility lost incoming power from its utility provider, Ohio Edison. The power

company disconnected the utility feed after 143 homes in the area lost power due to an unspecified mechanical problem. The power outage quickly became a non-issue because the Hinckley plant was prepared, having installed a 600 kW Cat C18 diesel generator set in October 2014 that is capable of providing more than enough power to the entire facility.

"The Cat generator automatically fired up, the switchgear switched power over and it ran for nearly five days," Elmerick recalled. "Once they disconnected us, we ran the Cat generator for 114.2 hours until we could schedule electricians to come in and work on our high-voltage equipment and get it back up to snuff." He continued, "And the



Constructed in 1976, Hinckley Wastewater Treatment Plant processes an average of 1.7 million gallons of sewage per day. (Photo provided)



As part of routine testing, Hinckley Wastewater Treatment Plant personnel will run the genset under no load once a week for at least an hour. Once a month, staff transfers the generator load to run the plant anywhere from one to four hours. (Photo provided)

generator performed great. All we had to do was add fuel to it, and it ran flawlessly. We never had to phase it; it ran smooth. We just had our fuel supplier come in once a day and fill up our tank."

The Hinckley facility was proactive because it learned several years ago that Ohio Edison planned to remove one of the two utility feeds coming into the plant. Prior to the acquisition of the 600 kW Cat generator, the Hinckley plant had a trailer-mounted generator that was only large enough to run just one of the facility's raw sewage pumps.

"We knew we had to institute some type of backup power system, so we talked with several generator companies," Elmerick said. "We discussed what our power needs were with Mark Gibson at Ohio Cat, and he suggested we utilize a cooperative contract through the National Joint Powers Alliance."

Leveraging NJPA

NJPA is a public service agency offering cooperative purchasing to more than 46,000 education, government and nonprofit members across the United States and Canada. NJPA establishes and provides competitively solicited contracts from industry-leading vendors. These cooperative contract opportunities offer both time and money savings for their users by consolidating the efforts of numerous individually prepared solicitations into one national, cooperatively shared process.

"The reason it made sense for us is that we didn't have to go out for bid," Elmerick said. "The contract was already

done through NJPA. We spec'd out the Cat generator, and it gave us what we needed. By going with NJPA, it didn't take us weeks to go through that process. It saved us time and gave us the equipment that we wanted."

The C18 generator set has a 1,000-gallon diesel fuel tank mounted directly underneath the elevated generator enclosure. Running at full load, the genset should run for 24 hours before refueling is necessary. The generator only ran at 45 percent of its total capacity during the Hinckley power outage.

As part of routine testing, Hinckley facility personnel will run the genset under no load once a week for at least an hour. Once a month, staff transfers the generator load to run the plant anywhere from one to four hours. "We have a key that we can turn on the switchgear that will simulate a power outage," Elmerick said. "We have a countdown of 15 seconds for our generator to fire up, then it comes up to speed and the switchgear transfers the facility load to the C18."

NJPA offers more than 250 contracted solutions for commodities, equipment and services. The government agency also offers more than 370 eZIQC construction contracts. Combined purchases through NJPA-awarded contracts will exceed \$2 billion during the current fiscal year. Even though NJPA leverages most contracts nationally at the manufacturer level, members stay close to the action because local dealers deliver many of the contracted solutions.

"Our relationship with Ohio Cat has been great," Elmerick added. "If I have any questions about our C18 generator, I just call up our sales rep and he always answers the question, or he will transfer me to someone who knows the answer. And, when we need parts, they have them ready for us that day or the next day. In hindsight, it's clear that we made the right choice in purchasing the Cat genset, both from a standpoint of reliability and dealer support."

To see the Cat C18 generator set in action at the Hinckley Wastewater Treatment Plant, check out this video online: <http://njpa.co/CATgen>.



Hinckley Wastewater Treatment Plant Superintendent Robert Elmerick (Photo provided)



Houseboat Row, a unique feature of the annual National On Water Houseboat Expo on Lake Cumberland, allows expo attendees to rent aquatic accommodations during the three-day festival. (Photo provided)



Hundreds of houseboats, such as the 124-foot "Tammie T," descend on Lake Cumberland for the annual National On Water Houseboat Expo. (Photo provided)

'Houseboat Capital of the World' Lake Cumberland area, Ky.

by **RAY BALOGH** | The Municipal

THE LAKE CUMBERLAND AREA OF KENTUCKY DUBS ITSELF the "Houseboat Capital of the World" with good reason.

The region hosts the greatest concentration of houseboat manufacturers in the world.

The largest, Trifecta Ventures, was created by the August 2014 merger of three of the area's leading houseboat manufacturers — Stardust Cruisers, Thoroughbred Houseboats and Somerset Houseboats — and their relocation into one facility in Monticello, a city of 6,162 residents.

The Cabinet for Economic Development, Kentucky's primary state agency encouraging job creation, retention and business investment, threw Stardust a thin lifeline in the form of a \$7,500 Export Initiative State Trade and Export Promotion grant for travel expenses to tap the Dubai houseboat market.

The trip by Stardust executives proved successful, yielding \$3 million in contracts. The company, which had pared its workforce from 70 to 15 employees and saw its president and chairman of the board

working without salaries, began hiring new workers from among the decimated local pool of potential employees.

The merger allowed the companies to consolidate their resources and specially skilled employees, take advantage of economies of scale and rebound from their yearslong fiscal drought.

Trifecta employs more than 100 workers and during its first year of operation sold more than \$12 million in product.

Jerry Harden, Trifecta's president, said the post-recession turnaround was slow because of a tightening of bank lending standards, resulting in many boats being purchased with cash. At a starting price of \$250,000, failure to procure bank loans priced young people and families out of the market.

So the company turned to the international market and has sold boats to buyers in Australia, Russia, Finland and Nigeria.

Shipping costs can be substantial. Harden cited an instance where a Dubai purchaser's 125-foot boat had to be transported by truck,

freighter and barge, adding \$250,000 to the boat's original \$1.2 million price tag.

Monticello contributes the bulk of the more than \$800 million benefit houseboats bring to the state.

Not content with the industry's recent success and believing the houseboat industry to be undersold as a Kentucky attraction, in September 2014 then Gov. Steve Beshear signed a state senate resolution declaring Kentucky the "Houseboat Capital of the World."

"Kentucky is known for horses, bourbon and automobiles — and now we add houseboats to that distinguished list," he said. "The first houseboats originated in Kentucky more than a half century ago, and since then boating has been a staple of our economic and tourism efforts."

The resolution acknowledged Kentucky has "more navigable waters than any other state in the nation except Alaska, which makes Kentucky a wonderful destination for houseboaters and further supports Kentucky's boating and outdoor recreational tourism industry."

Sen. Chris Girdler introduced the resolution.

"We hear about Kentucky's signature industries, but one that doesn't get a lot of press or notoriety is that of the houseboat industry," he said. "The houseboat industry has been a stable source of employment for many skilled craftsmen and at the same time has led to increased tourism in Kentucky."

One of the keys to Monticello's success is nearby Lake Cumberland, the country's ninth-largest lake.

Lake Cumberland snakes 101 miles through southern Kentucky, boasting 1,255 miles of shoreline, including hundreds of wooded alcoves ideal for secluded houseboat docking, and attracting millions of visitors a year.


The lake was created by the construction of Wolf Creek Dam, the 22nd largest in the United States, and opened for public use in August 1952. For the past six years it has been the site of the annual National On Water Houseboat Expo, a three-day festival celebrating the joys of houseboating.

The expo is designed to be a unique experience and attracts hundreds of houseboats from around the globe.

"Before our first run at it in 1999, the national and international show circuits offered next to nothing when it came to houseboats," said Brady Kay, editor of Houseboat magazine, which sponsors the festival.

"Yet at this same time the houseboat market was in a rapid expansion. Several new houseboat manufacturers were popping up," he said, "and boat facilities across North America had quickly come to appreciate an exclusive form of dock community — the houseboat marina. The timing was perfect for a show to call our own."

The festival includes a boat giveaway, poker run, food, exhibitors, prizes, live entertainment and educational seminars. The Captain's Course teaches prospective owners how to operate a houseboat. Representatives from insurance and finance companies and houseboat brokers are on hand to answer questions.

A unique feature of the festival is Houseboat Row, a collection of docked houseboats attendees can rent for overnight accommodations. The "boatels" do not leave the marina and rates can run lower than some of the local hotels. The boats will sleep from 10 to 16 people. 

For more information, visit www.houseboatmagazine.com or www.houseboatexpo.com.



When not sunning on the deck or visiting lakeshore attractions, houseboat denizens can enjoy the lush indoor appointments of their floating palace. (Photo provided)



There are few better places for a light lunch or hearty dinner than the deck of an elegant houseboat. (Photo provided)



Dozens of vendors, including houseboat brokers, lenders, insurance agents and purveyors of accessories, attend the annual National On Water Houseboat Expo on Lake Cumberland. (Photo provided)

Samuel Goodson and Joseph R. Anderson: *Bristol, Va.*

Virginia

Bristol

Depending on whom you ask, the independent city of Bristol, Va., was founded by Joseph R. Anderson.

Or Col. Samuel Eason Goodson.

Or both.

The city of 17,341 shares its name with its larger municipal Siamese twin to the south, Bristol, Tenn., population 26,626.

The cities are conjoined in geography but dissected by the Virginia-Tennessee state line, which runs along the meridian of State Street in their common downtown district.

The foresight and ingenuity of both gentlemen contributed to the present unified metropolitan area.

In the 1850s two railroad lines under construction by the Virginia-Tennessee Railroad were destined to meet at the Virginia-Tennessee state line near the present location of Bristol.

Anderson, a young merchant in Blountville, Tenn., purchased a 100-acre plot of his father-in-law Rev. James King's plantation, 52 acres in Virginia and 48 in Tennessee, through which the railroad was to run.

Meanwhile, Goodson, a Virginia state legislator, was busy influencing surveyors to reroute the railroad to cross his

land in Virginia, along the northern border of Anderson's property.

In 1852 Anderson platted his land and sold 216 lots for \$100 each. About the same time Goodson founded his community, Goodsonville, later named Goodson, to the north.

Building began in earnest 1853 with a post office and general mercantile opening before Christmas and a bank erected the following year.

The railroads reached the twin communities in 1856 and the population and industry rapidly grew.

But Goodson — the town — had a problem. Rail passengers who boarded in Lynchburg, Va., were given tickets to "Bristol" even though the train depot was in Goodson.

The identity crisis was resolved by the merger of Goodson and Bristol, Va., in 1856, resulting in the de facto annexation of Goodson into the interstate metropolitan area dubbed Bristol.

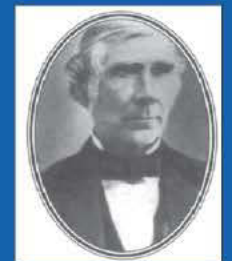
Bristol historian and retired circuit court judge Charles Flannagan explained the behind-the-scenes machinations that brought the railroad to Bristol.

"In those days," he said, "there were unusual reports as to how it happened the railroad came there. It is said the shortest and best line ought to have been located in Paperville, Va., two or three miles east of Bristol.

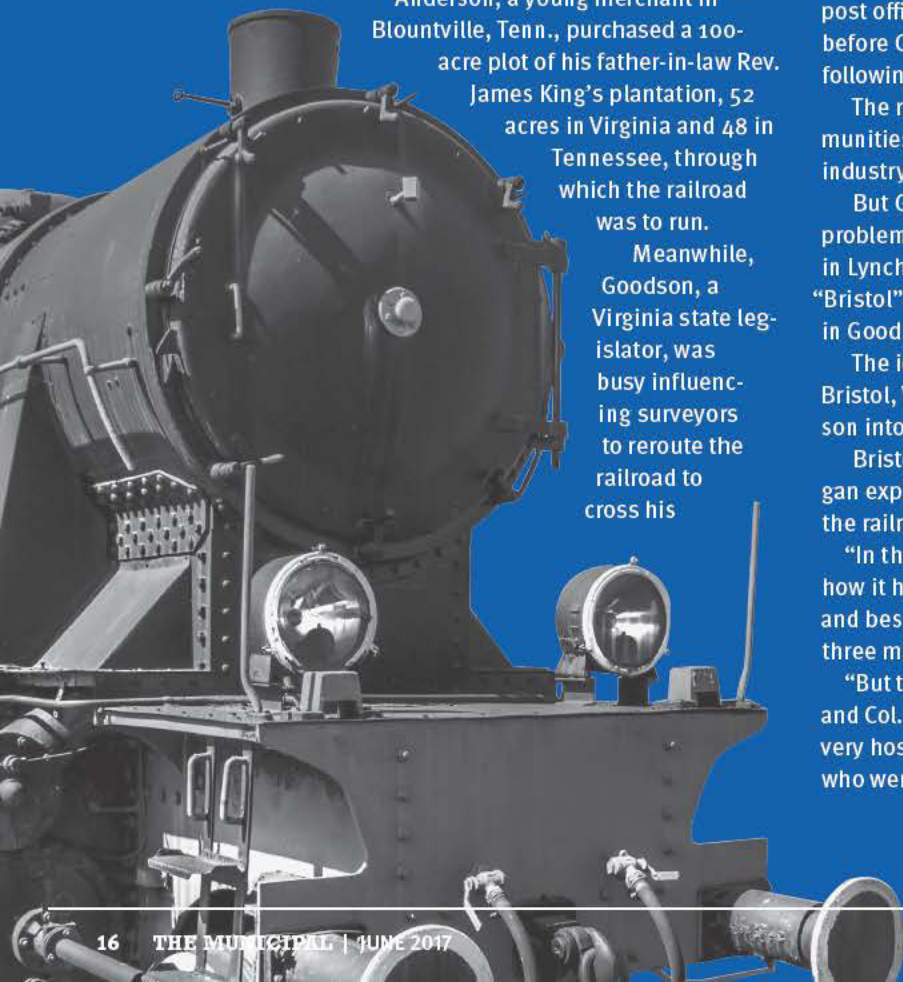
"But the story runs that Rev. King had plenty of ham and eggs and Col. Goodson had some fine brandy. These gentlemen were very hospitable and free with their good things and the engineers who were locating the railroad had a tooth for such good things." M



Samuel Goodson



Joseph R. Anderson





Flag Day - June 14

Flag Day is nationally recognized, and annually celebrated, on June 14. On that date in 1777, the Continental Congress in Philadelphia adopted a resolution that gave the new republic its first emblem, the flag of the United States of America. The most-recognized symbol of the United States of America turns 240 years old this year.

President Harry Truman signed an Act of Congress in 1949 that designated June 14 as Flag Day. The U.S. Congress determined Waubeka, Wis., was the birthplace of the observance.

What does the U.S. President proclaim on Flag Day?

Traditionally, the president issues a proclamation calling for the display of the flag of the United States on all government buildings and designates the week of June 14 as National Flag Week. He requests that all citizens display the flag throughout the course of the week.

The proclamation aims to inspire the American people to celebrate the period from Flag Day through Independence Day, by having public gatherings and activities in which they honor the United States and publicly recite the Pledge of Allegiance.

"I pledge allegiance to the flag of the United States of America, and to the republic for which it stands, one nation under God, indivisible, with liberty and justice for all."

Local branches of the American Legion and other patriotic service groups use the day of celebration of the American flag to honorably retire and dispose of flags that are no longer fit for public display. ■

Focus on:

Waste & Water Utilities

\$271 Billion

Wastewater infrastructure
exceeds this amount.

Source: <http://www.infrastructurereportcard.org/cat-item/wastewater/>

21%

Funding for recycled water
distribution has increased
by this percentage since
2008.

Source: [infrastructurereportcard.org/cat-item/wastewater](http://www.infrastructurereportcard.org/cat-item/wastewater/)

\$2.5 million

The amount of a zero-interest loan received by Kinston, N.C., as part of North Carolina's Clean Water State Revolving Loan Fund to purchase a biosolids dryer.

Learn more on page 24.

90%

The percentage of Americans who receive their drinking water from a public drinking water system.

Source: www.infrastructurereportcard.org/cat-item/drinking-water/

300,000

Chula Vista, Calif.'s, population is expected to reach well over 300,000 people, leading the city to utilize water conservation methods to reduce the impact of that rapid population growth.



Learn more about Chula Vista's Water Stewardship Plan on page 34.

\$1 Trillion

The amount of investment needed to maintain and expand water service to meet demands over the next 25 years.

Source: <http://www.infrastructurereportcard.org/cat-item/drinking-water/>

\$500,000

Wisconsin Department of Natural Resources said Racine, Wis., could have this amount of funds for 2017 to help residents address their lead service lines.

Read about Wisconsin's other efforts to remove lead pipes on page 30.

\$22 million

Wellington, Fla., completed a \$22 million dollar expansion in 2012 that included a new aeration basin, additional belt press, solids handling pump, digesters, new reuse filters with additional pumps and a complete biosolids dryer system that allowed for a change from Class B sludge to a Class AA sludge.

Read the story on page 26.

6 Billion Gallons

The amount of treated water lost due to leaking pipes. Additionally, 240,000 water main breaks occur each year.

Source: <http://www.infrastructurereportcard.org/cat-item/drinking-water/>

Healthier, greener water treatment systems options for the public

by ELISA WALKER | The Municipal

As contaminants and nutrient control in water systems become common issues in cities and counties around the country, more and more municipalities are looking into decentralized wastewater treatment system options. While there are a number of reasons as to why this option is being pursued, the two main reasons and benefits of DWTS are how environmentally friendly and cost effective it is. With a wide range of treatment options from simple septic systems to cluster systems, this option can be served on different scales, including individual homes, multiple homes or businesses.



Environmentally friendly and cost-effective for every community

The green aspect of a DWTS is that the water could be recycled back into the ground or water source, which would prevent communities from pulling more water than what is available. By also treating the wastewater, there is not only potential for water reuse, which could not only cut into the demand for treated drinking water, but also filter out more contaminants than what centralized wastewater treatment systems do. Even if the wastewater isn't cycled in for reuse, the filtering out of pollutants would create a positive impact on the environment as the water is deposited back into earth.

"Depleting groundwater is an issue across the country because we're taking more than what's being given back," explained University of Minnesota's Adjunct Assistant Professor Sara Heger. "Decentralized wastewater treatment systems typically have smaller collections systems so the closer you treat your wastewater, the cheaper. I've yet

LEFT: Sara Heger has traveled across the country and spoken in different cities about the benefits of implementing a DWTS. Heger's background is a Bachelor of Science in biosystems and agricultural engineering, a Master of Science in water resource science and a doctorate in water resource science. (Photo provided)



The majority of decentralized wastewater treatment systems have lived long and well when implemented and managed properly. The system not only values the wallet, but the health of the public as well. (Photo provided)

to see a comparison where decentralized systems aren't more cost effective."

"Decentralized Wastewater Treatment Can Be Green And Sustainable" is an EPA document that states that DWTS respond well to growth while preserving green space since "decentralized systems can be easily scaled to a needed size for communities with rapid growth and/or where installing pipelines a long distance to a central waste facility can be too expensive." DWTS is an ideal option for growing communities.

Another benefit of DWTS is the simple and easy general maintenance that is required. Because DWTS options are less mechanical and have lower energy requirements, all components are smaller. DWTS has the ability to adapt and be flexible by working on a variety of sites and soil conditions, which allows many communities to benefit from the system despite their location.

Challenges in funding and implementing the system

One of the biggest challenges faced when implementing a DWTS is making sure citizens understand the wastewater treatment option and why it's important. The community has to know how it works and get on board with



Implementing a decentralized wastewater treatment system isn't only cost effective, but also creates a good economical impact by promoting job opportunities. (Photo provided)



Just as with every piece of equipment, decentralized wastewater treatment systems must be properly maintained and operated to function with full potential. To ensure proper maintenance and operation, employ a business or engineer with extensive knowledge of DWTS and how it works. (Photo provided)

the idea since there may end up being an extra cost, whether it be a separate cost on a wastewater bill or on property taxes. When explained properly about not only the green footprint, but also the cost-effective equipment and economical impact, residents may get on board with the idea of DWTS.

Another one of the most difficult challenges on any new project is the upfront bill, which the majority of municipalities can struggle to get

funds for. Funding may be available in certain areas, such as grants and loans. It's important to research what kind of resources are available in each state, city or county. EPA's Clean Water State Revolving Fund is a low-to-no-interest source of loan funding regarding the installation, repair and upgrading of DWTS and water quality projects. CWSRF is a program that rural, small-town and suburban communities should look into for potential funding. ►

Since it's mainly small businesses that specialize in working with DWTS, it can be difficult to navigate through businesses that understand the work that goes into DWTS and how to properly scale them to the size that is needed for the community. By working with a knowledgeable business or engineer, the community can avoid problems and misinformation that could occur.

"They really need to find a consultant, designer and engineer who really understands what this is," advised Heger. "It has to be scaled down right. Small communities need to do lot by lot assessments and figure out who has a compliant system and who doesn't, then find the closest location to put a potential cluster system in.

"They should find someone to work with them who has also worked with cities just like them. Talk to other cities and communities similar to their own to gain more firsthand experience. Talk to a local and state regulator to see if they qualify for any local funding options." ■

Case study: Shannon City, Iowa

Shannon City is one of the recorded cities in EPA's Case Studies of Individual and Clustered (Decentralized) Wastewater Management Programs documents. Shannon City had a population of 76 people in a rural community that primarily connected into a system where wastewater was deposited into a lagoon and ditches when it began looking into a DWTS option.

"When Shannon City came to us, they wanted to try some innovative ways," explained Southern Iowa Rural Water Association General Manager Dan McIntosh. "They liked the idea of the water not flowing out into the ditches like it was."

Some problems Shannon City faced were the installments of the DWTS, where there was one put in for every property owner. Lateral fields had to be replaced since residents would park their cars on top of them, and some residents were skeptical where the system would be installed in case they wanted to utilize that part of the land for a project. Later on after the system had been installed, it became difficult to gain access to the septic tanks, some people had built sheds or other projects beside or around the system.

"Getting the easements was difficult," commented McIntosh. "We had to talk to each landowner and explain what we were putting in and checking out what ground they had. All their neighboring towns had conventional systems whereas this took up a big share of their yard, so we had to explain the difference and why we're doing it this way."

He added, "It was an experiment. I wouldn't say it was a failure because it works, but we probably wouldn't put in another one. It would just be easier to put in a collection system that would go to the lagoon since, in the end, it would've cost the same without as much hassle. But it's worked for us and we're making it work."



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Once its biosolids dryer is in place, Kinston calculates that the expenses for the biosolids dryer in the first 10 years will be within \$20,000 of what it currently pays. After that period, the city could see an annual savings of almost \$200,000 per year. (Photo provided)

Biosolids dryer demo exceeds Kinston's expectations

by CATEY TRAYLOR | The Municipal

Kinston, N.C.'s, City Council approved at the beginning of the year an ordinance to begin utilizing a biosolids dryer in the city's wastewater treatment process.

Typically, the end result of a city's wastewater treatment process is an environmentally safe byproduct that is irrigated into the land. Using a biosolids dryer, however, this can be dried, formed into pellets and sold commercially or disposed of in a landfill.

"The overwhelming majority of wastewater is land applied after treatment," City Manager Tony Sears said. "This works well, unless we have an unseasonably wet season and the byproduct can't be land applied, or

we start producing more wastewater than there is land. We're always looking for how to better control getting rid of this waste."

While land application is popular, only certain areas are allowed to be utilized. Since there is bacteria in the liquid byproduct, any farmland that produces anything a human may consume is out. The use of a biosolids dryer eliminates those hazardous restrictions and opens the door for many more uses.

"This will enable us to change our biosolids from a Class B material, which is heavily regulated and requires state permits and restrictions on what we can do with it, to a Class A product that could be commercially sold," Steve Miller, assistant public services director of Kinston Public Services, said in an interview with blueridgenow.com.

The shift from Class B material to Class A product is significant, largely due to the removal of hazardous substances that may be left behind in a typical wastewater treatment system.

"The dryer has a belt press that we run the wastewater through to draw out the liquid, leaving a solid material. Then, that goes into a

high-powered dryer where it makes the solid non-hazardous. We can then sell it to a customer or dispose of it in a landfill," Sears said.

The end result is thousands of tiny black pellets that serve multiple uses.

"The pellets can be used in landscaping and really almost anything you would use fertilizer for," Public Services Director Rhonda Barwick said. "Some companies have even mentioned burning it for biofuel. Citizens could come pick up a truckload, too, if they had a use for it."

While the process itself is cutting edge, the real perk is the convenience of the dryer and ease of transporting the waste material to a landfill. The pellets collect in a large bin that is stored on site, allowing the city to control when they dispose of them.

"The dryer is so important because it makes the disposable solid lighter and, therefore, cheaper to dispose of in a landfill," Sears said. "Eliminating all of the water allows us to avoid paying for the disposal of liquids, rather just a solid product."

Barwick anticipates the implementation of the dryer leading to a less complicated process overall.

"Currently with the land application, all of us in the area are contracted with the same company for disposal," she said. "We were getting boxed in by weather and availability. The dryer grants us more regulation. This is the solution to be able to get rid of waste in an environmentally friendly way when we need to."

Biosolids dryers are largely popular in Europe, although a few regions of the United States have started exploring the option. As the recipients of a zero-interest \$2.5 million loan as part of the Clean Water State Revolving Loan Fund, Kinston's biosolids dryer will serve as a pilot program with the hope that other North Carolina cities will follow suit in the future.

While the dryer has not been permanently installed yet, a demo product was used in the city for six months and exceeded expectations.

"It's unbelievable that this process even exists," Sears said. "We were completely happy with the product and how it operated. We're looking forward to implementation."

During that demo time, Sears said, the water treatment facility staff had a chance to master maintenance and repair of the machine and to get comfortable with the



Kinston, N.C., demoed a biosolids dryer for six months during which its expectations were exceeded. During that demo time, the water treatment facility staff had a chance to master maintenance and repair of the machine and to get comfortable with the way it operates. (Photo provided)




Kinston received a \$2.5 million zero-interest loan as part of the Clean Water State Revolving Loan Fund for a biosolids dryer, which should be in full use by the end of 2017. The city's biosolids dryer will serve as a pilot program with the hope that other North Carolina cities will follow suit in the future. (Photo provided)

way it operates. All repair parts are locally sourced, which is another appeal of the dryer.

Ease of process, convenience and innovation aren't the only perks of the new technology — the city will save money in the long run, too.

"We calculate in the first 10 years, the expenses for the biosolids dryer will be

within \$20,000 of what we currently pay. After that period, we could see an annual savings of almost \$200,000 per year," Barwick said.

According to Barwick, implementation is pending some legal documents. Once those are complete, she expects to begin use of the biosolids dryer by late 2017. 

Wellington, Fla., continually awarded for its reclamation facility



LEFT: Wellington, Fla.'s, water reclamation facility has been the recipient of many awards for its operations, including from the Environmental Protection Agency, Florida Water Environment Association and Florida Department of Environmental Protection. (Photo provided by Bryan J. Gayoso)



ABOVE: Bryan J. Gayoso, water reclamation facility superintendent

By ANNE MEYER BYLER | The Municipal

Wellington, Fla., has a population of 60,000, and its water reclamation facility has been on the receiving end of several accolades in the past, including Environmental Protection Agency Operations Maintenance Excellence Award in 2005; Florida Water Environment Association Biosolids Innovation and Technology Award in 2014; Florida Water Environment Association Biosolids Small Operations Award in 2015; and Florida Department of Environmental Protection Plant Excellence Award in 2004, 2005, 2006, 2014 and 2015.

Bryan J. Gayoso, Wellington's water reclamation facility superintendent, has been at the facility for 14 years and has spent 30 years in the field. And he shared some of the keys to the Wellington water reclamation facility's success below:

Q: What are some of the best practices of your water reclamation facility?

A: I would say that the overall operation of the facility is one of our strong points. We

think we do a good job from the headworks (screenings), aeration, clarification, dewatering, biosolids drying and deep well injection.

Q: What are some recently completed, ongoing or future projects that set your system apart from others?

A: We completed a \$22 million dollar expansion in 2012 that included a new aeration basin, additional belt press, solids handling pump, digesters, new reuse filters

with additional pumps and a complete biosolids dryer system that allowed us to change from a Class B sludge to a Class AA sludge. We are currently in design phase for additional improvements that include headworks building rehabilitation with new odor control; new offices and control room; additional digesters; and relocation of digester blowers to a sound-abated building. The latter will be a concrete structure with concrete block made so the sound doesn't travel. Now we've put sound blankets inside and outside the structure walls for digester blowers to keep the sound from bothering neighbors as much as possible. Final completion of the new building should be in early 2019.

Also, now the water that we don't reuse goes into a well that is 2,800 feet deep. The goal is to get more of this water reused in the village. An engineer will come and develop a reuse master plan so that hopefully more water will go to the village. Additional sites



Currently, water that isn't reused goes into a well that is 2,800 feet deep. The facility's goal is to get more of this water reused in the village. An engineer will be developing a reuse master plan to do just that with potential reuse sites including equestrian fields and golf courses. (Photo provided by Bryan J. Gayoso)

may include equestrian fields and golf courses. (Wellington is the equestrian capital of the world.)

Q: What type of management do you use and what kind of training procedures?

A: My management style is hands on (I don't mind getting dirty), but I allow my staff the room to use their knowledge to get the job done. No real established set of training. Usually people have had experience elsewhere who come here to work. Our total staff includes six operators, two mechanics, myself and an electrician in instrumentation shared with water treatment. We have a combined 150 years of experience within our staff.

We have a safety program once a year that the utility (water treatment, water recollections, collection and distribution staff) has held in house that involves a safety class: electrical safety, confined space training, excavation safety and personal protective equipment. This June we will have a company from outside do it for us. When new people come on staff, we connect them with someone experienced in this particular plant, and they learn the specifics of our system. ►



Wellington completed a \$22 million dollar expansion in 2012 that included a new aeration basin, additional belt press, solids handling pump, digesters, new reuse filters with additional pumps and a complete biosolids dryer system that allowed it to change from a Class B sludge to a Class AA sludge. (Photo provided by Bryan J. Gayoso)

Our plant is on a very small property, 25 acres. It is a lot of equipment but in a small area. The treatment capacity is 6.5 million gallons per day.

Q: What has been your biggest challenge?


A: Our biggest challenge has been the successful operation and maintenance of our dryer system. None of us had ever operated or maintained a similar system so we had to learn from scratch. The system has been running now for over five years without any downtime.

Q: What would be your advice to other cities that are looking to improve their water reclamation facilities?

A: Research.

- Visit other cities that have the equipment you are interested in. You'll be glad you did. It makes all the difference.
- Definitely plan on drying biosolids; it's the future of this field.
- Spend the money now to get the right equipment because you will spend a lot more replacing and adding equipment in the future.

Q: What is your favorite part of the job?

A: Having the equipment and people to do the job properly makes the job so much easier. I like to plan ahead and see what we might need to do in the future. I enjoy coming in to work each day. 



Wellington, Fla.'s, water reclamation facility is located on a very small property, 25 acres, and has a treatment capacity of 6.5 million gallons per day. (Photo provided by Bryan J. Gayoso)



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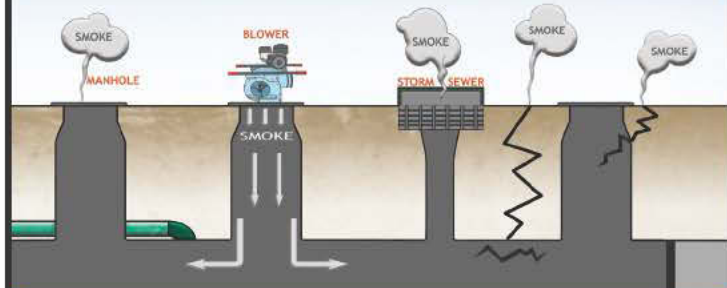
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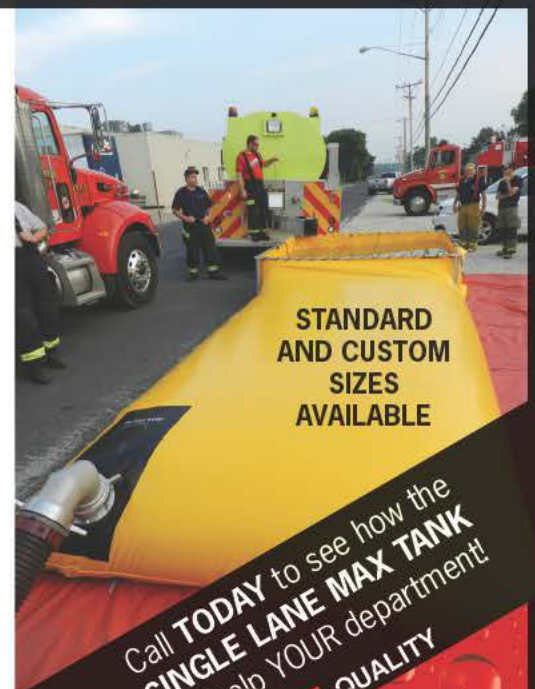
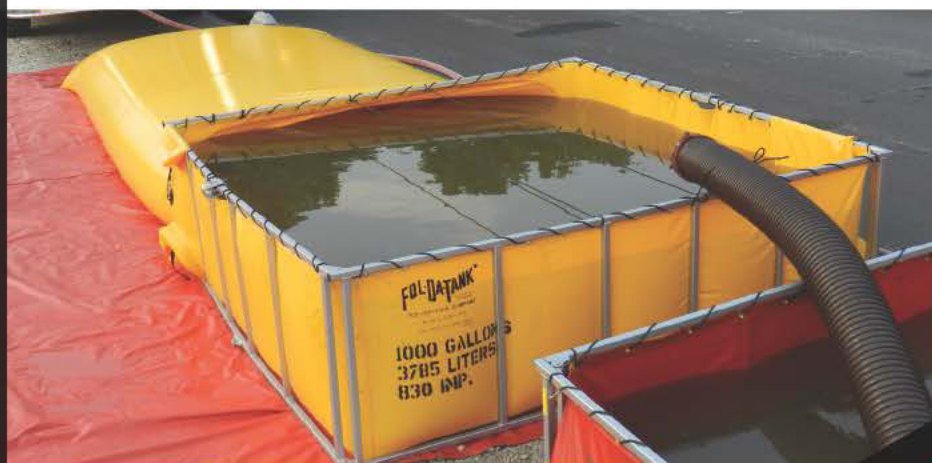
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Wisconsin takes on lead service lines

By ANNE MEYER BYLER | The Municipal

Wisconsin cities are between a rock and a hard place when it comes to replacing lead pipes with those of an environmentally neutral material.

Curt Witynski, J.D. assistant director, League of Wisconsin Municipalities, said that this issue has been discussed for years. “Most recently, the League of Wisconsin Municipalities, Wisconsin Rural Water Association and an association of large municipal water utilities worked with Sen. Rob Cowles to introduce some legislation.”

2017 Senate Bill 48 would allow water public utilities to establish financial assistance programs for its customers, with Witynski stating, “The Senate was scheduled to take up the bill one week in April, but leadership withdrew the bill at the last minute due to concerns raised by Miller-Coors over the bill. They are concerned that large water users like them will foot most of the bill of the program.” He added, “Their concern is misplaced and the authors are attempting to work it out.”

Witynski believes water users of all types will be charged as they have been. It is then true that the rates from all users will go into whatever plan a city comes up with to help out homeowners with their lead service line replacements. But it isn’t clear or stated in the bill what type of program that will be. It could be a low-interest loan or a rebate program, or it could include some kind of grant.

Input was also gathered on the bill from Wisconsin cities and towns. Keith Haas, general manager of Racine Water and Wastewater Utilities, said, “Some of my colleagues and I did get a chance to comment on the draft legislation. The legislation is simply another tool in the toolbox for a city or water utility to use if they view the lead and copper issue



Racine, Wis., has taken advantage of Wisconsin Department of Natural Resources’ program to financially help homeowners’ replace their lead service pipes; however, it has been like “pulling teeth” to get people to take advantage of the funds. (Photo provided by Chad Regalia)

as a priority in their community and assuming they have the financial wherewithal to be able to borrow the money to begin a program considering all of the rest of the pressures facing city government from a borrowing perspective.”

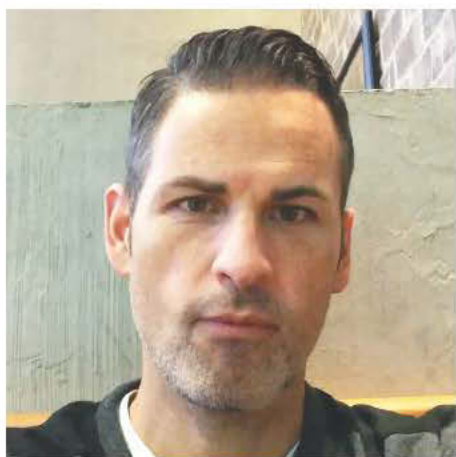
Wisconsin Department of Natural Resource grants help for now

Monies from the Wisconsin DNR aid the private side of lead service lines replacement. For cities to use these funds, they need to first send in a “notice of intent.” Money from the DNR can be used in several different ways.

Robin Schmidt, environmental loans section chief, said, “Basically, municipalities are eligible for this program and there are several

options for how they choose to implement the program. These options are discussed on our webpage as are program requirements. These are not grants, per se, but loans for which 100 percent of the principal is forgiven, so it does act like a grant. We only have funds for two years so the program will end at the conclusion of SFY 2018, unless other funding becomes available. For SFY 2017, 38 municipalities applied for funding. And for SFY 2018, 42 municipalities are eligible to apply for funding, the deadline for which is June 30, 2017.”

Chad Regalia, chief engineer of Racine Water and Wastewater Utilities, said, “Racine, Wis., began doing the lead (service line) rebate program in October 2016 and is using



Chad Regalia, chief engineer of Racine Water and Wastewater Utilities

state DNR money, which is guaranteed for three years after it is first paid out to the customer. They will probably finish by 2021." Projects started in 2018 would finish paying out in 2021, so after 2022 this would be at their cost, explained Regalia. The city money for the public portion of the project is paid for through water rates.

What was the issue that got the program started? "Racine has been replacing the public portion for that last 10 years," said Regalia. "We recently began doing private portion because the money was made available to the state. The homeowner hires the plumber, the plumber does the work and we pay the plumber the first \$2,500. The private portion typically costs \$2,500 to \$3,000. It's a good improvement to your house basically free."

For other cities facing similar situations, Regalia said, "Check with your state to see if there's funding available. Begin to inform/educate if the money is available."

The biggest challenge for Racine has been getting people interested in using the funds. Regalia said, "Getting people educated to use the rebate and to take part in it is a challenge. People may not want to mess up their basement or front yard. We try to document what their private service is — copper? lead? We do inspections for free or they could hire a plumber." This hopefully indicates where there is a problem

Racine has been trying to prioritize who gets the replacement service lines first. Regalia said, "If we do the public portion in the street, those private services are higher ►

Case study: Madison, Wis., gets head start

According to Amy Barrilleaux, Madison public information officer, "In 2001, Madison Water Utility launched its Lead Service Replacement Program aimed at physically replacing every single known lead service pipe in the city, more than 8,000 in all. The landmark program would take 11 years to complete and cost \$15.5 million." There were 5,600 pipes replaced on homeowners' properties. When the EPA went to upgrade its 25-year-old policy for lead and copper in water, Madison's experience was a major part of the discussion.

Many people in Madison had already had their portion of the service replaced in the decades since 1930. Madison banned lead water service lines in the late 1920s, making the replacement project not as large as for some other cities.

Madison was the first city in Wisconsin to take the step of replacing pipes and there was pushback. First, the EPA said that chemical additives were the way to go to lessen lead in water, but Madison did some studies showing that those chemicals didn't make much difference "and in some cases made things worse," said chemist and independent consultant Abigail Cantor, P.E. This is because the metals in the pipes continued to make an impact. Cantor's recommendation to the Madison Water Utility was that all lead service lines needed to be replaced.

So first there were years of discussion about how Madison could skip the step of putting a chemical in the water. Then they ran into the fact that water lines were owned by the city but only to the property line, where a valve marked the beginning of the owner's property and responsibility. Madison passed a pay back law, up to half the homeowner's cost, but people were disgruntled and some doubted there were problems with lead in the first place.

Barrilleaux said, "In the spring of 2000, after months of wrangling over how it would work, the Common Council narrowly green lit Madison Water Utility's Lead Service Replacement Program, the first of its kind in the country." Madison isn't worried about its lead levels in water anymore having practically eliminated it.

How did they pay for it? Barrilleaux said, "Wisconsin's Public Service Commission did not allow us to use rate-payer dollars to fund customer reimbursements, but we were able to use revenue generated by renting space on top of our water towers to cell-phone companies for their antennas."

While the city crews worked on the city-owned parts, private plumbers worked on the private side. They could often work together with the city leaving the trench open to lower the cost for homeowners, whose plumbers followed right behind. Barrilleaux said, "During the program, our average reimbursement for half the cost of the private-side lateral was \$670. So the entire cost to replace the private-side portion was \$1,340 on average. The average cost to replace our side during the program was \$1,997."

Barrilleaux would tell other cities to "communicate with customers as much as possible. Even after replacing pipes, encourage flushing pipes and go back to do testing. Homeowners push back. Flushing is really important. It takes a lot of education and outreach. In Wisconsin you get lukewarm water first — run until it gets cold, a couple minutes. Get stagnant water out of plumbing and use the fresh water coming out of the main. This would be more of a problem in states where the water is always lukewarm."

Before the program the 90th percentile of lead in water was 16 µg/L, though some homes had higher than 100. Barrilleaux said, "We continue to monitor for lead at the customer's tap. Each time (twice in 2011 and once in 2014) the 90th percentile level has been around 3 µg/L. Lead testing will occur again in 2017 and then every three years after that."

Barrilleaux said the biggest challenge so far was "figuring out reimbursement. We couldn't use money from repairs for improvement of local property. We couldn't put a surcharge on everyone's bill. We had to organize with private companies. Private plumbers would follow city plumbers to work with homeowners. This was logistically difficult and took a lot of planning initially. When we did this, we were on our own. Cities now have the state (DNR) funding to help."



priority. If the lead service is leaking, we want to use the money to fix the leak.”

For Racine, the DNR said the city could have \$500,000 for 2017 based on the size of the utility, number of customers and the 10,000 lead service lines to replace out of 34,000 customers. The DNR has to apportion out their money based off each community’s need.

“2018 should be similar. For that we can do 200 replacements. Guessing what’s lead, based on year built, comes to 10,000 leads to replace. For FY 2017 we have \$500,000 and have three years to spend it. We know there’s 2018 money. We’re not sure about 2019 and 2020 state moneys.” Regalia also mentioned that this was a pilot program the city is trying with the state’s funding and not meant to be the final resolution to replacing all 10,000 private leads that might exist in its system.

Haas gave another perspective on Racine’s lead service line replacements and the DNR help. “The Racine water utility has been budgeting about \$250,000 a year for the last 20 years to remove lead

Racine has been replacing the public portion for that last 10 years and began focusing on the private portion because the money available through the DNR. The homeowner hires a plumber, the plumber does the work and then the city pays the plumber the first \$2,500. (Photo provided by Chad Regalia)

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"Assuming we have about 10,000 lead services in the public right of way and another 10,000 on private property, and it costs about \$5,000 to remove one in the street and another \$2,000 to replace one in a front yard; the price tag in the right of way is \$50,000,000 and on private property another \$20,000,000. At a rate of \$250,000 per year in our budget, it would take 200 years. At \$1,000,000 per year just 50 years for the public side of the service. With the passage of the lead and copper rule in the late '80s and early '90s, we knew that the writing was on the wall to deal with lead in the distribution system."

Even with some limited funds being made available at this time from the Wisconsin DNR, Haas agreed it is like "pulling teeth" to get homeowners to use free funds to replace their lead service lines, agreeing that communicating the need to the homeowners is a big challenge in this type project.

Racine's current efforts are part of a pilot program it is trying with the state's funding and not meant to be its final resolution to replacing all 10,000 private leads that might exist in its system. (Photo provided by Chad Regalia)

Racine is not alone. Clintonville, population 104, has also taken advantage of the Wisconsin DNR lead service line replacement funds. It began getting all the paperwork together last July and started repairs in April. The DNR money was a major incentive to help replace customer service lines, which in Clintonville covers all the homeowner's part. The city side of the project will come out of the city budget.

David Tichinel, water and waste water manager, said he would tell other cities "to work on this quite diligently since we don't know what new lead and copper rules will be." The biggest challenge so far has been finding all the areas where the lead was in the houses. Tichinel said, "We went door to door and used surveys and phone calls." 



On the Web

To learn about the Wisconsin DNR's lead service line replacement program, visit <http://dnr.wi.gov/Aid/documents/EIF/leadServiceLineFunding.html>.

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No need to wait for a California-style drought

by SARAH WRIGHT | The Municipal

DROUGHTS, GIVEN THE RIGHT collision of conditions, can take root anywhere, with sections of The Municipal's readership already having experienced varying levels of drought early on in 2017. And as the traditional saying goes, "necessity is the mother of invention" with several states, cities and residents dealing with drought addressing water conservation and launching real actions to address its impact. If any state knows about such necessity, it is California. Its Gov. Jerry Brown first declared a drought emergency in 2014 and only in April 2017 did he declare an end to that drought—the state's driest four-year period on record.

When it comes to water conservation and stewardship in the face of such conditions, California has turned out an immense number of innovative ideas that can be adapted throughout the country. Chula Vista, Calif., has a long history of sustainability efforts and first produced its climate action plan in 2000 before adding its water stewardship plan, which was approved by its city council in November 2016.

"The plan is an extension of the climate plan; it hits two stones at once with multiple actions," Lynn France, manager of Chula Vista's office of sustainability, said.

The plan was made possible with grants from the San Diego Foundation and the Bloomberg Award for Local Sustainability Matching Fund, and it brought together many partners from within the city government and its utilities in addition to citizens and local businesses. France noted the city has a history of engaging the community and, in preparation for the stewardship plan, hosted public workshops for community stakeholders.

"Not a lot came, but those who did had things to say," France said. Other citizens



The city of Chula Vista integrates green infrastructure concepts in new development projects to reduce stormwater runoff and beautify its neighborhoods.

responded to online surveys that were sent using all of the city's mailing lists. Additionally, the city treated its two water districts as staff and received a lot of input from them.

"The community is used to us coming out there to talk to them, and they're ready to

give their opinions," France said, adding, "It makes it easier for the council to adopt (policies) as everyone has already had their say."

Feedback, according to France, "ran the gamut from those who said we were not



LEFT: The city of Chula Vista's water stewardship plan engages residents, businesses and city government to manage increased water demand and protect its water resources through reuse, conservation and other key initiatives. (Photo provided)

BELOW: The city of Chula Vista has replaced much of its landscaping with drought-tolerant species that significantly reduce water use and maintenance costs. (Photo provided)



doing enough to those who said they were not going to be able to do business. We heard from them all."

Overall, France said while public outreach can be cumbersome at times, it brings good feedback to the table and they took everything into consideration. However, with the sheer amount of information and feedback, the city found itself overwhelmed when putting it all together, which is why it turned to Haley & Aldrich, an environmental and engineering consulting firm.

"Those involved were very impressed with Haley & Aldrich. They were able to put all the information together," France said, noting more than a thousand pieces of information were handed over to the consultancy.

"There was a clear level of trust that the city had established with community members," Amy Malick, sustainability strategist with Haley & Aldrich, said. "I was actually surprised with how thoughtful the responses were."

Malick said all the ideas submitted during the planning process could have easily resulted in 200 potential actions or initiatives. "The drought made everyone very conscious," she remarked. In the end, actions had to be prioritized so they could be realistically achieved.

The end result was a multifaceted, comprehensive and holistic plan for water conservation, with five actions: raise the profile of water use and reuse performance; promote and expand water capture and reuse; improve water efficiency and reuse capacity in the built

environment; encourage water-efficient landscape decisions; and promote green infrastructure. Malick said, "(The plan) is a blueprint on how the city will move forward."

"Funding is the big challenge from the city side," France said, noting the city can decrease its water use; however, it also requires a lot of turf removal and drought-resistant plants going in. As noted in the stewardship plan, irrigation made up 42 percent of the city operation's potable water use in 2015.

One method to reduce potable water use — in addition to drought-tolerant landscaping — is the use of laundry-to-landscape gray water. In fact, France said, "All new homes are pre-plumbed for this (laundry to landscape)." At one point, gray water toilets were also brought up; however, France noted, "A lot of stakeholders would say 'Let's do this!' They don't get all the steps involved." Still she added, "We are looking at having more dialogue on water reuse beyond laundry to landscape."

One thought involves the soccer field where the city is considering switching to compost rather than using chemical fertilizer, which not only eliminates chemical runoff but will help the field better retain water. The end result should decrease downtimes for the soccer field, which would occur for a couple of months so the turf could recover. The city has already been grass cycling and continues to explore other types of grasses that can better hold up to salt, which is found in reclaimed water. ▶

New water flow meters have also gone in place in the park department, which allows for staff members to control water flow from their phones. This saves workers time if there is a sprinkler head malfunctioning since they can cut the water flow — in this case, gray water — without having to drive to the location. “We don’t want to waste even reused water,” France said.

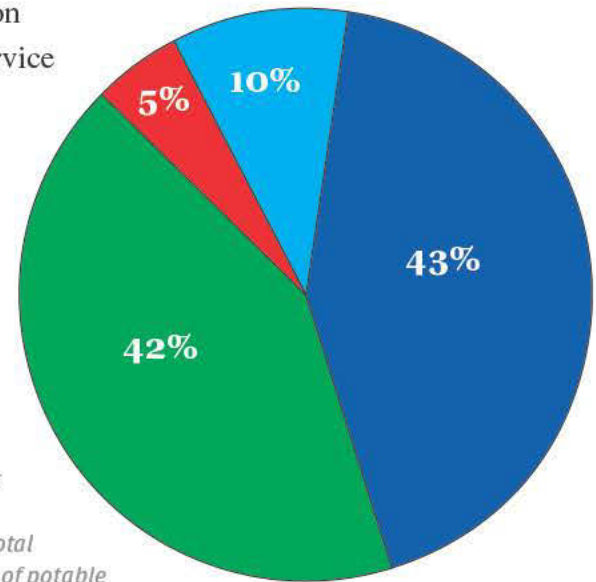
Buildings made up 43 percent of all potable water use in Chula Vista’s city operations in 2015. To lessen that, the city is currently in midst of redoing its library’s bathroom, which hadn’t been revamped since it was installed in 1976. The project will place water-saving fixtures, and there will even be educational signs that highlight them. Chula Vista’s city hall complex will also be receiving water conservation features while the city continues to work toward LEED certification.

“We still have a good portion of the city waiting to be built,” France said.

For this reason, the city is also examining the wording of its building codes to make sure they continue the city’s sustainability mission. Some new builds are already on board, including an LEED community that has installed corner catch basins with flower beds to keep water from leaving the community. These catch basins have an added bonus, with France noting their aesthetic value.

The fact Chula Vista is still growing increases the necessity of a water stewardship plan, with France saying the population of the city is

- Buildings
- Irrigation
- Fire Service
- Pools



This pie chart shows city operations’ total consumption of potable water during 2015. Buildings and Irrigation saw the most use, and Chula Vista is working to expand water efficiency and reuse measures in those areas.

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expected to be well over 300,000. "We have to minimize the impact of all those people."

Additionally, the city's water goal will also benefit its pockets. France said, "With our energy efficiency (efforts), water is now the most expensive utility in the city. It's another motivating factor."

"We undertook this during a major drought (in California)," Malick said, noting despite the drought easing, water conservation and stewardship should remain a priority. "You don't know how long it will be until the next one (drought). Don't wait for when you have a California-style drought to consider (water stewardship)."

When it comes to other cities and towns looking at water conservation and other sustainability goals, France said, "I would say we have a really nice plan that they can follow along with and modify to their needs. The overarching actions are pretty universal and they can make them personal. There is so much information to put their arms around." 



The city of Chula Vista has been proactive in engaging and educating the community on water stewardship, which is an extension of the city's climate action plan. (Photo provided)

On the Web

Both Chula Vista's climate action plan and water stewardship plan can be viewed at www.chulavistaca.gov/departments/clean.



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Jonathan Gano puts his overalls on

by **BARB SIEMINSKI** | The Municipal

Remember the successful TV program “Undercover Boss”?

Jonathan Gano, public works director of Des Moines, Iowa, invokes an unusual twist to that idea.

Gano, who moved to Des Moines two years ago to take his current job, had been working in the public works field for a decade in Missouri and explained his personal adaption of the popular show.

“Early in my public works career, I borrowed a learning technique from the Army,” began Gano, a civil engineering graduate of the United States Military Academy in West Point, N.Y., who later earned a master’s degree in engineering management from the University of Missouri at Rolla.

Called a Right-Seat-Ride, it is a training and observation opportunity for a peer-to-peer exchange by shadowing someone, quite literally riding in the right side of their truck while they go about their duties.

“I started doing the same thing with my public works crews, riding in the right-side seat and following along for the day. We’ve all seen this before, the boss jumps into a crew, poses for a photo op, grips and grins, and goes back to the office, never to be seen again. The boss feels like they’ve done their duty to join in with the field crew and get their hands dirty.”

Gano continued, “What I do differently is that I go back again and again and again. Every two to three weeks, I join a different work group for a day’s work in the field. It takes me almost an entire year to get through each work group in the department. Kind of like ‘Undercover Boss,’ just not undercover.”

Gano insisted that he be treated just “like an extra, if unskilled, pair of hands,” rather than “a dog and pony show.”

He would just rather join the day’s work, said Gano, adding that doing so had



Jonathan Gano, second from right, is pictured at a panel discussion on water quality in the landscape upstream from Des Moines, Iowa. He is joined by with farmers who are active conservation partners and a Des Moines City Council member. (Photo provided)

presented him with a tremendous variety of experiences.

“I have patched potholes, set barricades, poured concrete, rolled asphalt, jack-hammered sidewalks, replaced traffic signals, scooped up roadkill, repaired sewage mixers, torched thermoplastic, wired up controllers, jet-vacced sewers, spliced fiber optic cable, sampled wastewater, emptied trashcans, chipped brush, mowed grass, planted trees, dug a grave — quite literally, all kinds of really cool stuff,” he said.

“My advice to public works leaders across the country: Take off the suit and tie, put on your safety vest, grab your gloves and go to work with your people. I lead a workgroup of almost 400 men and women resourced with \$120 million per year in a city of over 200,000; there’s plenty of demands on my time, and I could spend it going from meeting to meeting

like many busy public works professionals, solving problems and making policies, etc., feeling like I couldn’t afford this much time out and about — but you make time for what’s important. Your staff will get to know you as a person and vice versa. You will get to see and do things that you’d never encounter otherwise.”

There are two watchwords that inform all of Gano’s interactions: dignity and respect. “I endeavor to treat every person with dignity and respect. In turn, I require that in return from everybody in my workgroup, not just with me but with each other.”

Gano — who is married with four kids and enjoys reading, running and playing the guitar — traced his career from commencement.

“After graduating from the military academy, I was commissioned into the U.S. Army



Jonathan Gano



Public works employees continue sewer cleaning using pipe jetting. (Photo provided)

as an engineer officer,” said Gano. “I spent eight years on active duty with assignments in Europe and the U.S. I served as a platoon leader and maintenance officer in a combat engineer battalion. Later I commanded an engineering company and a recruiting company.

“In 2004, I started work in the public works department of the city of Springfield as the operations manager of the streets division. After a few years, I advanced to be the superintendent of streets and a few years after that to the position of assistant director of public works. I served in that capacity for four years before starting here in Des Moines.”

Asked how he happened to “fall” into public works, Gano said a good friend of his was working in the public works department in Springfield where he was living while job searching at the twilight of his military career.

“Their operations manager had just retired and he recommended the position to me,” said Gano. “As a military officer, I was a good fit for the job because of both a technical engineering background and I brought experience with leading large work groups.”

The late Phil Broyles, P.E., was Gano’s most important career mentor.

“Phil hired me into my first position in public works and maintained a weekly leadership role with me for the next nine years until his untimely passing,” said Gano. “Of the many important lessons that I learned from him, I’ll never forget that he always made an extra effort to make each coworker feel valued not just for their work, but also for who they were as a person — everybody is important. Rarely was he found without a smile and a kind word for anybody he encountered.”

Gano is an active member of the American Public Works Association who has also served as a leader in the Missouri chapter of the APWA, culminating with a term as the chapter president and earning recognition from the national association as the 2010 Young Leader of the Year. Additionally, he is a member of the Water Environment Federation and the Solid Waste Association of North America and the American Water Works Association’s committee to develop standards for storm water utilities. These involvements have also helped guide his public works career.



Des Moines workers complete a pump station valve replacement. (Photo provided)

“I have also had the fortune to have been mentored by another consummate public works professional, Larry Stevens, P.E. We’d been introduced while he was serving the APWA as a regional director and I was in the Missouri chapter as a director. His advice and mentorship through the APWA Public Works Executive Certificate Program has been invaluable.”

Gano and his crew are currently undertaking some interesting projects, most notably a \$111 million flood mitigation project.

“Des Moines is a river town. Sitting at the confluence of the Des Moines River and the Raccoon River, there is almost 10,000 square miles of the most productive and heavily cultivated farmland in the world upstream from Des Moines. The city is protected by 21 miles of levees and has experienced major flooding three times in the last 25 years. The most famous, or infamous, flood in 1993 left the 500,000 people without drinking water for two weeks. Subsequent floods have overtopped levees and the city has sustained major damage in recent memory from flooding.

“We are working on a \$111 million flood mitigation project to raise the height of our levees, lift bridges out of the floodway, flood harden the wastewater treatment plant and improve floodwall closures throughout the downtown.” He added, “But this will be the last time we raise the levees and bridges. The next generation of flood control will be out in the landscape. This is the next big future project I’m working on now.” ▶

In addition to that project, Gano said, "Work is underway now at the University of Iowa's Flood Center to develop and implement the Iowa Watershed Approach, a way to engage stakeholders throughout the landscape to implement conservation practices that both reduce the quantity of water and improve the quality of the water coming off the land."

Engagement is also a key component to the overall project, with Gano saying, "The city of Des Moines is engaging the larger community across the state of Iowa, joining with other cities, counties, conservation districts and agricultural sector partners with a One Water approach. We are a part of the largest conservation project of national significance awarded grant funding from the USDA in 2016, working with an innovative public-private partnership that leverages a significant investment from the private sector." He added, "We will be working well outside our jurisdictional boundaries to help property owners and farmers with their land."

He concluded, "This is a generational project. We got into this situation over several decades, and it will probably take several more to get out, but we have to start somewhere and sometime. I'd rather start now than kick the can down the road."

Finally, Gano remembered a saying from his YMCA camp days that continues to guide his life: "Dream big dreams, and then put on your overalls." ■



Work is underway to reconstruct Grand Avenue Bridge in Des Moines, Iowa. The former bridge was deemed structurally unsafe, leading to this \$10.5 million project. (Photo provided)



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Grant program fans community service

By LAUREN CAGGIANO | The Municipal

A partnership between the city of Montgomery, Ohio, and community groups has resulted in more connections and greater engagement.

The Service to the Community grant program provides financial support for local community groups or organizations who have the ideas and skills necessary to execute qualifying creative community projects. The suburban Cincinnati city has about 10,250 residents and no shortage of community groups and nonprofits.

According to Communications and Engagement Coordinator Faith Lynch, the grant program was created in response to a specific need in the community. “About 2010, we were looking at how to help along organizations in the community that needed seed money to get off the ground,” she said. “We wanted to fund programs, not operating costs.”

The philosophy is that the grants provide a catalyst for the groups to get off the ground while also inspiring them and motivating them to seek funding elsewhere for sustainability. Beyond that, Lynch said

the criteria has been left intentionally vague to capture more interest. In fact, the city council changed the guidelines’ verbiage to allow for greater flexibility. “We didn’t want to limit the possibility of what we couldn’t imagine, but others thought possible,” she said.

The possibilities really are endless in terms of the nature of the project and the beneficiaries. For example, the first year of the grant program, the city funded the Montgomery Farmers’ Market and the Montgomery Food Share program. Lynch said the market, which is going into its eighth season, sought monetary assistance in 2016 to make the experience more inclusive and accessible by accepting SNAP, or food stamp benefits. Lynch said, in a time when many markets are no longer operating due to factors like maintaining a venue or personnel, it’s particularly encouraging that the market has remained sustainable over the years.

LEFT: Montgomery, Ohio, is a suburb of Cincinnati and has a population of about 10,000. (Photo provided)

RIGHT: Residents explore produce options at the Montgomery Farmers' Market. (Photo provided)

The latter project is an all-volunteer effort, now in its fourth year, that executes one of the largest donor drives in the area. As of January, the food share has engaged 712 households and involved 22 neighborhoods. Collecting food six months of the year on the first Saturday of the month, they have donated nearly 100,000 pounds of food to the Freestore Foodbank. Lynch called this effort a "success," citing the consistency of donations. "People are invested and committed to it," she said. "It's an easy way to teach teens the ethic of service."

Speaking of service, Lynch said this year's three grant applicants reflect the values of the community. A local high school has proposed a day of service and is in need of a leaf blower. The second group is a Boy Scout troop affiliated with a local church; it is seeking funding to do light maintenance and yard work tasks for seniors and disabled residents. The third group, Honor Flight Tri-State, is seeking funds to offset the cost of sending five veterans to the capital. At the time of publication, the 2017 grant applications were still in review, but they reflect the diversity of causes and interests in the community.

"The city of Montgomery is proud to partner with these local organizations for the benefit of the community, and it is a value-added proposition when service organizations partner with local government to meet the needs of all citizens. What is truly remarkable about this grant program — and the programs created by the grantees — are the opportunities to provide the means for social connections among the citizens. From Montgomery Food Share and Montgomery Farmers' Market to projects that assist those with light yard care or home maintenance, these programs serve as the catalyst for the citizens to connect and engage," said City Manager Wayne Davis.

To that end, the city has set aside a budget of \$5,000 annually, with a maximum investment of \$2,500 per project. Lynch said organizations can receive funding up to three consecutive years if there are no other applicants. Projects must be completed within




Montgomery Farmers' Market Board President Marian Dickinson receives the 2016 Service to the Community Grant from Mayor Chris Dobrozsi at the May 1, 2016, city council meeting. (Photo provided)

one year of receipt of funds. The city requires six-month and one-year reports to ensure integrity of focus is maintained.

While the reports serve as one means to check in and measure outcomes, Lynch cautioned her municipal peers against getting too mired in the figures. Sometimes results are more qualitative versus quantitative and anecdotal in nature.

"Measuring success can be difficult," she said, "because to some extent you are measuring relationships." Really at the end of

the day, she added, these projects encourage neighbors talking to neighbors. There's a value in face-to-face connections. These projects can encourage them to "convene in other ways" that may be beneficial to the community. 

For more information about the Service to the Community grant program, visit www.montgomeryohio.org/pages/service-to-the-community-grant/.



West Plains, Mo.,

beckons economic development with broadband

by CATEY TRAYLOR | The Municipal

Residents were complaining about unreliable connections and rising internet costs in West Plains, Mo., so local officials became determined to find a solution.

Enter municipal broadband deployment, an initiative that has become increasingly popular across the nation. This allows broadband internet access services to be provided either fully or partially by local governments. City-provided internet reaps many benefits, including lower costs, higher reliability and

serves as a selling point when trying to attract new businesses and residents to the area.

"West Plains has recognized this potential source of revenue and economic development impact and is now working to offer an alternative, city-provided internet service in town," Community Marketing Director Todd Shanks said.

After forming a broadband study group comprised of local community representatives, officials determined that offering city-provided internet was financially and technically viable for West Plains.

"This group did the research necessary, including surveying local residents and talking to other communities that have implemented their own broadband to see if the need was there," Shanks said. "They determined that the need was there, city council gave the go ahead and now we are in

LEFT: West Plains, Mo., population around 12,000, has been working to install a fiber ring circling the city since 2015. The hope is the broadband will attract businesses and residents. (Photo provided)

RIGHT: Located in the Ozark Mountains, West Plains, Mo., attracts nature lovers, entrepreneurs and families with its small-town feel and big-city conveniences. (Photo provided)

a position to be able to offer dedicated high-speed fiber internet to businesses in town.”

Part of the city’s initial research in deciding to move forward with this project involved visiting other communities that offer broadband in some fashion, either to businesses, residential or both. Shanks said many of these communities actually began installing fiber optic networks in the 1980s and are now capitalizing on that investment by extending those networks to businesses for internet access.

West Plains’ electric department has been working to install a fiber ring circling the city since 2015. With that infrastructure currently still under construction, the city is now able to offer high speed and secure connections to commercial users and businesses.

The hope, Shanks said, is that this will provide an added perk to life in West Plains, for both businesses and residents.

“Being able to offer fast and affordable internet is a must for a community our size, particularly when trying to compete against larger metropolitan areas for businesses and investors. We are hoping that by providing this incentive it levels the playing field or maybe even tilts it to our favor,” Shanks said. “For our residents, it could be another amenity to living in West Plains, much like our quality health care, fantastic schools, higher educational opportunities and small town way of life.”

In addition to broadband, certain areas in the city have been designated “wifi hotspots,” allowing users to utilize the internet connection while out and about.

The city’s first hotspot is at the West Plains Civic Center, which houses a 3,000 seat arena, a 400-person theater, plus indoor pool, fitness gym and meeting rooms. Future plans include expanding hotspots to downtown West Plains so residents can use wifi when attending activities and events downtown.

“Both locations are strategic in that we are trying to accommodate the numerous residents and visitors that attend events and activities in those locations,” Shanks said. “In some cases, available public wifi is a requirement when trying to attract a major event.”

While wifi hotspots and municipal broadband deployment seem like second nature in this day in age, they come at a cost. According to Shanks, the city’s approximation is \$15 million for a full roll out, including the salaries of five staff members to implement the services.

Funds for the initial testing phase of the project, as well as the fiber ring surrounding the city, came from reserve funds from the city’s utilities budget. Shanks said a full-scale deployment will require financing, either from a loan or a bond issue, which will require a vote of the people prior to moving forward.

The cost is worth it, Shanks said, for the economic uptick the city expects to see as a result of this implementation.



With a motto like “Make It Happen Here,” West Plains is hoping to encourage more people to visit and stay while taking advantage of its different features. Its city-provided internet service will become another draw. (Photo provided)

“The West Plains community has suffered some key economic development losses in recent years, and the broadband project is just one example of the city’s renewed focus on economic development,” Shanks said. “The sum total, we believe, will make West Plains a very attractive place to do business, which in turn will help grow our economy.”

As of now, there is no concrete timeline for implementation, but the city is aiming to have completed this project by the end of 2023. Shanks said the West Plains community has been supportive of the project as a whole, and he hopes residents see that this project is ultimately for them:

“This tells our residents: ‘Hey, you don’t have to leave West Plains to start or grow your business. We have everything you need right here.’” ■

Pedal power: Do increased bike lanes mean increased safety?

by DENISE FEDOROW | The Municipal

Bicycle lane infrastructure has been on the increase for a number of years and, if a survey of mayors is any indication, will continue to rise in the coming years. A 2015 Menino Survey of Mayors showed one in five mayors listed making their city bicycle friendly as a top three area of infrastructure spending. The 89 mayors represented a variety of city sizes all over the nation and a bipartisan majority. In fact, the survey showed 70 percent of the mayors would add bike lanes at the expense of driving lanes or parking spaces.

Some of the reasons cited by various mayors across the country in a video by PeopleForBikes include better quality of life, safety for all and economic benefits.

City of Memphis, Tenn., Mayor A.C. Wharton said, "It's much more cost feasible to fix up streets downtown than it is to put streets, sewers, (etc.) somewhere else."

Chicago Mayor Rahm Emanuel said the improved quality of life allows the city to draw employers, employees and entrepreneurs, especially from the tech sector.

Bicycling magazine created a list of "The 50 Best Bike Cities" in 2016 and two that made the top 10 are Chicago, Ill., and Cambridge, Mass. To find out how the bike lanes are working, The Municipal checked in with officials from those cities.

City of Chicago

Chicago took the top spot in 2016 after finishing No. 2 behind New York City in 2014. The city has more than 108 miles of protected bike lanes giving the city a total network of 292 miles of bikeways, including 245 miles of on-street bike lanes and 47 miles of off-street trails.

Those bicycle lanes include 18.5 miles of barrier protected lanes, which are located next to curbs and use physical barriers such as parked cars and bollards to separate the bicyclists from motorists. There are also 67 miles of buffer protected lanes, which are similar to conventional bike lanes with extra space to keep bicyclists farther away from motorists and from parked cars. Chicago also incorporates



This bicycle lane is frequently used in Chicago, which was named the No. 1 "Bike City" in America by Bicycling magazine last year. The League of American Bicyclists has also rated the state of Illinois No. 14 for bike friendliness with 15 bike-friendly communities, 23 bike-friendly businesses and eight bike-friendly universities. (Provided by PeopleForBikes)

neighborhood greenways, bike lanes that are striped on the roadway, marked shared lanes — typically used when there's not enough width for a full bicycle lane — contraflow lanes and bike priority lanes.

The city has received its high ranking for the amount of bike lanes, its bike sharing program called Divvy as well as promoting education, awareness and advocacy.

Michael Claffey, director of public affairs for Chicago Department of Transportation, and Mike Amsden, assistant director of



The Western Avenue Cycletrack in Cambridge, Mass., is an example of a barrier protected bicycle lane. In this case, the city used planters and parked cars to separate the bicyclists from the drivers on the road. (Photo provided)

transportation and planning for bicycle lanes, spoke about the city's bicycle infrastructure.

When asked why it has become such a priority for the city, Amsden said, "There's a lot of ways to answer that question."

He cited providing a better option for a low-cost form of transportation, attracting families and attracting employers large and small. Chicago has seen a large growth in the tech industry, according to Amsden, and they've said they want their employees to have the opportunity to walk or bike to work. There's also a huge health benefit to bicycling, and it's creating safer cities by slowing traffic down.

When asked how a city can insert bike lanes into existing streets that may already be overcrowded, Amsden said, "Every street is different so every bike lane is different." He added it's a matter of talking to members of the community to ascertain what challenges exist in the area and what sort of bike lanes would work best.

Some of the things to take into consideration are the width of the street and whether it can be done as the street is or is there a need to take out travel lanes or parking lanes? Do you have to do just a striped lane instead of a protected bike lane? Amsden said he doesn't necessarily think any one type of lane is safer than another.

"Our goal really is to organize traffic as best as we possibly can by providing dedicated space," he said. "But data shows when you put in bike lanes crashes go down making it safer for riders, walkers and drivers."

Amsden said even more important the protected lanes provide a comfortable and enjoyable space. He said as bike ridership has increased in Chicago the number of crashes have gone down.

"There's safety in numbers," he said.

But how are the bike lanes working? Some cyclists in other cities have expressed frustration that the bike lanes are not being kept clear — often blocked by parked cars or dumpsters.

Amsden said it does happen. "We definitely hear about it," he said, and through communication education and enforcement, they strive

to take care of the problem. They have bike ambassadors who are in the communities, and the city is dedicating a 311 code to report if someone is parked in the bike lanes. Amsden said they want to use the information as a prevention tool to determine trouble spots rather than for immediate punitive action. Amsden said Chicago has been experiencing a strong development boom. As a result, in 2016 they started updating rules and regulations so if a contractor has a dumpster in a bicycle lane they have to provide a clearly marked detour.

Bike sharing and funding

Michael Caffey said one of the biggest benefits for bicycling in Chicago was launched about four years ago: the city's bike sharing program called Divvy. The city has over 5,000 Divvy bikes — nearly 6,000 in the program as it's expanded to Evanston and Oak Park — and about 580 solar-powered docking stations. Initially, it was partially funded through grants that promote economic recovery, reduce traffic congestion and improve air quality. Blue Cross and Blue Shield of Illinois is a sponsor of the program, investing \$2.5 million annually for bikes, ride share stations, education and outreach programs through the bike ambassadors.

"We've had 10 million rides since 2013 under the bike share program," Caffey said.

Amsden and Caffey said those using the bike share program include "a whole gamut of folks — young and old, residents and tourists — it's a great mix of people."

To participate in the Divvy program, cyclists can purchase a 24-hour pass for \$9.95 or an annual membership pass for \$99. The passes get unlimited amounts of 30-minute rides; rides going over the time limit are charged an additional fee. They've also kicked off a D4E program — Divvy for Everyone — which gives a one-time annual membership for \$5 to qualifying residents and allows a cash option for paying any additional fees. The D4E program discounts the membership for the second year with a goal of full membership by the third year.

Chicago has used a variety of funding methods to pay for its infrastructure. Amsden said they've been very successful with the payments from the Divvy program as well as from federal grants, Tax Incremental Funds and general bond money.

"There's been a lot of research that shows that investing in biking and hiking goes a long way in economic development — even low-cost investments pays off big," Amsden said.

Cambridge, Mass.

Cambridge was number eight on the 2016 bike cities list, and it was listed for several reasons, including the "street teams" deployed to meet non-biking residents in the places they live, work, shop and exercise.

In 2016 44 percent of bike commuters were female, which Bicycling magazine considers an indicator of a bike-friendly community because it indicates safety, and Cambridge had the highest percentage of female bicyclist of all cities named in the top ten. ►

In the 1990s Cambridge implemented air quality policies and bike riding goes along with those policies. Joseph Barr, AICP, director of traffic, parking and transportation, said, "Increasing cycling helps us meet our overall city goals around sustainability, safety, mobility, public health and reduction of greenhouse gas emissions."

Like Chicago, Cambridge officials believe adding bike lanes are not only safer for cyclists, but for everyone. "By encouraging cycling with quality bike facilities, we attract more riders, making cycling safer for everyone and making drivers more accustomed to sharing the road," Barr said. "Over the years we have evolved our bike lane designs to make them as safe as possible for users of all ages and abilities. We often hear from drivers and cyclists that the separation between bikes and cars provided by bike lanes make them feel safer and more comfortable."

Barr said in order to accomplish integrating bicycle lanes onto existing streets often "requires making tradeoffs to maximize the effectiveness of our streets," and he said they always try to come up with plans that are clearly beneficial to all in the community.

The majority of bike lanes in Cambridge are on-street adjacent to traffic, but they have been installing more of the physically separated facilities like on Western Avenue. As previously mentioned, even non-bicyclists feel the bicycle lanes are important, so the response has been positive and has increased ridership, but they, too, have had some issues with compliance. Barr said they address any issues through education and enforcement.

"More recent designs also incorporate physical separation and are, therefore, self-enforcing," Barr said.

Cambridge also has a bike sharing program called Hubway, a public transportation by bike system owned by the municipalities of Cambridge, Boston, Brookline and Somerville. Hubway is fully integrated amongst the

This cycle track barrier selection matrix was developed by Nathan Wilkes of Austin, Texas, to aid municipalities to decide which type of bicycle lane would be best for them. The matrix lists the different types of barriers and rates them based on perceived protection of the cyclist, cost, etc. (Photo by Nathan Wilkes/provided by PeopleForBikes)

GREEN LANE PROJECT

peopleforbikes

14 WAYS TO MAKE BIKE LANES BETTER

A quick guide to the ways to protect a bike lane.

Developed from research by Nathan Wilkes, City of Austin

STRIPED BUFFER

1.5 ft. additional width; \$8k-\$16k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

PARKED CARS

11 ft. for parking + buffer; \$8k-\$16k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

DELINEATOR POSTS

1.5 ft. additional width; \$15k-\$30k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

JERSEY BARRIERS

2 ft. additional width; \$80k-\$160k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

TURTLE BUMPS

1.5 ft. additional width; \$15k-\$30k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

PLANTERS

3 ft. additional width; \$80k-\$400k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

LARGE BUMPS

1.5 ft. additional width; \$15k-\$30k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

RIGID BOLLARDS

2 ft. additional width; \$100k-\$200k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

OBLONG LOW BUMPS

1.5 ft. additional width; \$10k-\$20k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

CAST IN PLACE CURB

12 in. additional width; \$25k-\$80k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

PARKING STOPS

6 in. additional width; \$20k-\$40k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

12" PRECAST CURB

1.5 ft. additional width; \$400k-\$800k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

LINEAR BARRIERS

6 in. additional width; \$25k-\$75k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

RAISED BIKEWAY

No additional width; \$8m-\$26m per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	○	○	○	○	○
AESTHETICS	○	○	○	○	○

GREEN LANE PROJECT

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municipalities “so travel is seamless and makes cycling as easy as taking the bus or subway.”

Technology

Both Chicago and Cambridge have begun incorporating more bicycle traffic signals into their intersections. Chicago now has 25 intersections with dedicated signals. The traffic signals have an additional green light with a bicycle symbol with gives bicyclists a head start, especially where right-hand turns can create conflicts. Officials say the bicycle signals go hand in hand with protected bike lanes.

A Federal Highway Association Administrator said in a memo to PeopleForBikes that “people on bikes are more likely to follow the rules because the infrastructure is working for them.”

Each city also has a count station—Chicago’s is placed on an elevated bike trail and Cambridge is on a major cycling corridor in Kendall Square. The counters have an infra-red sensor that count the cyclists in real time and displays the number of riders.

Amsden said the automatic count technology is increasing and they use the data for project justification and for encouragement that the lanes are being widely utilized. Officials in both cities said the data collected is also useful for trends in ridership — “particularly in being able to understand weekly and seasonal variations,” Barr said, as well as hours of the day the lanes are used most.

Other technology in biking includes pedal-assisted bicycles called pedelec bikes. Being used in other cities across the country as part of

their bike sharing programs, the pedelec bikes are useful for encouraging those with health concerns to go biking.

Advice for other municipalities

These bike-friendly city officials offered advice for others who would like to increase their city’s bike friendliness, encouraging them that even starting small will pay off big.

“While construction of fully separated cycle tracks during street reconstruction projects is great, it is also possible to retrofit physically separated bike lanes using pavement markings, flexible delineators, and other materials at a low cost,” Barr said.

“Identifying corridors with strong political and community support to execute demonstration projects is a great way to test new ideas and introduce new concepts,” Barr added. “Look for partnerships with local businesses, institutions and other stakeholders to help plan for implementation and potentially help pay for improvements, whether through development approvals, sponsorships or other arrangements.”

Kyle Wagenschutz, director of local innovation for PeopleForBikes, said the nonprofit’s “Quick Builds for Better Streets Guide” offers ideas for test projects and other low-cost ways to get started. It can be found at www.peopleforbikes.org.

Amsden said as cycling increases across the country, “We’re trying to accommodate the demand that’s there. We’re trying to catch up and provide for the ridership that’s there.” ■

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According to a 2006 review and meta-analysis of 32 studies, researchers discovered that firefighters have an increased risk of multiple myeloma as well as a greater risk of contracting non-Hodgkin's lymphoma, prostate and testicular cancers, due at least in part to the harmful substances that they are exposed to, some of which might end up trapped in turnout gear. (Shutterstock.com)

Wash and wear: Minnesota fire departments receive funding for heavy-duty washers and dryers

By JULIE YOUNG | The Municipal

It is the uniform of a superhero that can become one's kryptonite if it is not properly decontaminated: a firefighter's turnout gear — the thick pants, coat, boots, gloves, hood and mask that may protect men and women who face the flames, but trap the harmful carcinogens that can lead to an increased risk of cancer as the years go by. At one time, firefighters wore the grime of their turnout gear as if it were a badge of honor, but now departments recognize the dirt and grease for what it is: a health hazard that must be eliminated.



In September 2016, the fire departments in the cities of Minneapolis and St. Paul, Minn., partnered to apply for a \$1.5 million federal grant that would not only treat their firefighters to a spare set of turnout gear, but also cover the purchase of heavy-duty machines that can properly clean gear between each run.

"The grant was awarded to us through the Assistance to Firefighters Grant program, which falls under the Federal Emergency Management Agency," said John Fruetel, fire chief for the city of Minneapolis. "It was a challenging and competitive process, but it sure has made a heck of a difference to us, that's for sure."

Too many ironies in the fire

While most people would assume the most dangerous part of battling a blaze is the fire itself, it's not. It's the smoke. Because so many of our consumer goods are made from and coated with synthetic materials, when they burn, they create a noxious fuel that can fill a firefighter's lungs as well as the fibers of his or her gear. This puts them at a risk for a number of respiratory conditions and cancers, which is the leading cause of death of firefighters in the U.S.

Although the direct link between the profession and the disease has not been conclusively proven, it is more than a coincidence. There is evidence to suggest that the association has been on the rise since the 1950s and has become an even greater concern over the past 12 years. According to a 2006 review and meta-analysis of 32 studies, researchers discovered that firefighters have an increased risk of multiple myeloma as well as a greater risk of contracting non-Hodgkin's lymphoma, prostate and testicular cancers, due at least in part to the harmful substances that they are exposed to.

Now that they understand the risks, fire departments, such as those in the Twin Cities, are working hard to eliminate them by purchasing equipment and adopting best practices that can benefit their teams. They know that by doing so, they are adding years to their hero's life. Not only do they encourage firefighters to "shower within the hour" after returning from a fire, but they are also seeking funds to purchase and install high-powered machines to extract contaminants from turnout gear and be ready to go when the next call comes.

"We want to protect our firefighters the best way we can," Fruetel said.

Extracting the facts

Needless to say, the new appliances are not the standard washers and dryers that can be found at most major retailers, but highly specialized machines called "extractors" that are designed to clean heavy-duty gear. They require specialized solution for washing and cost anywhere from \$6,000 to \$9,000 to install, depending on the model and how the station's utilities are configured.

"These machines are really something and use a high-powered, industrial centrifuge to extract the dirt from the gear quickly before they are placed on the dryer, which is kind of like a drying rack where air is pumped into the clothing for about 30 minutes in order to dry it," said Tim Butler, fire chief for the city of St. Paul. "With these machines, we can safely wash and dry our uniforms, gloves, hoods and liners as well as our ambulance service towels that are often soaked with pathogens."



In September 2016, the fire departments in the cities of Minneapolis and St. Paul, Minn., partnered to apply for a \$1.5 million federal grant that would not only give their firefighters a spare set of turnout gear, but also cover the purchase of heavy-duty machines to clean them. (Photo provided)

Securing the funding for the machines is not easy, but Butler said it can help if departments can work together in order to make the most of the money. Minneapolis and St. Paul are no strangers to partnering with one another, and it is those kinds of collaborations that can benefit multiple departments. In addition to applying for federal grants and other matching funds, he said it is important for communities to appeal directly to community leaders who establish the budget and make sure they consider this all important equipment when planning for the year ahead.

"If they say they support firefighters, then they are setting the standards for putting them in a risky environment," Butler said. "You wouldn't send a police officer in without a bullet-proof vest, would you? Of course not, but you have to push for it, especially in smaller communities. By working with Minneapolis and having a few of these machines already in place, the grant helped us to make sure these machines are now in every station in our department."

Fruetel concurred that there is a need and departments need to do everything they can to ensure that these machines are available to firefighters. "Obviously we are going into environments where carcinogens are absorbed into their garments, and it gets to the point where the clothing is a danger to the firefighters themselves. By coming up with a policy and procedure for eliminating them and having the opportunity to partner with a nearby city like St. Paul for this grant, we were able to make a lasting change that can mean the difference between life and death." ■

LEFT: Departments in Minnesota and across the country are seeking to turn the notion of dirty turnout gear as a badge of honor on its head, instead hoping to promote proper cleaning of gear to remove potential carcinogens. (Shutterstock.com)

Microbreweries helping to redesign downtown areas



by NICHOLETTE HODGSON | The Municipal

Many cities are working to revamp their downtown areas to make them more of a tourist destination. One option that is becoming more popular is attracting microbreweries to set up downtown. According to Amy Henderson, director of communications and marketing at the Georgia Municipal Association, "There is a burgeoning tourism market in the craft beer industry."

In 2016, the Georgia Municipal Association met for its annual conference. A portion of the conference was set aside to discuss microbreweries and how Georgia breweries seem to be "at a competitive disadvantage compared to other states because they weren't allowed to sell their product on premises."

This meeting, along with a later discussion with the Legislative Policy Council, led the GMA to support legislation changes allowing breweries to sell product on site. This bill has since passed the session and is currently

awaiting approval by the governor. If the governor chooses to pass the bill, these changes will go into effect Sept. 1.

Benefits of passing new legislation

Microbreweries are perfect for downtown areas of any size and the ability to sell their own product on site will not only attract more breweries to the area but also help the brewery be more successful.

The ability to sell directly to the public will help allow breweries to achieve financial

success faster and banks may be more willing to lend startup money to businesses interested in coming to the area. This will allow new startup breweries to remain small while continuing to thrive.

If the new legislation passes, it will effectively lower the cost of entering into the brewery business when previously, in order to be profitable, one would have to go into business on a relatively large scale with a high cost and limited availability of buildings.

According to Henderson, the GMA will then "partner with the Georgia Department of Revenue and produce a model ordinance for cities to use in order to facilitate the changes in the law. A new ordinance may be necessary in some cities as breweries would be allowed to sell directly to customers by pouring or by package" if the legislation is



Creature Comforts Brewery has its signature beers available year-round and then includes a variety of seasonal beers. They also have a tasting room where people can come and taste its beers and find a favorite. (Photo provided)



The local brewery in Athens, Ga., has become part of the bedrock of the city. By repurposing an old tire factory, Creature Comforts Brewery has become part of the foundation of the downtown scene. It not only assists in bringing in tourism, but also highlights other restaurants and stores downtown. (Photo provided)

approved by the governor. The GMA will also assist these cities with a draft ordinance.

Benefits of downtown breweries

The members of GMA have seen a positive impact on local economies where local breweries are present. Henderson stated, "With most downtown managers, DDA (Downtown Development Authority) directors and economic development professionals, there is tremendous interest in attracting a brewery into their downtown." They are great at allowing options for residents and visitors who are shopping and eating downtown.

For example, "downtown structures that are of unwieldy size for retail often make a perfect fit for breweries or distilleries," according to Henderson. One reason is that microbreweries are able to fit into unused downtown properties that larger breweries and retail establishments cannot.

Former manufacturing sites are a particular type of building that are normally located in or near downtown that make perfect locations for microbreweries to move into. Reusing these buildings can tie in with local pride and make the brewery an anchor for the city. Richland, Ga., has become known as the home of the distillery Richland Rum. Jailhouse Brewery in Hampton, Ga., is located "in an old city calaboose."

Creature Comforts Brewery in Athens, Ga., has become both for the community. It is located in an old 1940s tire factory that had been empty for many years. It also has a discount program in which it partners with local restaurants



One of the primary goals in creating Creature Comforts Brewery was making a space where people can be comfortable. They want their brewery to be a destination for both residents and visitors to relax and be happy. (Photo provided)

to encourage people to dine downtown. The brewery highlights various other downtown businesses routinely during tastings. It has a "get comfortable" charity program. The brewery even hosts a weekly farmer's market.

These microbreweries are promoting economic development and an investment in the

downtown area. They not only help to bring in additional tourism but also local tax revenue. Henderson mentioned that with the potential addition of "on-site direct sales in tasting rooms, coupled with tours and a place to socialize," cities can make their downtowns a destination location. **M**



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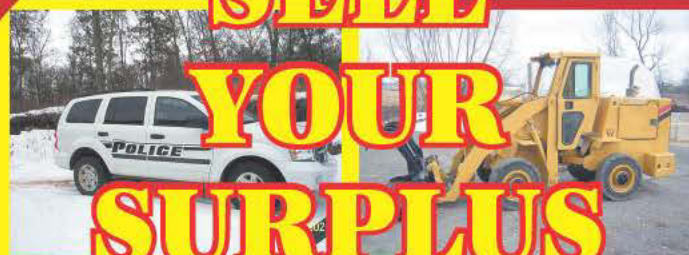
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Tackling stormwater pollution is a team sport with moving targets

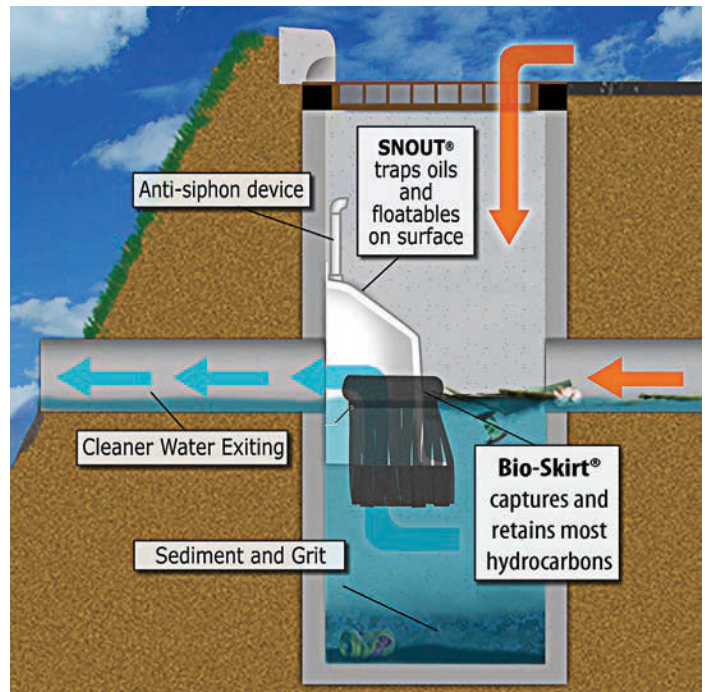
By T. J. Mullen | President and Co-founder of Best Management Products, Inc.

In the last 18 years, even small municipalities have had to take big steps to combat the threat of pollution from stormwater runoff. The push came with the U.S. Environmental Protection Agency National Pollution Discharge Elimination System Phase 2 rule, promulgated in 1999. The rule addresses the problem of polluted runoff, which continues to be a leading cause of degraded water quality in our nation's lakes, streams, beaches and waterways. It requires communities to adopt stormwater best management practices to improve their water quality.

Recently, however, Trump administration executive orders have the potential to change the sight picture again. The first order calls for a review of the "Waters of the United States Rule," issued on Feb. 28. This rule basically defines what water bodies in the U.S. fall under federal protection. The Obama administration sought to codify that rule in 2014 expanding federal protection coverage to smaller ephemeral water bodies that may be seasonal, or include wetlands that may not have a continuous surface connection to other larger bodies of water. The Obama effort remains blocked in court, and the prevailing guide to what's covered is a Bush era guidance document that was issued in 2008. Secondly, the U.S. EPA Office of Water announced that it was seeking feedback on reducing the regulatory burden. A public comment period from May 2 through May 15 was opened with a listening session and web teleconference that was held on May 2. While the results of these efforts remain unknown, attempts to scale back any rules will surely face court challenges and legislative roadblocks before guidance can be adopted.

The outcome of how Trump administration orders affect the planning and practice of stormwater pollution reduction by municipalities is unclear. So for now, the focus will remain on actions that can help communities comply with the goals of the Clean Water Act. During this 18-year water-quality effort, hundreds of engineers and communities in the U.S. successfully employed simple devices made by Best Management Products Inc., of Lyme, Conn., to curtail stormwater pollution.

It all starts with a great plan. Eric Sanford, PE, CPSWQ, principal and director of municipal services for DDC Engineers Inc. in Myrtle Beach, S.C., has been using BMP's Snout water quality hoods for 14 years. As primary municipal engineer for cities in northeastern



Pictured is a deep sump catch basin with Snout and Bio-Skirt. (Photo provided)

"In public works, simple is almost always better. It's hard to find a simpler concept than these hoods."

South Carolina, including Myrtle Beach, North Myrtle Beach and Surfside Beach, Sanford is aware that keeping the beaches clean is a big driver for DDC's stormwater designs.

"We know people visit the beach to have a good time. Part of that means folks are doing a lot of eating, drinking and shopping at our famous waterfront venues, all while walking from place to place. With that activity comes trash and debris. Making sure it doesn't flow to our waterways and the beach is a crucial part of our stormwater planning," Sanford said. "We put Snouts on most of our projects. The first one we used was back in 2003, and we haven't stopped since. In public works, simple is almost always better. It's hard to find a simpler concept than these hoods."



A 30F Snout in Myrtle Beach, S.C., traps trash, debris and oils. (Photo provided)



Pictured is a Snout, Bio-Skirt and stainless TrashScreen in North Myrtle Beach, S.C. (Photo provided)

Snout hoods are installed in stormwater structures with a deep sump, which is extra depth beneath the bottom of the pipe that allows for the capture of solids that will sink and settle out of the runoff. The hoods, whose bottom edge is typically a foot or more beneath the pipe invert, then create a baffle that allows floatable debris to be skimmed off the surface, preventing pollution from exiting the structure and causing problems downstream.

The cars that bring tourists to the beaches also drop oils and other hydrocarbons that are targeted for removal. Sanford is using BMP's Bio-Skirts with the hoods to capture this oil before it gets to the waterways.

"We have been employing Bio-Skirts in hot spots where there is a lot of traffic or parking facilities. Oil sheens are not what people want to see in the water, and we've added this extra measure of quality control. It's making an impact," Sanford added. DDC has utilized nearly 1,000 Snouts and over 300 Bio-Skirts in its designs. A review in 2013 estimated that the hundreds of

Snout structures in Myrtle Beach are keeping more than half a million pounds of trash and debris out of the water on an annual basis.

On a 2015 project in North Myrtle Beach, Sanford used BMP's Snouts, Bio-Skirts and Stainless TrashScreens to tackle downtown flooding and improve water quality. These goals are often at odds with each other. Fortunately, BMP makes Snouts up to 96 inches wide that can handle flows in excess of 100 cubic feet per second, while still allowing for water quality control. Two of these large hoods were needed for the Main Street outfall.

Implementing the plan is next critical step. Travis Dupree, PE, is the public works engineering manager of North Myrtle Beach. When asked about the biggest challenges NMB faces with stormwater runoff, Dupree stated: "Obviously water quality is one of the biggest concerns we are dealing with. We focus on TSS (total suspended solids), oils and debris."

Residents and visitors also notice the city's stormwater quality efforts. "They see less debris and trash on the beach because it's not allowed to

reach the outfall. The city performs street sweeping, but no matter how much we do to keep the litter out of the catch basins, cups, bottles and other items that people throw away end up in the drains. That's why we use the Snout and Bio-Skirts in our inlets, especially around Main Street, which is a busy area where the possibility of pollutant loading is a lot higher," he added.

Maintenance, of course, is key to long-term success. A fact that Jennifer Rauhofer, PE, president of Stormwater Maintenance and Consulting in Hunt Valley, Md., knows well. Her firm maintains

hundreds of structures with Snouts in the Mid-Atlantic region. She often hears from her service crews that these structures keep underground stormwater facilities much cleaner, prolonging their service life.

The engineers at BMP Inc. believe that no matter what pollutants you are trying to reduce, even nutrients, chemicals or dissolved metals — anything that requires infiltration, filtration or phytoremediation — you need to prevent that high resolution treat-

ment step from being clogged with trash and debris. Stormwater quality improvement always requires focusing on many moving targets. Whether it is a treatment train that combines low-impact development concepts to reduce runoff; structural elements to tackle the trash and debris; the creative engineer who designs a sustainable system; the municipality that implements the design; or the crew that follows through with a conscientious maintenance program, it is always a team sport. BMP Inc. looks at its company as part of that team.

With more than 70,000 installations in North America and in all 50 states, more inquiries and projects come in every day. BMP has a long-standing offer for any municipality that has not tried a Snout before, although there are fewer of them — it offers the first one for free, no strings attached. [Find out more about the "Adopt a Snout" program on the company website, bmpinc.com: It's an offer that is hard to refuse and that is sure to keep BMP busy.](http://bmpinc.com) 

"We have been employing Bio-Skirts in hot spots where there is a lot of traffic or parking facilities. Oil sheens are not what people want to see in the water, and we've added this extra measure of quality control. It's making an impact."

For a complete list of all upcoming events, visit themunicipal.com/events.

To list your upcoming conference or seminar in The Municipal at no charge, call (800) 733-4111, ext. 2307, or email the information to swright@the-papers.com.

JUNE

June 10-13 Tennessee Municipal League 2017 Annual Conference

Murfreesboro Convention Center, Murfreesboro, Tenn.
www.tml1.org

June 11-15 Community Transportation Expo

Detroit, Mich.
web1.ctaa.org

June 12-15 Government Fleet Expo & Conference (GFX)

Henry B. Gonzalez Convention Center, San Antonio, Texas
www.governmentfleetexpo.com

June 14-17 New York State Association of Fire Chiefs 111th Annual Conference & FIRE 2017 Expo

Turning Stone Resort, Verona, N.Y.
www.nysfirechiefs.com

June 14-16 League of Minnesota Cities 2017 Annual Conference

Mayo Civic Center, Rochester, Minn.
www.lmc.org

June 15-18 International Hazardous Materials Response Teams Conference

Hilton Baltimore, Baltimore, Md.
www.iafc.org

June 19-22 Safety 2017 Professional Development Conference & Exposition

Colorado Convention Center, Denver, Colo.
safety.asse.org

June 19-22 AAMVA Region II Conference

Chattanooga Convention Center, Chattanooga, Tenn.
www.aamva.org/2017-Region-II-Home/

June 20-23 Snow & Ice Management Association 20th Annual Snow & Ice Symposium

Montreal, Quebec, Canada
www.sima.org/show/symposium-home

June 23-27 Georgia Municipal Association Annual Convention

Savannah, Ga.
www.gmanet.com

June 27-28 Police Security Expo 2017

Atlantic City Convention Center, Atlantic City, N.J.
www.police-security.com

JULY

July 8-11 International Municipal Signal Association Forum & Expo

Scottsdale, Ariz.
www.imsasafety.org

July 14-18 Florida Fire Chiefs Association Executive Development Conference

Sanibel Harbour Marriott Resort & Spa, Fort Myers, Fla.
www.ffca.org

JULY

July 20-23 Municipal Association of South Carolina's Annual Meeting

Marriott Hilton Head Island, Hilton Head Island, S.C.
www.masc.sc

July 21-24 2017 NACo Annual Conference

Franklin County, Ohio
www.naco.org

July 21-25 National Association of Police Organizations 39th Annual Convention

The Westin, New York, N.Y.
www.napo.org

July 23-27 Community Anti-Drug Coalitions of America Mid-Year Training Institute

Marriott Marquis, Atlanta, Ga.
www.cadca.org/events/myti2017

July 24-26 Fleet Safety Conference

Renaissance Schaumburg Convention Center Hotel, Schaumburg, Ill.
www.fleetsafetyconference.com

July 26-29 International Association of Fire Chiefs' Annual Conference & Expo (Fire-Rescue International, FRI 2017)

Charlotte Convention Center, Charlotte, N.C.
events.iafc.org/micrositeFRIconf/

AUGUST

July 30-Aug. 2 Joint ITE/CITE 2017 Annual Meeting and Exhibit

Sheraton Centre Toronto, Toronto, Ontario, Canada
www.ite.org

Aug. 15-16 Midwest Security & Police Conference/Expo

Tinley Park Convention Center, Tinley Park, Ill.
mspce.com

Aug. 17-19 Florida League of Cities Annual Conference

World Center Marriott, Orlando, Fla.
www.floridaleagueofcities.com

Aug. 27-30 NIGP Forum

Salt Lake City, Utah
nsite.nigp.org/forum2016/home

Aug. 27-31 StormCon The Surface Water Quality Conference & Expo


Bellevue, Wash.
www.stormcon.com

Aug. 27-30 American Public Works Association Public Works Expo (PWX)

Orange County Convention Center, Orlando, Fla.
pwx.apwa.net

Aug. 28-31 Florida Recreation & Park Association Annual Conference

Omni Orlando Resort at ChampionsGate, ChampionsGate, Fla.
www.frpa.org/conference/confgeneral



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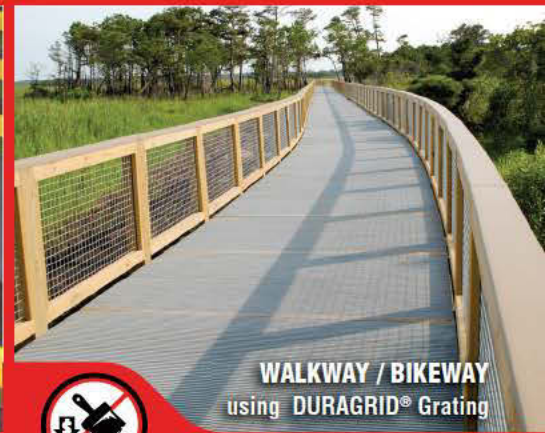
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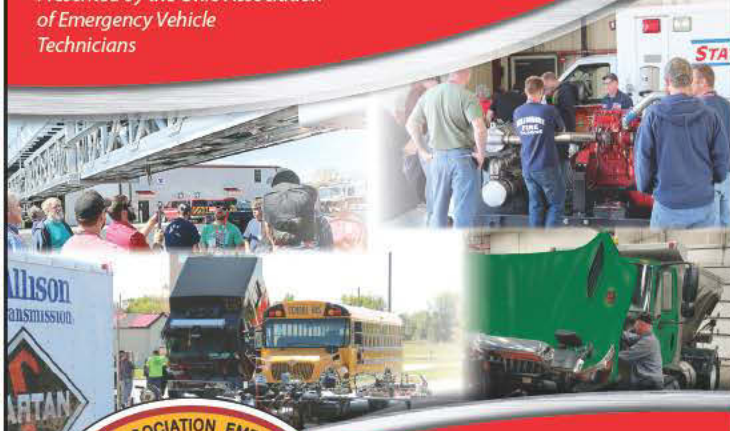


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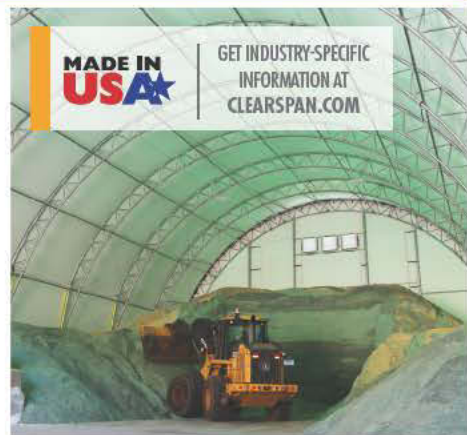
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TOP 15

Cities where hurricanes would cause the most damage

Hurricane season for 2017 runs from June 1 to Nov. 30 in the Atlantic, and for that reason, we are sharing 24/7 Wall St.'s list of cities where hurricanes would cause the most damage. For the 2016 list, 24/7 Wall St. "reviewed the number of homes at risk and the estimated construction costs for U.S. Metro areas along the Atlantic and Gulf coasts from real estate data tracking company CoreLogic." It noted that the 15 most vulnerable cities "are listed in order by the number of homes at risk of destruction from

storm surge — the abnormal rises in sea level due to storms."

In addition to reviewing the number of homes via CoreLogic, 24/7 Wall St. considered estimated rebuilding costs in the event of a total loss in each city — data also from CoreLogic. It also factored in death tolls and damage estimates for past hurricanes, using data from the National Oceanic and Atmospheric Administration.



CITY AT RISK	HOMES AT RISK
1. Miami, FL	780,482
2. New York, NY	719,373
3. Tampa, FL	454,746
4. New Orleans, LA	390,806
5. Virginia Beach, VA-NC	385,084
6. Cape Coral, FL	306,953
7. Houston, TX	280,112
8. Bradenton, FL	250,615
9. Naples, FL	180,919
10. Jacksonville, FL	166,709
11. Philadelphia, PA	165,940
12. Charleston, SC	145,356
13. Boston, MA	129,167
14. Myrtle Beach, SC	123,645
15. Lafayette, LA	119,942

A

Alumitank	70
Ampliroll Hooklift Systems	28
Andy Mohr Ford	54
APWA	71

B

Best Management Products	23, 56-57
Bonnell Industries	Back Cover
BulletSafe	41

C

Calhoun Super Structures, Ltd.	23
C.E.T. Fire Pumps Manufacturing	33
Clearspan Fabric Structures	64

E

Ebac Industrial Products, Incorporated	54
--	----

F

Fire Suppression Products	60
Fol-da-tank	29
Fort Bend Services, Incorporated	2

G

Global Environmental Products	65
-------------------------------------	----

H

Harmsco Filtration Products	63
Henke Manufacturing	64

I

Imel Motor Sales, Incorporated	63
--------------------------------------	----

L

Land Pride	41
Lock America	49

M

Mile-X Equipment, Incorporated	41
Minimizer	7

N

National Construction Rentals	68
National Joint Powers Alliance	Cover, 12-13
New Way Trucks	4
NCFI Polyurethanes	69
Nuform Building Technologies, Incorporated	55

O

Ohio Association of Emergency Vehicle Training	63
--	----

P

Pik Rite, Incorporated	22
PMP Precision Valve Company, Ltd	11
Pro-Tainer, Incorporated	10

R

Ranch Hand	32
------------------	----

S

Scott Bader Company Ltd.	54
Strongwell	62
Superior Signal	29

T

Thor Manufacturing/All Power Supply	68
Trinity Highway Products, LLC	36
Trusco Manufacturing	29

U

United Storm Water Incorporated	9
---------------------------------------	---

V

Ventrac	40
Victor Stanley	5
Voth Truck Bodies	37

W

Wind River Environmental	3
Wisconsin Surplus Auctions	53

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