

JANUARY

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2016

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INDIANAPOLIS, IND.

PRE-SHOW
ISSUE

IN A TIME OF NEED

Former funeral service managers Shawn and Tracy Chilton say their onsite installing business also concentrates on providing compassionate service to vulnerable customers
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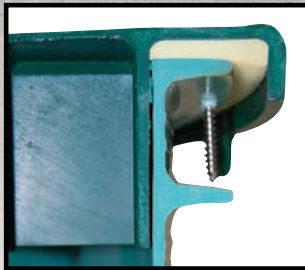
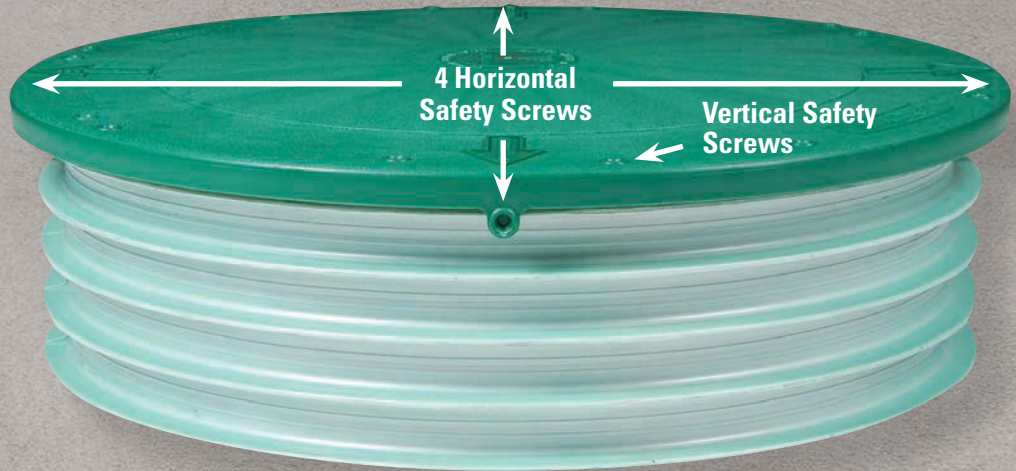
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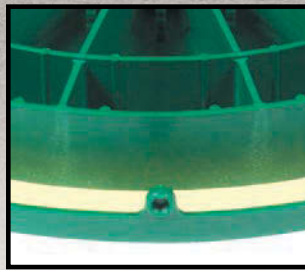
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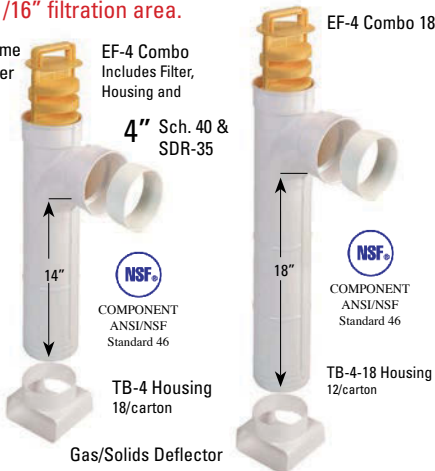


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Published monthly by

COLE publishing

1720 Maple Lake Dam Rd. • PO Box 220
Three Lakes, WI 54562



Call toll free 800-257-7222;
outside of U.S. or Canada call 715-546-3346
7:30 a.m.-5 p.m. Central time, Mon.-Fri.

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Send to Editor, *Onsite Installer*, P.O. Box 220, Three Lakes, WI, 54562 or email editor@onsiteinstaller.com.

REPRINTS AND BACK ISSUES

Visit www.onsiteinstaller.com for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email jeff.lane@colepublishing.com. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email nicole.labeau@colepublishing.com.

CIRCULATION

Circulation averages 21,683 copies per month. This figure includes both U.S. and International distribution.

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7 WWETT Show Seminars You Won't Want to Miss

The latest tips and training for onsite professionals will give your company a leg up on the competition back home. Don't miss out.

By Jim Kneiszel



Will we see you at the 2016 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show next month? If you've already made plans to head to Indianapolis Feb. 17-20, you're among the thousands of wastewater industry professionals who know the tremendous value the WWETT Show offers.

You may be coming to shop around for a new piece of equipment in the vast Indiana Convention Center exhibit space. If a product is manufactured for the onsite industry, you'll see it in the nearly 600,000 square feet of exhibit space. WWETT Show regulars know they will see a variety of new onsite technologies that offer great business-building opportunities for the coming year.

In fact, I've had installers tell me, "Shhhh! Don't tell my competitors back home about the edge I gain by attending the show and learning about the latest innovations. Unless they've been here, they have no idea about the technologies hitting the market." Well, I don't want to play favorites in the onsite industry. So just know that if you skip the show, another contractor is going to use the WWETT Show to get a leg up on you.

Or maybe the WWETT Show is your opportunity to network with your suppliers and fellow installers. Regulars meet with their vendors and talk about new products, special purchase deals and build the personal relationships that can make a big difference to small-business owners. They'll also meet up and swap stories with other contractors they've met over the years.

NETWORK FOR SUCCESS

And there's a new way to network at the WWETT Show this year.

The Industry Appreciation Party is a popular staple at the WWETT Show, where attendees will gather Friday, Feb. 19, for 25-cent tap beers and an intimate concert with country star Jerrod Niemann.

New this year, by request of attendees, is two nights of the WWETT Show Kickoff Party, 5-8 p.m., Feb. 17 and 18, on the field inside Lucas Oil Stadium, home of the NFL's Indianapolis Colts. The popular COLE Pub truck – with its huge wooden barrel – will be parked at the 50-yard-line, and exhibitors will host their own areas on the field to mingle with visitors. This will be a great chance to get to know others in the industry away from the hubbub of the show floor.

And I don't want you to forget about the many education opportunities at the WWETT Show. For three days, including Feb. 17 Education Day,

industry educators and vendors will provide more than 100 seminars – which may qualify for required continuing education credits back home.

Many attendees envision shiny new equipment when they think about the WWETT Show, and rightly so. But if you don't map out some seminars to attend, you're missing an important element to your Indy experience. I took a look at the slate of talks aimed at installers and have a few to recommend for your visit:

Many attendees envision shiny new equipment when they think about the WWETT Show, and rightly so. But if you don't map out some seminars to attend, you're missing an important element to your Indy experience.

Making Infiltration Decisions – Understanding Soil Surface Design (11 a.m. Wednesday)

Speaker Sara Heger, Ph.D., an engineer, researcher and instructor in the Onsite Sewage Treatment Program in the Water Resources Center at the University of Minnesota, will talk about the role of soil in treating wastewater. A leading wastewater educator, Heger will explain how onsite system designers can maximize the treatment potential of soil on any site. This certainly becomes more important as the best sites for onsite treatment are developed and property with more challenging site characteristics is earmarked for development.

An Exercise in Septic System Troubleshooting (1:30 p.m. Wednesday)

Session presenters Bob Wright, an onsite wastewater trainer for the National Association of Wastewater Technicians, and Kim Seipp, NAWT's education coordinator, will teach a systematic approach to onsite system troubleshooting. They will explain what installers need to know about system analysis and thinking outside the box to help uncover treatment issues. The speakers will share insights gained from generations of experience in the wastewater industry. Wright has been a system designer beginning in Alaska in 1979. Seipp owns Colorado's High Plains Sanitation Service with her husband, Jeff.

The Onsite Wastewater Industry and Our Carbon Footprint (11 a.m. Thursday)

Jessica Kautz, of Infiltrator Water Technologies, will delve into the benefits of onsite wastewater treatment over centralized municipal treatment. The presentation will cover the dynamic history of decentralized wastewater treatment and explore trends including sustainable development and green building. Kautz brings a broad perspective to the topic of wastewater, earning a master's degree in civil and environmental engineering from the Colorado School of Mines and conducting research on wastewater recycling in India.

Fact vs. Fiction: The Top 10 Septic Myths (8 a.m. Friday)

Who in the industry hasn't heard the old wives' tales over and over again, such as advising dumping a chicken carcass into the septic tank to promote bacteria growth? Speaker Dennis Hallahan, P.E., of Infiltrator Water Technologies, will explore many myths surrounding onsite wastewater treatment that continue to live on despite the best efforts of industry educators. Hallahan speaks nationally and has written several articles on the science and fundamentals of onsite wastewater treatment.

Inspecting Concrete Sewage Tanks (11 a.m. Wednesday)

Claude Goguen, P.E., of the National Precast Concrete Association, will explain a step-by-step approach to effectively inspect precast concrete structures, such as tanks, pump chambers, aeration chambers and distribution boxes. He will explain what to look for when new tanks arrive on the work site for installation and when performing maintenance.

Excavation Safety (9:30 a.m. Wednesday)

Gary Hooks, of Safety Corporation of America, has a tall order in demystifying terminology and field expectations of the U.S. Occupational Safety and Health Administration (OSHA). Having conducted 600 competent-person training courses to 10,000 people, Hooks is up to the task. He will share potentially lifesaving information about predictable hazards, proper use and installation of protective systems, and options of shields, benching, sloping and shoring for installers.

COLE Publishing's Onsite Installer Course (8 a.m. to 5 p.m. Friday)

Our own industry experts, *Basic Training* column writers Jim Anderson, Ph.D., and David Gustafson, P.E., once again give a comprehensive all-day program introducing proper practices for sustainable use of onsite treatment systems. This is a convenient opportunity for newer installer crew members to get valuable training from these well-known national instructors and experience the WWETT Show in one trip.

SO MUCH TO SEE

For WWETT Show regulars, I hope this column gives you a few ideas for how you'll spend your time in Indianapolis. For those still on the fence about attending the show, I hope this pushes you over the top. And I hope to see you all in Indy.

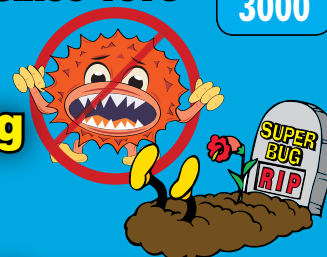
Turn inside this issue to learn more about the WWETT Show, including more ways to take advantage of learning opportunities, enjoy great entertainment and gather with industry friends. ■

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8" blue
Patent# 6,811,692

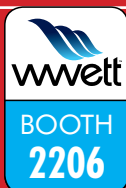


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DIAGNOSING A SYSTEM

DO Indicates System Health

Troubleshooting a septic tank? Is the ATU or a media filter working properly? When done properly, checking the dissolved oxygen is key to diagnosing performance of an onsite system. Read this tutorial from instructor Sara Heger on how to correctly test DO.

onsiteinstaller.com/featured

ONSITE ARITHMETIC

PRACTICE MAKES PERFECT

How's Your Septic Math?

We featured basic septic math tips last month and featured several practice problems on the site. Check them out, along with a couple more pointers we published after fielding some reader questions regarding the best ways to solve calculations you may come across in the field. onsiteinstaller.com/featured

Overheard Online

"A 'team' is an achievement; a dynamic process that includes talent, focus, motivation and sacrifice. It has a personality, preferences and a unique culture."



- *The 5 Steps of Successful Team Building*
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POLICY UPDATE

Social Media Storm

Your company is probably active on social media — but even if it isn't, your employees probably are, and what they say ultimately reflects on your brand. You can't censor them, but describing expectations of behavior in a company handbook can minimize your risk of employees damaging your company's reputation. Check out these policy suggestions. onsiteinstaller.com/featured

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IN A TIME OF NEED

Former funeral service managers Shawn and Tracy Chilton say their onsite installing business also concentrates on providing compassionate service to vulnerable customers

By David Steinkraus | Photos by Kris Wilson

The funeral and wastewater industries share something in common: They're both associated with life stresses. Shawn Chilton knows this firsthand because he has managed both a funeral home and his 8-year-old startup installing and pumping business.

"I always say the two worst things that can happen to someone is, one, for one of your loved ones to pass away, and two, to see wastewater flooding your basement," he says. And a lot of management practices he learned working in the funeral business can help onsite system installers get more organized, according to Chilton.

COMING HOME

When Chilton and his wife, Tracy, were ready to start a family, they also decided to start their own business. They had already spent years in small business, but it was Tracy's family's business. This one would be their own, and they chose wastewater.

Since they began it in late 2008, All Clear Pumping & Sewer – based in Jefferson City, Missouri – has grown as fast as children, and for some of the same reasons: careful nurturing and an attention to the little things that make a big difference in the long term.

The Chiltons got their start in small business in Troy, Missouri, about 60 miles northwest of St. Louis. They ran a funeral home. It was one of about a dozen that Tracy's family owns, but Chilton also worked part time for a pumping company. They wanted to be closer to extended family, so they moved back home to Jefferson City and founded All Clear.

"You not only get benefits like the 401(k), but you also get bonuses for going above and beyond. ... What we're really doing is teaching a skill set to our people, and we want them to stay and gain experience for us."

Jason Jones

The majority of All Clear's revenue is in system installation, maintenance and a small but rising number of inspections being requested by mortgage banks. Pumping is also an important business.



<<OPPOSITE PAGE: All Clear Pumping & Sewer project manager Jason Jones, right, shows a new Polylok Universal Kid Catcher safety screen to Tracy Chilton, left, and Shawn Chilton as the All Clear co-owners pay a visit to a work site in Fulton, Missouri.

ABOVE: Jason Jones, left, watches as operator Phil Bailey uses a Bobcat 435 ZHS mini-excavator to fill an absorption bed with aggregate during an installation in Fulton, Missouri.

>>RIGHT: Project manager Jason Jones gathers supplies stored in a job site trailer from Doolittle Trailer Mfg. Trailer graphics are from Envision Signs.

MAKE LISTS

In both the funeral and wastewater industries, attention to detail is a key to success.

For a funeral, this means caring for the family and the deceased, personalizing the service in order to provide the best tribute to someone's life, and having everything go off without a hitch. The solution in the funeral business was a checklist: make sure a member of the clergy is booked, the grave opening and closing are scheduled, the vault will be there, a police escort is arranged, and so on.

"And you have to do it this way because it's very, very, very important. You can't just pretend you're going to remember because you might have multiple funerals at the same time," Chilton says.

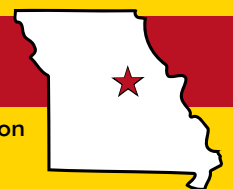
He brought this systematic approach to the wastewater business. Every job has its own folder, and inside that folder is a standard checklist to make sure there's a signature on a contract, the permit is pulled, the tank is ordered, and so on.

MAKE FRIENDS

Another lesson Chilton brought from his former business is the need for relationships. "In the funeral industry you promote yourself in the community, and I decided I needed to do the same thing for my wastewater business," he says.



All Clear Pumping & Sewer LLC, Jefferson City, Missouri



OWNERS:	Shawn and Tracy Chilton
FOUNDED:	2008
EMPLOYEES:	9
SERVICE AREA:	90-mile radius around Jefferson City
SERVICES:	Septic system installation and maintenance, aerator replacement, inspections, drain cleaning and pumping
AFFILIATIONS:	Jefferson City Chamber of Commerce, Leadership Jefferson City, Mid-Missouri Referral Alliance
WEBSITE:	www.allclearmo.com



All Clear Pumping & Sewer's Kelvin Lee uses a Spectra LL300 laser level during a system installation in Fulton, Missouri.

Happy employees will perform for customers

Customers aren't the only people Shawn and Tracy Chilton take care of. They look out for their employees, too. It starts with careful hiring. "We don't want to hire just anybody. We're looking for somebody to stay." Once they join All Clear Pumping & Sewer, people do remain. "And the reason is we pay well. We offer a 401(k). We are a family," Shawn Chilton says.

"With a lot of guys we hire, we're starting at the beginning, training them on the basics and building their skills. If you're going to invest time and money, you want the right candidate," says project manager Jason Jones.

Chilton says he wanted to offer a health insurance plan, but the cost was too high. He found a different solution: a fixed payment that employees can use as they wish, to buy a policy in the private market or pay toward the premium of a spouse's plan. "It lets my employees know I care, that I'm not the guy collecting all the money while they get nothing in return for all their hard work."

"You not only get benefits like the 401(k), but you also get bonuses for going above and beyond," Jones adds. "Shawn's whole goal with us is employee retention. What we're really doing is teaching a skill set to our people, and we want them to stay and gain experience for us."

Vacation is also an important part of the benefits package, even in the summer when the company is busiest. Chilton provides paid holidays and vacation: one week after a year, two weeks after two years, and three weeks after five years. In 2014 he contributed \$2,500 for Jones' family vacation ("Everybody knows how hard Jason works.") and at the last minute added \$500 in spending money as they were about to leave for Mexico.

His philosophy with employees is simple: "If I can give it, I do. If I can't give it, I don't."

He started with the people who provide him with business and can provide more: real estate agents. To show his appreciation for their business, he rented a bus, rented a suite for a St. Louis Cardinals game, and thought he might attract about 40 people, with his wife, project manager Jason Jones, and other employees filling the remaining seats.

"But it was so popular with the agents we had a waiting list. In Missouri the Cardinals are a big deal, plus everybody likes something free. It's a two-hour bus ride to St. Louis, and the people could eat and drink for free, and they didn't have to deal with driving."

People have asked how he can afford to sponsor such a trip, but Chilton says if he gets a contract to install just one advanced system, the investment will pay for itself.

"This is really nothing more than realizing you have to invest in your business," he explains. "You have to spend money to make money, and I'm going to do something like this every year. If I spent the same \$5,000 on a print advertisement, what do I get out of it? More importantly, what do any potential clients get out of it? This trip makes memories for people."

Chilton has also taken care to cultivate good relationships with inspectors, and not just to make things run smoothly. Inspectors cannot recommend an installer, he says, but they are allowed to give citizens the names of three companies that provide wastewater services. If the company does a good job, it will be on that list and people will talk.

"When we give people a quality product, at the end of the day they're going to tell other people. Word-of-mouth is probably the best advertising we have," says project manager Jones.

CUSTOMER CONFIDENCE

Building and maintaining good relationships with customers is equally important, but this does not mean cutting corners for short-term gain.



Garrett Gibson, right, of S.I. Precast, delivers a Sim/Tech pump filter to All Clear sewer project manager Jason Jones as the two look over the installation of a Hydro-Action septic system in Columbia, Missouri.

“When we give people a quality product, at the end of the day they’re going to tell other people. Word-of-mouth is probably the best advertising we have.”

Jason Jones

“People will say, ‘So-and-so will do this or will do the job for this lesser amount of money.’ I tell them my price is what I need to run my business. I have nine employees, equipment, other costs, and people respect that,” Chilton says.

Another recent addition to the company’s service list is acting as a sort of wastewater general contractor. Under Missouri regulations, customers may obtain their own soil and engineering reports. All Clear offers to hire out these professional services so the customer doesn’t have to. This builds good relationships with other area professionals and can bring All Clear referrals for its business.

“When people see we’ll do this for them, they become comfortable with us and they become comfortable with us putting their system in. And comfort is important because we’re asking people to trust us with a significant investment in their home,” Jones says.

Following installation, All Clear offers a two-year maintenance contract. “That’s something I make sure to talk to people about, especially when we’re considering different products to solve their problem. I give them comparisons of the up-front costs and the long-term costs that include maintenance, and most of the time they are pleased to have this information so they can make better decisions,” Jones says.

In just its first five years, All Clear grew from a few thousand dollars in revenue to more than \$1 million. That revenue comes from all those little details he pays attention to, Chilton says.

EQUIPMENT CORNER

Keeping All Clear on the go requires a diverse selection of equipment to handle pumping, installation and home plumbing. The company uses:

- Spartan Tool 798 trailer jetter
- 2001 Peterbilt septic service truck with a 2,500-gallon steel tank and a Jurop/Chandler pump
- 2005 Bobcat 435 that does duty as an excavator or whatever else is needed
- 2015 GMC 3500 pickup to pull the Bobcat
- 2014 Case tractor with a Bradco Vibratory Plow (Paladin Attachments) for installing dripline
- 2012 Nissan cargo van for service calls



LEFT: All Clear Pumping & Sewer's Brent Kleffner lays down geotextile fabric over the pipes and aggregate absorption bed during an installation.

ABOVE: Equipment operator Clarence Graham, called on occasionally by the company, uses a rented Kubota excavator.

- 2011 Ford E250 cargo van for service calls
- 2007 Ford E250 service van
- 2015 GMC 3500 pickup for service calls

They also operate three cameras, two from Spartan Tool and one from RIDGID. They have a Spectra Precision LL300 laser level.

The service vans are smartly covered in full-body wraps. And the septic service truck features a large cabinet situated between the cab and the tank. The cabinet carries a cable machine for clearing residential and other small sewer lines, and there's a winch to lift the cable machine in and out. The cabinet also has enough room to carry a riser, a lid (Polylok) and other supplies. The purpose is to save time for the whole crew.

"Lake of the Ozarks, where we do some work, is 45 minutes away, and with this system you don't have to call the guy in the service van to drive half an hour out of his way to handle a sewer cleaning," Chilton says.

Those wraps are more than pretty. "Those help out a lot. You can't miss me going down the road, and even though a single wrap is about \$3,500, if you get one job because someone noticed you, the wrap is paid for," Chilton says.

Wraps provide another benefit. When a truck is past its service life, the wrap can be stripped off to reveal a clean, scratch-free truck body underneath – and a clean body means a higher resale value.

GROWTH POTENTIAL

So far All Clear has been mainly working in and around Jefferson City. Chilton has plans to change that and – in the process – rebalance his business. While All Clear is presently split about 60-40 between installing/maintaining/inspecting and pumping, he would prefer a balance of 70-30. "Wastewater systems would produce more revenue for me, and I'd like to have two crews putting in systems simultaneously," he says.

It will take a lot of advertising in rural areas, but Chilton believes he can find the expansion needed to grow the installing business. There's another bus trip in his mind, too – not another return to a Cardinals game, although he intends that as well. This other trip will be next fall to Hermann, Missouri, which is known for its Oktoberfest – the German celebration of autumn and harvests, not to mention beer.

It's another investment and another set of details to attend to, but – as Chilton has already proven – sweating the details now can produce a flood of business later. □

MORE INFO:

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Minnesota Trending Toward Required Point-of-Sale Inspections

By Doug Day

More communities in Minnesota are requiring point-of-sale compliance inspections of septic systems. According to *The Little Digger* newsletter of the Minnesota Onsite Wastewater Association, 116 local government units had such rules in 2013, increasing to 141 in 2014. The survey by the Minnesota Pollution Control Agency showed increases in those requiring such inspections: counties up from 60 percent to 69 percent, cities up from 55 percent to 64 percent, and townships up from 31 percent to 45 percent.

PENNSYLVANIA

A federal judge has refused to review his ruling that the U.S. Environmental Protection Agency was not required to review Pennsylvania's anti-degradation water-quality standards. The ruling lets stand Pennsylvania Act 41, which states that onsite wastewater systems complying with the state's Sewage Facilities Act automatically comply with the anti-degradation rules and are

not subject to review by the state EPA. Judge Edward G. Smith, of the U.S. District Court for the Eastern District of Pennsylvania, denied a petition filed by the plaintiffs in the case seeking a review of his earlier finding. The plaintiffs had claimed the federal EPA was failing to follow the Clean Water Act. The judge ruled that the Clean Water Act was ambiguous on the topic, and the federal EPA acted properly in deciding that the CWA did not require it to review the state regulations.

ARIZONA

Public records of 19 databases of the Arizona Department of Environmental Quality are now available online, including business operating permits and compliance records. Also available are records concerning any environmental activities for properties in the state, such as spills that have occurred and septic tank permits. The DEQ says it receives about 3,000 public records requests every year. The online access will cover about 40 percent of those requests and allow the public to see the records immediately. DEQ's Megasearch service is available at megasearch.azdeq.gov.

COLORADO


Costilla County has stepped back from proposed land-use rules that created controversy among people who are living off the grid in the area. The changes would have required water, septic and electricity to be installed before final building permits could be issued, and lots smaller than 5 acres would have been limited to one housing unit. Off-grid residents claimed that the changes would have banned such things as composting toilets. County officials say they have the authority to require proper electricity and sanitation without the changes. The county has also stopped issuing long-term camping permits to discourage using RVs as permanent homes. Campers are now required to be moved every two weeks.

CANADA


The British Columbia Ministry of Health has selected the OpusDaytonKnight engineering firm to review bylaws and regulatory tools for onsite wastewater management. The information will be used to develop common regulation and management principles for regional districts and local governments in the province for effective onsite sewage programs with a focus on maintenance. The Ministry says concerns have been raised by the industry regarding a lack of prescribed maintenance. The study will include consultation with the Union of BC Municipalities, the Ministry of Community, Sport and Cultural Development, and the Capital Regional District to ensure that the final report reflects the needs of local governments and associated agencies. The project is expected to be finished in spring 2016. ■

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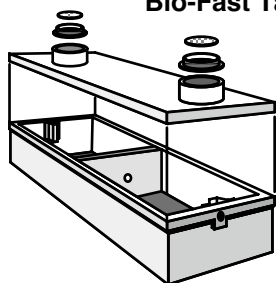
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INDIANA CONVENTION CENTER

FEB. 17, 2016 - Education Day

FEB. 18-20, 2016 - Exhibit Hall Open



4 Days to Make Your Business Better

The Water & Wastewater Equipment, Treatment & Transport Show promises great value and opportunity for your business

By Luke Laggis

Last year, the Water & Wastewater Equipment, Treatment & Transport Show was spilling out of the exhibit hall at the Indiana Convention Center. This year, it's pouring into Lucas Oil Stadium.

It all gets started like it does every year, with the industry's best slate of education courses. The show returns to its Wednesday-through-Saturday schedule this year, so Education Day will be held Wednesday, Feb. 17.

A day in the classroom may not sound like the most exciting part of your trip to Indianapolis, but it could be the most valuable. Presenters from the industry's top manufacturers and associations will lead a wide variety of classes, covering everything from septic myths to small-diameter pipe cleaning. There are more than 50 classes on Wednesday alone.

When class lets out, the party gets started. Just take the short walk over to Lucas Oil Stadium — it's connected to the convention center — for the 2016 WWETT Show Kickoff Party. Relax, check out the exhibitor sponsor displays, and enjoy a cold beverage and complimentary hors d'oeuvres while networking with manufacturers and peers.

"One of the main requests we receive from attendees year in and year out is for more networking opportunities," says show coordinator Brad Bisnette.



"The Kickoff Party presents this opportunity and does so in a very unique, convenient and exciting atmosphere."

The show really ramps up on Thursday when the exhibit hall opens. Every year, products introduced at the show become important components in many industry professionals' toolboxes and equipment fleets. More than 9,400 people representing 4,200 companies and 54 countries attended the 2015 show, with 597 exhibitors nearly spilling out of the exhibit hall.

This year, it's going to be even bigger, encompassing all 560,000-plus square feet of exhibit space at the Indiana Convention Center, in addition to the classrooms, stadium and the Sagamore Ballroom.



**"It's going to be
very impressive
when the lights turn
on and the doors
open for showtime."**

Brad Bisnette



"Right now it's a daily challenge trying to figure out how we're going to fit this much equipment on the floor," Bisnette says. "It's going to be very impressive when the lights turn on and the doors open for showtime."

When that moment comes, take your time and scope out the floor. There's a ton to see, and you can't get to all of it in one day. Plus, there are dozens more education courses on Thursday, and you'll want to take advantage of those opportunities. It's the perfect day to take another class or two, give yourself an overview of the show floor and formulate a plan to get everything you need out of the next two days. And when the floor closes, you can head back to Lucas Oil for the second night of the Kickoff Party.

Friday brings more education and another full day on the exhibit floor, with a chance for you to zero in on the tools, equipment and conversations that can make a difference for your business.

In addition to being a huge day at the show, Friday is also the biggest night, with the Sagamore Ballroom doors opening at 5 p.m. for the annual Industry Appreciation Party. In addition to 25-cent tap beer and a fun, laid-back atmosphere, country music star Jerrod Niemann will perform. Niemann's hits include "Blue Bandana," "Drink to That All Night" and "Lover, Lover."

Just make sure you don't really drink to that all night, because Saturday is the final day of the show and your last opportunity to see everything that makes it great.

Don't forget, there's also plenty to do outside the show. Indianapolis is a fun and accommodating city with dozens of museums, entertainment venues and shopping opportunities, along with hundreds of restaurants within walking distance of the convention center. And with 4,700 guest rooms connected to the Indiana Convention Center via covered and heated skyways, weather won't be an issue.

The 2016 WWETT Show will be held Feb. 17-20 at the Indiana Convention Center in downtown Indianapolis. You can view the complete schedule of events along with an exhibitor list, floor plan, travel information and everything else you'll need to plan your trip to Indy at www.wwettshow.com. ■



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Education Day Sessions

Wednesday, February 17, 2016

NAWT

National Association of Wastewater Technicians

Rooms 234-236

- 8 a.m. Basics of Septic System Control Panels
- 9:30 a.m. Using Septic Control Panels to Troubleshoot Systems
- 11 a.m. Inspecting Concrete Sewage Tanks
- 1:30 p.m. An Exercise in Septic System Troubleshooting
- 3 p.m. The Basics of Inspecting Drip Systems
- 4:30 p.m. NAWT Ask the Experts Panel Discussion

SSPMA

Sump and Sewage Pump Manufacturers Association

Rooms 133-135

- 8 a.m. Understanding Pumps and Common Pumping Issues
- 9:30 a.m. Evaluation and Installation of Backup Pump Systems
- 11 a.m. Best Installation Practices for Trouble-Free Pump Controls
- 1:30 p.m. Troubleshooting Pumps, Panels and Switches with Digital Multimeters
- 3 p.m. Sizing Guidelines for Sump, Sewage and Grinder Pumps
- 4:30 p.m. SSPMA Ask the Experts Panel Discussion

Business Strategies

Rooms 140-142

- 8 a.m. How Much Should I Charge?
- 9:30 a.m. Business Game Changers: Top 5 Secret Strategies for Massive Growth in Your Service Business
- 11 a.m. The Un-Business Plan — Making Your Business Less Complicated But More Profitable
- 1:30 p.m. How to Use Superior Customer Service to Increase Sales
- 3 p.m. Reward the Right Stuff: Finding, Training and Keeping Great Team Members
- 4:30 p.m. Is Your Business Prepared for a Crisis?

Industry Safety

Rooms 237-239

- 8 a.m. Pre-Engineered Shoring Systems for Cross-Trench Utility Challenges
- 9:30 a.m. Excavation Safety
- 11 a.m. OSHA Confined Space, Air Monitoring and Fall Protection Explained

SSCSC

Southern Section Collection Systems Committee

Rooms 231-233

- 8 a.m. Positioning Yourself for Promotion and Succession Planning
- 9:30 a.m. Step Up Your Game! Taking Current CCTV Inspection Technology to the Next Level
- 11 a.m. Trailer Jetting — Getting the Most Out of Your Equipment
- 1:30 p.m. Vacuuming: the Other Half of the Combination Unit
- 3 p.m. Sewer System Maintenance — Challenges and Solutions
- 4:30 p.m. SSCSC Ask the Experts Panel Discussion

NOWRA

National Onsite Wastewater Recycling Association

Rooms 240-242

- 8 a.m. Introduction to Soils
- 9:30 a.m. Onsite Septic System Loading Rates and Site Layout
- 11 a.m. Making Infiltration Decisions — Understanding Soil Surface Design
- 1:30 p.m. Soil Dispersal Comparison
- 3 p.m. Introduction to the Elements of Onsite System Design and Regulations
- 4:30 p.m. Onsite Septic System Hydraulics and Pump Design

Portable Sanitation

Rooms 136-138

- 1:30 p.m. Marketing Basics: How to Effectively and Efficiently Grow Your Portable Sanitation Sales
- 3 p.m. Trust — How to Build it and Use it to Grow Your Portable Sanitation Business
- 4:30 p.m. Portable Sanitation Forum: Current and Future Critical Issues Affecting the Industry Discussion

NASSCO

National Association of Sewer Service Companies

Rooms 130-132

- 8 a.m. Cleaning Nozzle Technology
- 9:30 a.m. Large vs. Small-Diameter Pipe Cleaning
- 11 a.m. The Lower Lateral — The New Frontier in Sewer Rehab
- 1:30 p.m. Chemical Grouting Technologies
- 3 p.m. The Growth of the UV Cured CIPP Process
- 4:30 p.m. NASSCO Ask the Experts Panel Discussion

Treatment Plant Operator

Rooms 243-245

- 8 a.m. Effective Strategies for Collections System Management
- 9:30 a.m. Sustainable Innovation in Biosolids Management
- 11 a.m. Pretreatment and Wastewater Lagoon Management
- 1:30 p.m. Septage Collection and Treatment
- 3 p.m. Large Scale FOG/Septage Receiving Station — Lantern Environmental Project Case History
- 4:30 p.m. Progress in Electrochemical Water Treatment in Last Century

WJTA-IMCA

Water Jet Technology Assoc. - Industrial Municipal Cleaning Assoc.

Rooms 237-239

- 1:30 p.m. Proper Industrial Truck Maintenance Can More Than Pay for Itself in Productivity and Safety
- 3 p.m. Air Conveyance Through an Industrial Vacuum Truck
- 4:30 p.m. Vacuum Excavation Applications and Opportunities

Women in Business

Rooms 136-138

- 8 a.m. Marketing to Women
- 9:30 a.m. Women of Wastewater: Building a Community of Allies
- 11 a.m. Women in Wastewater Roundtable

Vacuum Truck Equipment and Operation Training

presented by **NAWT** National Association of Wastewater Technicians

Rooms 109-110 8 a.m. - 5 p.m.

This day-long session will discuss in detail the equipment on vacuum trucks and how to operate them. Pumping terms will be covered, as will safety principles, materials often encountered on the job and government regulations.



WWETT Education Sessions

Thursday, February 18, 2016

Liquid Waste Treatment & Disposal

Rooms 130-132

- 8 a.m. | Analysis of Drainfield Failures and Restoration Methods
- 9:30 a.m. | Cash In on Community System Operations and Maintenance
- 11 a.m. | Ultra-Efficient Inspection Technique to Locate Leaks on Septic Systems

SSCSC Sewer & Drain Cleaning Course

Rooms 231-233

- 8 a.m. | Hands-On Nozzle Technology
- 10 a.m. | Hands-On Jetter Hose Maintenance — Care and Repair

Sewer & Pipe Rehabilitation, Relining & Repair

Rooms 234-236

- 8 a.m. | Take Control of Inflow and Infiltration in Manholes
- 9:30 a.m. | When Things Go Wrong on a Lining Job
- 11 a.m. | Taking Small-Diameter Drain Lining Inside Infrastructure

Sewer & Drain Cleaning, Inspection & Repair

Rooms 133-135

- 8 a.m. | Using the Clean Water Act to Grow Profits
- 9:30 a.m. | Winning Trench Warfare — Finding Profitability in Sewer/Septic Work
- 11 a.m. | Your Best Shot at Sewer Success — How to Get the Most From Inspection Technology

Onsite Septic Installation, Repair & Design

Rooms 237-239

- 8 a.m. | Overview of Application, Design, Installation and Operation of Drip Dispersal Systems
- 9:30 a.m. | Onsite System Pump Design Made Easy
- 11 a.m. | The Onsite Wastewater Industry and Our Carbon Footprint

Treatment Plant Operator

Rooms 243-245

- 8 a.m. | Smart Water Technology in Theory and Practice
- 9:30 a.m. | Dissolved Ozone in Municipal Collection, Treatment and Disposal
- 11 a.m. | Municipal Biological Waste Treatment

Business Strategies

Rooms 136-138

- 8 a.m. | How Self-Employed People Can Make More Money
- 9:30 a.m. | Growing Your Business in a Tough Economy
- 11 a.m. | Staying in Front of Your Customer

NOWRA Design Course

Rooms 240-242

- 8 a.m. | Mound and At-Grade Design
- 9:30 a.m. | Low-Pressure Pipe in Drainfield Distribution
- 11 a.m. | Subsurface Drip Irrigation

Municipal Sewer & Water

Rooms 140-142

- 8 a.m. | How to Recover Non-Revenue Water
- 9:30 a.m. | Phased Assessment Strategy for Sewers - Understanding Sewer Condition Quicker with Fewer Resources
- 11 a.m. | The Science of Pipe Cleaning — Flow and Pressure



Many states approve WWETT education sessions toward fulfilling required certified education units or professional development hours.

See wwettshow.com for a list of approved states and courses.

Friday, February 19, 2016

Liquid Waste Treatment & Disposal

Rooms 130-132

- 8 a.m. | Fact vs. Fiction: The Top Ten Septic Myths
- 9:30 a.m. | All About Facultative Bacteria
- 11 a.m. | Brown Grease Recovery From Grease Trap Waste: Science and Economics

Industry Safety

Rooms 140-142

- 8 a.m. | Identifying and Managing Risk in a Septic or Sewer Business
- 9:30 a.m. | How Well Do You Know Your Cleaning Hose?
- 11 a.m. | Pathogen Exposures to Workers in the Onsite Industry

Business Strategies

Rooms 240-242

- 8 a.m. | Creating a Data-Driven Strategic Marketing Plan
- 9:30 a.m. | What Every Sewer and Drain Contractor Needs to Know About Asset Protection, Tax Reduction and Estate Planning

Municipal Sewer & Water

Rooms 240-242

- 11 a.m. | GIS: Empowering Water, Wastewater and Waste Removal Organizations

Sewer & Drain Cleaning, Inspection & Repair

Rooms 133-135

- 8 a.m. | Advanced Pipe Bursting
- 9:30 a.m. | Low-Latency, High-Definition Video Over Coaxial Cable for Remote Inspection
- 11 a.m. | Plumbers vs. Technicians: The Slow Decline of the Tradesman

Municipal Sewer & Water

Rooms 231-233

- 8 a.m. | Using Acoustic Inspection to Prioritize Sewer Cleaning
- 9:30 a.m. | Evaluation of Automatic Filters for Nozzle Protection in Recycled Water Applications
- 11 a.m. | Flow Monitoring — How to Make Your Program Successful

Treatment Plant Operator

Rooms 243-245

- 8 a.m. | Insights into Ozone Water Treatment Plants
- 9:30 a.m. | Wastewater Microbiology
- 11 a.m. | How to Ensure Gold is the Result — Choosing the Right Dewatering Equipment



Business Software & Technology

Rooms 136-138

- 8 a.m. | Know the State of Your Business Using Business Charts and Reports
- 9:30 a.m. | Using Software to Save Time and Increase Profits
- 11 a.m. | Using Mobile Devices for Business

Sewer & Pipe Rehabilitation, Relining & Repair

Rooms 234-236

- 8 a.m. | Buying Back Capacity
- 9:30 a.m. | Successful Reduction of I&I Using the Holistic Approach to Sewer Rehabilitation
- 11 a.m. | Large Scale Centrifugally Cast Concrete Pipe Culvert Rehab in CO Dept. of Transportation Region 1

COLE Publishing's Onsite Installer Course

Rooms 237-239 8 a.m. - 5 p.m.

This day-long session will walk professionals through an introduction to proper installation practices for the sustainable use of onsite treatment systems

Detailed session information available at:
www.wwettshow.com



PrO2 Series Bio Accelerator From Greener Planet Solutions Aids Wastewater Treatment

By Craig Mandli

Aerobic bacteria is used to consume organic wastes in ponds and holding tanks. However, the naturally occurring microbes need a high level of dissolved oxygen to multiply and effectively consume organic material. Supplying that oxygen is not always efficient, leading to high electricity costs and a large carbon footprint. The PrO2 Series Bio Accelerator from Greener Planet Solutions, which debuted at the 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show, attempts to resolve that issue.

The PrO2 Series can deliver oxygen in full nucleation, nanobubble or microbubble states. A small slipstream of water, supersaturated with oxygen, reintroduces oxygenated fluid back into the water using precision applicators, explains Randy Redmer, sales manager for Greener Planet Solutions. "Because we can hold oxygen in a solution, the PrO2 essentially creates supercharged microbes," says Redmer. "It provides a highly oxygenated waste stream for the microbes to feed off. Because the oxygen is efficiently injected directly into the waste stream, there is none gassed off."

The PrO2 can be permanently installed, or it is small enough to mount in the back of a pickup truck for portable use at 26 inches square and 59 inches high. It can inject up to 6 pounds of oxygen per hour and deliver the dissolved oxygen stream at a rate of 15 gpm. Redmer says the unit is adapted from high-flow supplemental oxygen therapy used in the medical field.

"It actually creates more oxygen surface area because the oxygen isn't being injected directly on the surface," says Redmer. "If you actually look at a cross section of a waste stream being treated, it looks like a layered structure, almost like layered Jello."

The unit is designed for municipal, industrial and commercial applications. The company has sold several to medium-sized municipal wastewater treatment facilities, but also sees it as a potential added service for septic service companies and onsite system installers.


"This unit is easy to set up, as a full system can be installed in a trailer unit," Redmer says. "It can eliminate algae and bacteria in a holding pond or



Alex Roorda, left, of Greener Planet Solutions, explains the technology behind the PrO2 dissolved oxygen bioremediation technology to a 2015 WWETT Show attendee. (Photo by Craig Mandli)

decorative pond in three days or less. Running the unit costs less than \$1 per hour."

The 2015 WWETT Show was the first for Greener Planet Solutions, and Redmer says the reaction exceeded expectations. Staff members answered several questions about applications of the technology that they hadn't even thought of.

"We're learning as much about the industry as the attendees are learning about us," says Redmer. "We've talked to onsite system installers who see this as an alternative to aeration, and septic pumpers see it as an efficient alternative for treating their own effluent. We learn more applications with each person we talk with." 517/682-0090; www.gps-na.com. 

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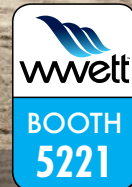
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Advanced System Positions Kentucky Subdivision For Growth

CSA Excavating Services is called in to finish a large-scale drip irrigation system scaled to serve more than 50 homes in suburban Louisville

By David Steinkraus

Ballardsville lies about 22 miles northeast of Louisville, Kentucky, close enough to be a bedroom community for the major city on the Ohio River. Proximity to Louisville has brought a lot of development to Ballardsville, and the increasing density is demanding more than the usual solutions. In the case of the Ballard Glen subdivision, installer Steve Johnson put in an advanced community wastewater system for two reasons. One was the lack of space for traditional systems and drainfields. The other was owners who are thinking of the future and wanted advanced onsite treatment.

Louisville is home to a large Ford auto plant building the company's popular F-150 and F-350 pickup trucks and Explorer SUV. There's a big FedEx operation as well as the national hub for UPS. "Personally, I know 20 or 30 of the aircraft pilots who have recently built new homes in the Oldham County area," Johnson says. All this corporate activity means new home construction is important to the area and to Johnson's CSA Excavating Services.

The group of homes Johnson worked on is the second phase of the Ballard Glen development. "They don't have it all built out yet. When they reach 25 homes we'll have to increase the size of the absorption field to

accommodate the rest of the project. Plans call for about 54 homes."

This was the second system Johnson did using Quanics technology, and it's a big one that involved not only a complicated arrangement but unusually large tanks. It involved a lot of fixing, too, because the project had been started by someone else. It was up to Johnson to finish the system — and fix pre-existing mistakes.

THE SYSTEM

Each home discharges wastewater into a 4-inch pipe that leads to a 1,500-gallon concrete septic tank to settle solids and provide primary treatment. Another 4-inch pipe takes wastewater from the tank outflow to a standard 8-inch sewer main.

All the mains converge on a 25,000-gallon concrete recirculation tank poured in place a couple of hundred yards behind the subdivision by a contractor not associated with Johnson. A 96-inch pump vault holding two Quanics 1/2 hp pumps sends water through about 40 feet of Schedule 40 2-inch pipe to a pair of Quanics 5,000 gpd AeroCell advanced treatment units. Water leaving the AeroCell tanks flows through a 4-inch pipe to a diverter that sends 80 percent of the water back to the recirculation tank.



<<OPPOSITE PAGE: Two of a planned five AeroCell advanced treatment units from Quanics handle treatment at Ballard Glen in Kentucky. Dosing and return lines lead back to the 25,000-gallon recirculation tank.

ABOVE: Forms are in place and waiting for concrete as the 25,000-gallon recirculation tank is poured for the Ballard Glen project in Kentucky. Groundwater was a continuing problem in this location. The land was swampy, and a creek is about 50 feet away.

>>RIGHT: With a vibrating plow unavailable except at an unreasonable rental price, the crew from CSA Excavating Services did things the old way: with a backhoe and shovels. Company owner Steve Johnson, who likes making tools anyway, is designing his own skid-steer accessory for this job.

The other 20 percent is pumped about 350 feet through a 4-inch line to a 15,000-gallon concrete dosing tank that was also poured in place. A 62-inch pump vault with two Quanics 1/2 hp turbine pumps sends water through a 2-inch pipe to the drip irrigation field.

The system is controlled by a Quanics panel. When the subdivision is fully built out, the panel will operate five treatment pumps, two drip pumps, and a six-zone irrigation controller. The treatment section will consist of five AeroCell units.

The absorption field for the moment consists of 18,000 linear feet of dripline from Geoflow. That will expand to 36,000 linear feet when the subdivision is completely built out. The design from engineer Bobby Vinsand splits the drainfield into three zones and, most importantly, fits within the confined space available, Johnson says.

The work was done with Johnson's backhoes from JCB and Caterpillar and a Caterpillar skid-steer.

"We've been here for 30 years, and I've never seen it freeze that low in the ground. Every year there are only two or three weeks of really bad weather."

Steve Johnson

INSTALLATION NOT EASY

"Logistically, the installation was a nightmare depending on different times of the year," he says.

For starters, the previous developer had not finished off the sewer system by some 700 feet of pipe. Johnson put that in. The previous developer also buried his sewer lines too deep, more than 10 feet. To work on them, Johnson and his guys had to dig steps in the earth to prevent cave-ins, and



SYSTEM PROFILE

Location:	Ballardsville, Kentucky
Facility served:	Ballard Glen subdivision
Designer:	Vinsand Engineering, La Grange, Kentucky
Installer:	CSA Excavating Services, Smithfield, Kentucky
Type of system:	Drip irrigation
Site conditions:	Silty clay loam
Hydraulic capacity:	25,000 gpd when built out

even then the work was difficult. This also meant that taps from the tanks at each home could be as deep as 10 feet. In this part of Kentucky, the frost line on paper is about 16 inches. "We've been here for 30 years, and I've never seen it freeze that low in the ground. Every year there are only two or three weeks of really bad weather," Johnson says.

Manholes for the sewer mains were all placed in the middle of streets. "We had to reseal several of those. If we hadn't, there would have been massive infiltration into the wastewater system every time it rains."



ABOVE: A section of the absorption field is finished off using dripline from Geoflow. The design splits the field into three sections of 6,000 linear feet each so it would fit in the restricted space available.

>>RIGHT: The 25,000-gallon recirculation tank finished off and in the ground at Ballard Glen in Kentucky.

The dripline was buried at 10 inches, and that provided its own challenge. As someone who doesn't do dripline often, Johnson first searched for a vibrating plow he could rent. It was a hard thing to find in his part of the world, and rental came at a steep price. "It was going to be like \$800 or \$900 a week to rent, and it took us about four weeks to put in all that dripline. That's strong incentive to invent your own tool."

In the end, he and his workers – grandson Camden Elliott and son Andrew Elliott Johnson – dug trenches with an excavator. He designed and built one dripline tool for his tractor, but couldn't get enough downward pressure and stopped using it. He says he still wants a better tool. His next design will go on his skid-steer. "If that doesn't work, I'll figure out some way to do it because I like making my own tools and equipment."

LAND CHALLENGES

The weather and land didn't help speed the three-month project. During the winter there was rain every three or four days. The site for the treatment system was



about 50 feet from a creek. "The whole place down there was a swamp at one time. There's a huge groundwater problem, and water kept filling up the hole for the big recirculation tank. I don't know how many times I pumped that hole out." That was after Johnson's crew spent 10 days cutting rock with a backhoe hydraulic hammer in order to create the hole.

Alternative systems are common in Johnson's part of Kentucky. "We've probably put in more mound systems than the rest of the people in the state," he says. In addition, he's done many LPP and engineered wetlands.

Soils are already so loaded with waste that new subdivisions are not being promoted as they were, and the lots that remain cannot be built on without advanced technology. Whatever is invented next, Johnson says, he and his company will learn about it and adapt to it. □

MORE INFO:

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Installer Steve Johnson, left, and grandson Camden Elliott of CSA Excavating Services, are shown at the Ballard Glen subdivision with a JCB backhoe.

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Tips to Restore a Mirror Finish

You want your service vehicles to look great, even after several years on the road. Here's how to bring back that showroom shine to chrome accessories.

By Peter Kenter

There's nothing quite so impressive to customers as a service vehicle flashing an array of polished chrome, stainless steel and aluminum. However, chrome is a two-edged sword — there's nothing so humbling as pulling up to a job site with shiny parts covered in mud, rust, dust and grease. Installers can do their part to ensure that chrome continues to shine, while professional detailers offer tips to maintain metallic luster.

Many contractors are attracted to chrome accessories to add to the good looks of vehicles that promote their brand, such as service vans, vacuum trucks and pickups. Luckily, this concern doesn't extend to digging equipment including excavators and skid-steers.

"You want to have the chrome on your service trucks that customers see first," says Penny Dunlap, co-owner of Dunlap Septic & Excavation Service of Medford, Oregon.

Brian Wakefield, owner of B & J Wakefield Services Inc. in Waxahachie, Texas, agrees. "We want the chrome on our pumper trucks to shine brightly, because the appearance of these vehicles is a big factor for customers," he notes.

Each of the materials that make up the chrome family requires care and maintenance to ensure longevity and consistent shine. Weighing in on professional chrome cleaning is Cory Jones, who has operated truck-detailing business Air Vision of West Valley City, Utah, for the past 30 years.

CHROME

While the term popularly includes any kind of shiny metal, it specifically refers to a thin layer of chromium electroplated onto a surface made of steel, aluminum, nickel or plastic.

Chrome falls into two categories:

- Hard chrome, industrial chrome or engineered chrome, which offers a thicker chromium coating, reduced friction, and resistance to abrasion and oxidation.
- Decorative chrome, which is thinner but possesses the same toughness. It's the chrome used on visible parts of trucks, such as pipes, trim and bumpers.

"Chrome is the hardest of a truck's shiny surfaces, so when it's new, it's pretty difficult to mess up — but that doesn't make it resistant to abuse," says Jones. "One of the big mistakes people make is to use harsh or abrasive cleaners. They'll go at it with Ajax or other abrasives that will shorten the life of the chrome."



A heavily chromed truck before (above) and after (below) a thorough cleaning and polishing. (Photos courtesy of Air Vision)



Chrome's biggest enemies are acids, which stain the material, and heat, which can permanently discolor it.

"If drivers have their motors turned all the way up, their straight stacks will turn purple, yellow and bronze," says Jones. "Once the surface is burned, its appearance is toast. The discoloration doesn't take away from the smooth surface and we can still shine it up, but it will never look the same again."

An Air Vision technician cleans an aluminum tank using a high-speed grinder and the side of a canvas wheel.

Jones uses a rubbing compound and cloth on chrome, then waxes the surface to protect it from dirt and moisture.

However, successive use and cleaning will slowly wear down the surface of the chrome until the material underneath is exposed. Even a pinhole on chrome-surfaced steel will bring rust to the surface.

"You can use a light steel wool to remove that rust, but each time you go that route, you'll wear the chrome down further, and the chances of rust coming back bigger increases," says Jones. "Wax will protect the surface, but eventually you will have to replace that part or re-chrome it."

STAINLESS STEEL

While steel rusts under the influence of air and moisture, stainless steel doesn't. That's because it contains a minimum of 10.5 percent chromium by mass. The reason — stainless forms a film of chromium oxide that prevents further oxidation.

Stainless steel is high-speed factory polished to provide its shine. However, the metal isn't invulnerable, as it can stain under the influence of excess salt. Keeping surfaces free of road salt is probably the best way for equipment owners to ensure the integrity of the metal.

"Stainless steel is way softer than chrome, but because these parts are solid stainless through and through, it's harder to mess up than chrome," says Jones. "However, because the material is softer, it's much easier to scratch deeply. Equipment owners can clean up any tough stains with window cleaner and (00 grade steel wool)."

At the shop, Jones gets stainless steel to shine by using a high-speed buffer fitted with a wool pad.

"You can use a light steel wool to remove that rust, but each time you go that route, you'll wear the chrome down further, and the chances of rust coming back bigger increases."

Cory Jones

ALUMINUM

"Aluminum is durable and doesn't rust, but it's porous and that means it latches onto stains from road salts, dirt and hard water," says Jones.

Air Vision typically uses a hydrochloric acid solution to clean impurities from the surface of aluminum. However, while acid cleans aluminum, it also makes it duller.

"Polishing will restore its shine, although some people mistake polishing for much lighter buffing," he says. "Polishing is also known as cutting, because you are actually ripping off the outer layer of aluminum."

Jones cleans aluminum using a high-speed grinder and the side — not front — of a canvas wheel. He uses jewelers compound to provide abrasion, ranging from red (the finest), through white, green and brown (the most abrasive), depending on the condition of the surface.

"You need torque and horsepower at 8 to 10,000 rpms because you have to put a lot of pressure on the wheel while you're cutting," he says. "Using paste, it's important to be thorough and to remove all of the paste before you're done, because paste left on the surface will turn black."



LARGE SURFACES

"Whether chrome, aluminum or stainless steel, the hardest part of doing a good job is to remain consistent," says Jones. "I liken it to painting — if you stop painting, you get a dry line that will be visible in the final job. You have to keep the wet line active and blend the lines together for a consistent surface shine."

Thankfully, tanks have natural breaks, such as vertical weld lines, that provide a convenient starting and stopping point for polishing.

"We like to start at the top of the tank sections, then move back and forth as we gradually move underneath the tank," says Jones. "That keeps the shine consistent." □

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Jim Anderson, Ph.D., and David Gustafson, P.E., are connected with the University of Minnesota onsite wastewater treatment education program. David is extension onsite sewage treatment educator. Jim is former director of the university's Water Resources Center and is now an emeritus professor, and works with the National Association of Wastewater Technicians education committee. Readers are welcome to submit questions or article suggestions to Jim and David. Write to ander045@umn.edu.

We Have an Answer For This Baffling Question

Beware of taking a shortcut to installing proper inlet and outlet baffles in a septic tank

By Jim Anderson and David Gustafson

As onsite industry veterans, we sometimes take for granted that by now everyone has a good grasp on certain concepts and there's no need to cover "that" again. Then we get a question that makes us rethink what we need to discuss.

Case in point: an inquiry about whether there is actually a need for an inlet baffle in the septic tank as long as there is not a place for toilet paper to hang up and plug up the inlet. Apparently some people in the industry do not recognize the need for both inlet and outlet baffles and develop their own creative solutions to get around the plugging problem.

DIRECT THE WASTE

Inlet baffles are needed for proper performance of the septic tank. Raw sewage from the residence is directed by the baffle downward into the middle zone of the septic tank. This means the effluent follows a tortuous path through the tank, which provides the necessary detention time for the larger solids to settle out.

This results in formation of the sludge layer on the bottom of the tank where some solids are broken down while the rest remain to be removed

when the tank is properly cleaned. This is why we view this area as the first part of the treatment process. The inlet baffle also prevents floating scum from plugging the inlet pipe.

A baffle is also necessary at the outlet end of the tank. It allows sewage effluent to flow out of the tank, while retaining the floating scum made up of grease and soap residue in the tank to be removed when the tank is cleaned.

To perform these functions properly, baffles must have the proper submergence and proper height above the liquid level in the tank. This allows both the settleable and floating solids to be captured in the tank and not allow them to move downstream. Today we have effluent screens located in the outlet baffle to help prevent larger solids from moving downstream. This is a big improvement from just a few years ago but does not affect the need for properly sized baffles at both inlet and outlet.

Properly sized baffles require the following:

- The inlet baffle must be submerged at least 6 inches under the liquid level but not deeper than 0.2 times the liquid depth to prevent the inflow from disturbing the bottom sludge layer and causing solids to go into suspension.
- The outlet baffle must extend farther below the liquid surface to ensure effluent sent downstream is coming from the middle clear zone. This provides storage area in the tank for both sludge and scum. This is why newer cleaning recommendations call for cleaning the tank if the total depth of the scum and sludge equals or exceeds 25 percent of tank liquid depth. So if the liquid depth in a tank is 60 inches, the tank needs to be cleaned when the total of sludge and scum are greater than $\frac{1}{4} \times 60$, or 15 inches.

PREVENTING CORROSION

The tops of both baffles must extend far enough above the liquid level to hold the scum in the tank and to prevent it from plugging the inlet. Here, the standard is again 0.2 times the liquid depth. There must be air clearance of at least 1 inch between the top of the baffles and tank cover to provide for movement of gases and proper venting. Without the clearance, there will be excessive corrosion and deterioration due to accumulation of gases around the outlet baffle. There should be a 3-inch drop from the inlet pipe to the invert of the outlet pipe. Septic gases are heavier than air and will accumulate in the low area. ❑



This image shows one service provider's solution to a plugged inlet. The configuration will not keep scum from blocking the inlet. (Photo courtesy of Jeff Burger)

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Facing Climate Challenges

Arizona onsite professionals push for greater training and more practical regulation of a variety of technologies to serve arid deserts and snow-covered mountains

By Doug Day

With little incentive for onsite wastewater professionals to get regular training, the Arizona Onsite Wastewater Recycling Association is a relatively small group. President Suzanne Ehrlich, a senior environmental health specialist with the Yavapai County Development Services, says there are no requirements for certification or ongoing training for onsite professionals. But that doesn't stop AzOWRA from educating its 35 members representing most aspects of the industry, from pumpers, installers and designers to regulators and manufacturers.

What's the value of membership if there are no certification requirements?

Ehrlich: Because of the limited regulations, those people who choose to participate in AzOWRA are doing so because they want to be the best they can be. They are the most professional; they are the cream of the crop. When you look at Arizona, we are hot and arid in some places, mild and arid in others, and then we have places that get significant snowpack at high elevations – from incredibly arid to skiing. It requires that onsite professionals really know what they're doing, but there is no requirement for a designer to have any particular credentials.

Our biennial conference gets high marks for its educational offerings. We've also decided to rejoin NOWRA (National Onsite Wastewater Recycling Association), so our members got free membership in NOWRA for 2015 – we paid those dues. Our members feel we need to have a voice in what is coming down from the federal level to the local levels. Lobbying is not something we've previously looked at. Membership in NOWRA will provide that representation and help us develop it at the local level. We would like to be able to capitalize on NOWRA's efforts.

We are working to develop or amend rules to be more effective. We have members on the Arizona Department of Environmental Quality (ADEQ) Onsite Wastewater Advisory Committee. They are not representing AzOWRA but are individual members. As an organization, we have not been effective at getting a position. It is one of our goals. More membership would help with that. Right now, we don't have enough active members to move things the way we'd like them to go.

What is the regulatory environment in Arizona?

Ehrlich: There is no requirement for certification or continuing education for those working on onsite systems, other than the larger

Suzanne Ehrlich
president of Arizona Onsite Wastewater
Recycling Association, 928/771-3214 or
Suzanne.Ehrlich@yavapai.us.
AzOWRA



commercial systems. There are rules for how a system is designed and installed, but no requirements for maintenance, pumping, inspection or report intervals. The rules broadly say you have to operate it in a manner consistent with the rule.

ADEQ has no program for homeowner education. We have a homeowners training course, a homeowners manual, and even offer membership to homeowners. We emphasize that property owners have the ability to do a lot of service and maintenance on their own and give them pointers on how to keep systems functioning for the longest time, how often they should be pumping, and how to manage their system. We've educated about 800 homeowners, which represents a small percentage of about a half-million septic systems in use in Arizona.

We do training for real estate professionals that is approved by the Department of Real Estate for their continuing education requirements. The transfer of ownership rule offers the one time that a system is required to be inspected. It is also the only time a system must be pumped, though there are a few exceptions.

Last summer, the ADEQ announced it didn't have the staff or funding to enforce the time-of-transfer rule so is looking at rescinding it or transferring responsibility to counties. What's the reaction?

Ehrlich: Those folks I've heard from are asking where that would leave the rest of the program. If it is rescinded, does that signal a change in the whole program? We have acknowledged that there are flaws to the rule that should be corrected. All they need to do is open the rule and fix the program.

Do you think more regulation is needed?

Ehrlich: We would like to have better education requirements and higher qualifications for designers and installers in addition to verification requirements and penalties for "bad actors." We want to make sure we're

not being overly burdensome but accomplishing the goal of having functioning systems.

Thirty years ago, it was enough if effluent just went into the soil. But we had a population of about a million people. With a population much higher (6.7 million) and a lot more people living in rural areas, it's necessary to have systems that provide better treatment.

We're looking for more flexibility. The general permit is very proscriptive. Each technology that existed in 2001 has its own section of rule. There are new technologies, but the rule doesn't allow those products so we need to create language that allows for new technologies without a rule change each time. Maybe we get rid of all the proscriptions and have a permit that requires treatment to particular standards. Allowing new technologies is going to be something needed for the future viability of the state onsite program.

"Thirty years ago, it was enough if effluent just went into the soil. But we had a population of about a million people. With a population much higher (6.7 million) and a lot more people living in rural areas, it's necessary to have systems that provide better treatment."

How does your water situation compare to the Western states like California that are suffering so much?

Ehrlich: Groundwater resources are particularly slim. We cannot afford to have them tainted. Our aquifers don't recharge very well; we don't have a lot of surface water. We are better off than California but not by much. We both get water from the Colorado River. We are downstream, so if California takes more water, we get less.

We have a fair amount of aquifer migration; water is taken out, pumped to individual houses and into the sewer system. The resulting effluent gets discharged to rivers and leaves the area. I have a great concern about that concept.

Is there any interest in recharging groundwater?


Ehrlich: The conversations are beginning. I was at a water reuse symposium last year and we're definitely being better about attempting recharge and trying to improve and innovate the tools we have. The whole concept of recharging with onsite systems was something they hadn't considered whatsoever.

In rural Arizona where we have our own wells and onsite septic systems, we're pumping it, using it, treating it, returning it, all on the same property. We need to get policymakers to understand the value and relevance of that.

There is growing interest in reusing graywater.

What's happening in Arizona?

Ehrlich: It's a big issue. Arizona has a particularly lenient position; it allows graywater systems with no additional permits for single-family homeowners. The question that has come up is if you remove as much as 60 percent of the flow, what does that do to the performance of your treatment systems?

One of our members asked his manufacturer about it. They didn't know people were doing it (graywater) and said they needed to look at it. Two or three other manufacturers started looking at it also. The result of the preliminary reviews is we are finding we have high strength waste in places we didn't realize. When you concentrate the effluent, the biological oxygen demand increases hugely. How is your system going to function in that environment? (Graywater reuse is) a pretty exciting concept; how does it change the world we're working in? 



Komatsu parallel link undercarriage

The parallel link undercarriage system (PLUS) from Komatsu America Corp. is an option on the D155AX-8 dozer. Available with three shoe widths (24, 26 and 28 inches), the system is designed to provide up to twice the life of a conventional undercarriage and eliminate the downtime of pin and bushing turns. 847/437-5800; www.komatsuamerica.com.



Water Cannon jetter trailer

The 16T52 two-wheel commercial jetter trailer from Water Cannon has 500-foot by 3/8-inch hose reel capacity, 200-gallon water tank with float valve, polyurethane toolbox, lights, front jack with wheel, safety chains and aluminum fenders. The commercial high-pressure jetter has a Vanguard 18 hp electric-start engine with 15-gallon fuel tank, TS Series

General triplex plunger pump (5 1/2 gpm, 3,500 psi), 8-foot jumper hoses, and three jetter nozzles (penetrator, flusher and degreaser/deicer). 800/333-9274; www.watercannon.com.

Gorman-Rupp horizontal end suction centrifugal pumps

The 6500 Series of horizontal end suction centrifugal pumps from Gorman-Rupp Company are designed to handle water and up to 4-inch solids in wastewater treatment plants, industrial facilities, and construction, mining and agricultural use. Sizes range from 3 to 16 inches, flows to 15,000 gpm and total dynamic head to 530 feet. Features include oversized bearings, atmospheric vent, side access inspection port (solids-handling models) and indexable Smart Scroll discharge locator. 419/755-1011; www.grpumps.com.



New Holland compact wheel loaders

C Series compact wheel loaders from New Holland Construction feature Z-bar linkage on models W50C, W80C and W80C HS for increased breakout force, digging and lifting power. The parallel lift path of the W50C TC eliminates the need for manual correction.

Designed to scrape, grade, push, rake and haul, all four models are powered by Tier 4 engines. Options include high-flow hydraulics (W80C only) that delivers 34 gpm at 2,900 psi, auto ride control, creep speed for applications that require slow and steady control, high speed (W80C only), and return-to-dig function that returns the bucket to the dig position after dumping. 630/260-4000; www.newhollandconstruction.com.

KOHLER diesel-powered mobile generator

The 55REOZT4 diesel-powered mobile generator from KOHLER Power Systems is U.S. Environmental Protection Agency emission-certified for non-road use, mounted on a DOT-certified trailer and is compatible with KOHLER's Mobile Paralleling Box. Features include a KDI 3404 Tier 4 Final engine that does not require a diesel particulate filter, fuel tanks sized for 24-hour runtime, external emergency stop, stainless steel door latches and hinges, cold-weather package that includes block and battery heater, single-point lifting eye, sound-attenuating housing (69 dBA at 23 feet), voltage, current, frequency and power monitoring, analog inputs, warnings and faults monitoring. 800/544-2444; www.kohlerpower.com.



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Grundfos holds Walk for Water event

About 175 Grundfos Pumps employees joined family, friends and corporate partners for their annual Walk for Water event held in Kansas City, Missouri, and Aurora, Illinois. The initiative raises awareness about the global water crises and funds for safe, sustainable water solutions in developing countries. Grundfos first held the event in 2012 and to date has raised more than \$200,000 for Water Missions International.

JCB celebrates 70th anniversary

JCB North America introduced a limited edition backhoe loader, a version of the 3XC super backhoe model. The model is being produced to celebrate the company's 70th anniversary, and only 70 of the machines will be manufactured. The machines feature the vintage look last seen 40 years ago on the JCB 3CIII. As part of the celebration, all company employees were given a day off.

Gehl expands dealer network

Gehl announced Caliber Equipment has joined its dealer network. Caliber Equipment provides sales and service for Gehl track loaders, skid loaders, compact excavators, telescopic handlers and articulated loaders in Vancouver, British Columbia, and surrounding areas. Gehl added Riggins Ag Solutions Group to its dealer network. Riggins provides sales and service to north-central Missouri for Gehl track loaders, skid loaders, compact excavators and articulated loaders. □

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Kansas Small Flows Association;
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Maine

Maine Association of Site Evaluators;
www.maineese.com

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www.mapss.org

Maryland

Maryland Onsite Wastewater Professionals Association;
www.mowpa.org; 443/570-2029

Massachusetts

Massachusetts Association of Onsite Wastewater Professionals;
www.maowp.org; 781/939-5710

Michigan

Michigan Onsite Wastewater Recycling Association;
www.mowra.org

Michigan Septic Tank Association;
www.msta.biz; 989/808-8648

Minnesota

Minnesota Onsite Wastewater Association;
www.mowa-mn.com;
888/810-4178

Missouri

Missouri Smallflows Organization;
www.mosmallflows.org;
417/631-4027

Nebraska

Nebraska On-site Waste Water Association;
www.nowwa.org; 402/476-0162

New Hampshire

New Hampshire Association of Septage Haulers;
www.nhash.com; 603/831-8670

Granite State Designers and Installers Association;
www.gsdia.org; 603/228-1231

New Mexico

Professional Onsite Wastewater Reuse Association of New Mexico;
www.powranm.org;
505/989-7676

New York

Long Island Liquid Waste Association, Inc.;
www.lilwa.org; 631/585-0448

North Carolina

North Carolina Septic Tank Association;
www.ncsta.net; 336/416-3564

North Carolina Portable Toilet Group;
www.ncportabletoiletgroup.org;
252/249-1097

North Carolina Pumper Group;
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Ohio

Ohio Onsite Wastewater Association;
www.ohioonsite.org;
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Oregon

Oregon Onsite Wastewater Association;
www.o2wa.org; 541/389-6692

Pennsylvania

Pennsylvania Association of Sewage Enforcement Officers;
www.pa-seo.org; 717/761-8648

Pennsylvania Onsite Wastewater Recycling Association;
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Pennsylvania Septage Management Association;
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Tennessee

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Texas

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Washington

Washington On-Site Sewage Association;
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Wisconsin

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Wisconsin Liquid Waste Carriers Association;
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NATIONAL

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National Onsite Wastewater Recycling Association;
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Onsite Wastewater Systems Installers of Manitoba, Inc.;
www.owsim.com; 204/771-0455

New Brunswick

New Brunswick Association of Onsite Wastewater Professionals;
www.nbaowp.ca; 506/455-5477

Nova Scotia

Waste Water Nova Scotia;
www.wwns.ca; 902/246-2131

Ontario

Ontario Onsite Wastewater Association;
www.oowa.org; 855/905-6692

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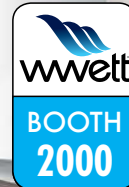
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