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The Clarifier is the publication of the Wisconsin Wastewater Operators’ Association and is intended to inform and educate the membership on issues related to the treatment and control of wastewater. The Clarifier is produced five (5) times each year: February, April, June, September, and December. All members are encouraged to contribute to the mission of the Clarifier.

The Wisconsin Wastewater Operators’ Association is a non-profit organization dedicated to educating, informing, and advancing the wastewater profession. WWOA has approximately 2,000 members divided throughout six regions: Southeast, Southern, Lake Michigan, North Central, Northwest, and West Central.

2017 - 2018
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Presidents message: Be proud of being an operator

Good day to all,

As I sit down to compose my first letter as President of the WWOA, the weather man is talking about many four-letter words that we don’t like to use. I will however go out on a limb and quote a few. Cold, wind, ice and snow. Not the worst words in the English vocabulary, but the key words that make us think of the coming season. If you are waiting for Indian Summer, don’t hold your breath. It was only a flash in the pan. Winter is still coming!

I realize while writing this letter the significance of the date and time; 11/11, 11:11. My father served in Korea and conveniently reminded me of that fact when it was election time. ‘Get your butt down there and vote, I didn’t go to Korea, so you could sit there and not exercise the right so many of us fought for.’ Thank you, Dad. And thanks to everyone that have sacrificed their time and some their lives for our freedom and continue to do so.

Because of that freedom I was able to choose what I wanted to do with my life. After farming and trying a few additional different jobs, I was asked to help shovel some sludge at a local wastewater plant. Who would have thought that 30 years later I would be a proud member of the Wisconsin Wastewater Operators Association? And because that freedom is so crazily awesome, someone decided that maybe I would make a good WWOA Board Member, to stand up for the Operators of Wisconsin and everyone in the wastewater industry. I am proud to have been chosen and now serve as your President. But remember, no one part is any better than the whole; as we learn from everyone that has taken part in our most important business of the world, WASTEWATER TREATMENT. Technology has developed at an explosive rate to keep up to the demands of the people. Some may look at the ongoing and ever-changing government regulations as difficult and sometimes unachievable. But who is government? It is the people we serve. They demand excellence and that is what we give them day in and day out. The WWOA is as strong today as it was 51 years ago.

That strength was shown recently at our 51st Annual Conference that was recently held in October at the Madison Marriott West Hotel and Conference Center, in Middleton, WI. With 843 attendees, 159 exhibitors (the most we have ever had) and three and 1/2 tracks of technical sessions, we continued the WWOA goal of education and training opportunities in all areas of water, wastewater and septage industries. WWOA will continue with this endeavor for years to come.

I may be the President of the WWOA, but I am first and foremost a proud wastewater treatment plant operator. My goal is to continue offering great training opportunities, while expanding our reach to everyone in our field. We have only scratched the surface of who we can be and what we can achieve.

I ask for all of us to reach out to our communities, our schools and local organizations. Tell them who we are. Tell them what we do. Show them how the dirty water gets clean. Strive to be better each day of our lives and we will continue to grow. WE ARE THE WWOA!!

2017 is rapidly coming to an end. As we close out this year and look forward to starting 2018, let’s take time to reflect on all that is good in our world. Wishing you and yours a Joyous Holiday Season and a very Happy New Year!

Clarifier deadlines 2018

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Stanley wastewater treatment plant upgrade

By: Joe Martirano, Cedar Corporation

PROJECT HISTORY:
Originally put into operation in 1984 at the current location, the City of Stanley’s wastewater treatment plant recently underwent a major facility upgrade. The upgrade, which focused on replacing equipment and processes at the end of their service lives, was also intended to expand the design capacity of the treatment plant and modernize the facility. The City, which experienced significant population growth between 2000 and 2010, also has plans for future industrial development that drove the need for facility upgrades. The design and implementation of the upgrade was directed by Cedar Corporation and its team of design, process, and electrical engineers. The general contractor for construction of the facility upgrade was Miron Construction Co.

MAINTENANCE OF PLANT OPERATIONS:
Perhaps a unique feature of major process upgrades at wastewater treatment plants is the requirement that the plant must never lose operational function at any point during the construction process. A tremendous amount of coordination between the construction staff and the operators is needed for a successful wastewater plant upgrade, an effort that may be often overlooked by those not familiar with the wastewater industry. The City of Stanley’s wastewater plant upgrade was no exception to this. George Thompson, one of Cedar Corporation’s engineers who was involved with WWTP operations through the upgrade and startup, offered praise for Dan Mainer, the lead treatment plant operator for the majority of the construction.

continued on page 6
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upgrade. “Dan’s attention to facility operations was vital to the success of the project, and things would not have gone as smoothly were it not for him”. Dan, the 2015 WWOA West Central Region Operator of the Year, served as the lead operator at Stanley’s treatment plant for over 30 years and has had a prolonged history of excellence. Dan’s testing laboratory was designated as the best in Wisconsin in 1993 by the Environmental Protection Agency, and was nominated again by the state DNR in 1998. Additionally, Dan has always been held in high regard amongst his operator colleagues for his dedication to his job.

Zack Nitz, the assistant treatment plant operator throughout construction, credits Dan with teaching him the fundamentals of being a wastewater operator. “Personally, he was a great operator to learn from because his work ethic was second to none. His care and detail with lab work has always set a great example for me to follow.” Zack’s tutelage under Dan has prepared him for taking over the lead operator responsibilities following the completion of construction. Zack, who has now been Stanley’s lead operator for over 6 months, is looking toward the future at providing the same quality of work that Stanley’s wastewater plant has been recognized for throughout Dan’s tenure.

The operational adjustments required by Dan and Zack throughout the construction upgrade were numerous. Over the nearly 14-month upgrade, several new processes and equipment were added to the facility, some of which became integrated with existing features. The upgrades will help ensure that the City of Stanley is able to continue meeting permit effluent limits in the most efficient and cost-effective manner possible.

The City has long been required to treat wastewater for organics, solids, ammonia nitrogen, and will soon be regulated for effluent total phosphorus. The treatment plant must also provide seasonal disinfection between May 1st and September 30th every year.

**INFLUENT FLOW:**
The fully upgraded treatment facility is designed to treat an average flow of nearly 0.8 MGD, capable of handling peak flows near 2.5 MGD. For extremely high flow events when inflow exceeds pumping capacity of the lift station, wastewater will automatically flow over a weir in the lift station and into a separate storage wet well, where excess water can be stored until flow rates return to a manageable level. This feature helps prevent the overloading of hydraulic
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capacity of the plant’s treatment facility, and reduces the risk of biomass washout and non-compliance with permit effluent limits.

**PRIMARY TREATMENT:**
Primary solids removal first occurs with a vertical screen, located at the influent lift station. After being pumped out of the influent wet well, wastewater then enters a new vortex grit removal chamber, located upstream of secondary treatment processes. In the vortex chamber, wastewater flows in a circular chamber accompanied by a fixed-speed rotating paddle drive. The forces generated by the paddle drive draw grit particles towards the center of the chamber, which then settle out from the wastewater stream into a sump pit. The process of grit removal protects downstream equipment and tankage from grit accumulation, which could cause a loss of operational efficiency over time.

As part of the grit removal process, a grit washing unit was also installed as part of the upgrades to handle cleaning and disposal of collected grit. Grit from the sump pit of the vortex chamber is automatically pumped to the grit washer, where it undergoes cleaning and dewatering before being disposed into a collection dumpster. The grit washer reduces both odors from the removed grit and the overall volume of grit that leaves the facility as waste, which are major improvements over the previous facility’s grit removal capabilities.

**SECONDARY TREATMENT:**
Following grit removal, wastewater enters anaerobic selector basins, followed by a three-channel oxidation ditch structure. This combination of secondary treatment processes continues on page 10.
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treatment is designed to drive biological nutrient removal from the wastewater, including biological phosphorus removal. In the anaerobic basins, mixed liquor is introduced to the wastewater via a pump from the oxidation ditch structure. The anaerobic environmental conditions within the tank promote the growth of the microorganisms that remove phosphorus from wastewater, which ensures the viability of the phosphorus removal process. Anaerobic conditions are verified by a sensor in the basins that monitors oxidation/reduction potential (ORP) at all times.

Mixed liquor flows by gravity from the anaerobic basins to the oxidation ditch structure. The oxidation ditch was an existing structure at the treatment plant that was modified as part of the upgrade project, and is where the majority of nutrients in the wastewater are removed. Air is provided to each channel of the oxidation ditch to a varying degree, depending on wastewater characteristics. Like the anaerobic basins, environmental conditions are constantly monitored in the ditch channels to ensure the best potential for treatment. The outer-most channel of the oxidation ditch continues on page 12.
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is kept in an aerated-anoxic state to promote simultaneous biological nitrification and denitrification, while the inner channels are aerated to higher degrees to facilitate the removal of organics, nitrogen, and phosphorus.

Aeration in the oxidation ditch is provided by upgraded disc aerators, each equipped with variable frequency drives (VFDs). The VFDs allow automated adjustment of disc aerator output based on wastewater strength and treatment requirements. This allows the treatment plant to optimize aeration, which is typically one of the most expensive operational costs for a wastewater treatment plant.

Standard circular final clarifiers are used for solids removal following the oxidation ditch. As part of the facility upgrade, one new 32’ diameter clarifier was built to match the two existing final clarifiers on-site. A new splitter box was installed up-stream of the clarifiers to provide equal distribution of flow to the clarifiers. Each clarifier is covered by a fiber-reinforced plastic (FRP) cover in order prevent algae growth and protect clarifier equipment from environmental conditions.

RAS from the final clarifiers can be pumped to either the anaerobic basins or the outer channel of the oxidation ditch, continued on page 14
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depending on the operator’s preference for operating the plant or treatment requirements. The RAS pumps were replaced as part of the project upgrades, and are now units with VFDs that allow automated adjustment of pumping flow rates to help save energy. “The old RAS pumps were not on VFDs, so they were often using more energy than necessary and required us to spend a lot of time trying to adjust them,” said Nitz.

Residual phosphorus that is not biologically consumed in the oxidation ditch structure can be removed by the facility’s chemical feed system. Chemical may be added at the outlet of the oxidation ditch, the final clarifier splitter box, or in-line on process piping for waste sludge prior to solids disposal. To date, the combination of biological phosphorus removal and chemical addition has performed very well, and the City is currently working on optimizing the balance between phosphorus removal and chemical addition quantity. Three tertiary sand filters are located downstream of the final clarifiers, which provide supplemental suspended solids and thereby phosphorus removal.

TERTIARY FILTRATION:
After the sand filters, effluent passes through a re-aeration channel and a new UV disinfection system before outfall to the Wolf River. The UV disinfection system replaced an old chlorine gas disinfection process, and is one particular upgrade that Nitz is very satisfied with. “Chlorine gas obviously has dangers associated with it, and daily monitoring of chlorine residuals took up lots of time. The new UV system is much easier to monitor and is also safer,” said Nitz.

BIOSOLIDS:
The facility upgrade also included a major and unique change for the solids disposal process at Stanley’s wastewater treatment plant. Sludge drawn off the bottom of the final clarifiers is pumped to an aerobic digestion for sludge stabilization. Following sufficient digestion time, sludge is pumped from the digester to one of four new reed beds, which have replaced the old facilities for sludge storage.

The reed beds act as artificial wetlands and reed growth occurs using nutrients provided in the digested sludge. Each reed bed is surrounded by an earthen berm for sludge containment and has an underdrain system for collecting sludge filtrate. Sludge applied to each bed accumulates over time, but the beds are designed such that sludge removal

continued from page 12

continued on page 16
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Continued from page 14

and hauling should only need to occur once every 10 years. The beds have helped the City overcome the need to find willing landowners to accept sludge on annual basis, which had been starting to become a serious challenge. “The reed beds have taken lots of headaches out of the land approval process for sludge application with the DNR”, said Nitz.

“Now we have the ability to treat our produced sludge on site and save lots of money on hauling and application costs.”

**SCADA:**
Aside from physical process and equipment upgrades, perhaps the most outstanding feature of Stanley’s plant upgrade has been the implementation of a full-service electronic SCADA system. SCADA (Supervisory Control and Data Acquisition) is a software-based control network that allows numerous devices and components to be linked together and controlled autonomously. Originally developed for use in manufacturing and other complex facilities, SCADA systems have begun to be widely implemented in wastewater treatment plants. Stanley’s SCADA system allows the operators to view and control every piece of equipment and process at the treatment plant from a single computer screen.

While convenient, the SCADA component of the facility upgrade was described by Nitz as the most challenging continued on page 18
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adjustment. “The operating process is basically the same as before, but it's an entirely new way of operation and monitoring, along with new visual checks.” Despite the lengthy training sessions and time spent familiarizing himself with the SCADA, Nitz has described the SCADA system as a very positive operational tool.

The usefulness of the SCADA interface can be demonstrated by examining its role for controlling environmental conditions in the oxidation ditch. These conditions are critical for maintaining an optimum biological phosphorus removal process. Probes are located in each channel of the oxidation ditch and constantly measure either oxidation/reduction potential (ORP) or dissolved oxygen (DO). As these parameters vary over the course of a day or time, SCADA automatically adjusts operation of the disc aerators to change airflow as needed.

Without this real-time monitoring and control ability that SCADA provides, the operators would need to spend significant effort and time monitoring this process every day. Additionally, costs associated with aeration would be higher than they actually need to be to provide the required degree of wastewater treatment.

The other major convenience that SCADA provides operators is the ability for remote access and control. SCADA will automatically send out alarm alerts to the operators on mobile devices, giving the operator immediate knowledge of a situation even if they are off-site at the time. Minor alarms and troubleshooting after hours can now be dealt with via remote access rather than requiring a site visit from the operator on duty.

CONCLUSION:
The adjustment to the upgraded facility has been challenging for the City staff in several aspects, but Nitz says it has made them better operators and critical thinkers. Nitz said that his experience through the upgrade has taught him the importance of patience; “there will be a few bumps in the road during the process, but they are temporary and the engineers and contractor will help take care of them.”

When asked about what advice he could give operators who may be preparing for an upgrade to their facility, Nitz expressed that they approach the upgrade with patience and an open mind. “I would tell other operators to stay positive and not be discouraged by troubles that might arise during the transition. Additionally, I found that the DNR was a very helpful and understanding resource, as they know the changes we are making are conducive to providing better wastewater treatment moving forward.”

Zack and the City are looking forward to operating the upgraded treatment plant for many years to come. Other City staff members include Don Goettl and Bill Lamarche, who each have over 20 years of experience as operators, and Herb Carlson who has over 10 years of experience. Additionally, Cedar Corporation's team of engineers is providing continued support, assistance, and guidance for the City's operators throughout the long-term operation of the plant. Nitz expressed optimism regarding his available resources, saying, “Everyone involved is willing to help each other out through this, so Stanley is going to remain in good hands as we continue on into the future.”

Left to right, Bill LaMarche, Don Goettl, Zack Nitz, Herb Carlson, John Hoel.

WWOA office holiday closures
The WWOA office will be closed from Friday, December 22, 2017 through Monday, January 1, 2018.

WWOA wishes everyone a safe and happy holiday season.
Welcome to the 51st Annual WWOA conference
Madison Marriott West
Middleton

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Golf outing at Pleasant View golf course, Middleton

The 2017 WI Wastewater Operators Association golf outing was held at Pleasant View Golf Course in Middleton, WI. 76 golfers enjoyed a beautiful day of golf on a challenging golf course. The usual “scramble” format was used. The “low” score was recognized by the group and 1st and 2nd place teams were drawn at random. We had a generous outpouring of support for the outing though hole prize sponsors and door prize contributors.

This year some new hole prize events were instituted. Long drive with a two iron, opposite handed putting, closest shot to the photo of President Sharon Thieszen, and a timed golf hole were not only fun but well received.

The help provided at the timed golf hole by Sara Bach, Northern Lake Services and Katie Gruber, B&M Technical Services was greatly appreciated. The registration assistance provided by Kelly Zimmer, MSA Professional Services was also appreciated. Bruce Municipal Equipment provided the snacks during the award presentation.

The golf outing continues to evolve into an outing that is fun for everyone regardless of their skill level.

Last but certainly not least is to mention the gracious contribution to the golf outing by Lamont Albers, Process Equipment Repair. Your contribution to this outing greatly appreciated.

See you next year in Lake Geneva! ☺

Randy Herwig
2017 Golf Outing Organizer

Thanks 2017 WWOA golf outing sponsors

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11th annual sporting clays, Waunakee gun club, Oct. 17

Chairperson: Jim Thalke, Jeff Smudde

- Record attendance – 65 registered shooters
- 50 target - 8 station shoot at the Waunakee Gun Club
- Also had a novelty shoot where there was 1 gun and several other prizes given away
- Prizes also given for:
  - Top Gun – Bucky Walters
  - 1st Place score of 129 – Jim Larson, Tom Stebbins, Jim Riege, Bucky Walters
  - 2nd Place score of 121 – Matt Giese, Ted Winkelman, Rob Brillhart, Jeff Hoeper
  - 3rd Place score of 119 – Pat Morrow, Mark Kane, Scott Halbrucker, Rob Szekeress
- Bucky Walters was Top Gun (for highest individual score of 46)
- Gun Drawing Winners: Jim Larson, Kevin Freber, Jeff Deitsch, Eric Hackett, Alex Krause, Dan Origer
- Everyone received a door prize
- 6-gun sponsors
- 8 other sponsors
- Everyone had a great time and for October, the weather was fantastic
- Lunch was cook-your-own steaks, Texas toast, baked beans and potato salad

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2017 WWOA bicycle ride, Quarry Ridge rec area, Fitchburg

Chairperson: Tom Crouse

- 6 riders
- Start/End of ride at Quarry Ridge Recreational Area, 2740 Fitchrona Road, Fitchburg, WI
- Halfway point was Mount Horeb, WI
- Lunch at the Grumpy Troll Pub & Brewery in Mount Horeb
- Total Miles ridden – 30
- Easy pace allowing for conversation along the way
- Each rider got a goodie bag
Meet ‘n greet

Keynote speaker LeRoy Butler
2017 operators of the year award

Lake Michigan region

Jenny Pagel, City of Clintonville (presenter),
Warren Howard Marinette Wastewater Utility

North Central region

Lyle Lutz, Village of Plover (presenter),
Ken Bloom Wausau Water Works

Northwest region

Larry Reinke, Jennie-O-Turkey Store (presenter),
Roy Riebe III, Seneca Foods

West Central region

Joe Beaudry, City of Hudson (presenter),
Chuck Stanke Cascades Tissue
2017 operators of the year award

Southeast region

Ben Huffman, South Milwaukee Wastewater (presenter),
Paul Kintziger, South Milwaukee Wastewater

Southern region

Josh Voigt, Xylem Flygt Products (presenter)
Kevin Freber, City of Watertown WWTP

Newcommer of the year

Jack Wendler, City of Ripon (presenter),
McKala Kiessling, City of Ripon

Region of the year-southern

Cody Schoepke, City of Fond du Lac, Jeff Simpson, Crane Engineering (presenter), Josh Voigt, Xylem Flygt Products
Past Bernauer

Seated: Leo Templeton, Pete Albers
Standing L-R: George Bowman, Gary Hanson, Dan Brady, Randy Case, Lamont Albers, Harry Mathos

Past Kolby Crabtree

Seated: Roy Lembke, Kathy Bates, Rick Mealy, Standing L-R: Gary Hanson, George Bowman, Kay Curtin, Troy Larson, Bill Marten

George F. Bernauer 2017

Bill Marten, Donohue Associates (presenter), Harry Mathos, City of Beloit

Kolby Crabtree 2017

Rick Mealy, WDNR (presenter), Kathy Bates, MATC

Past service members

Seated: Leo Templeton, Pete Albers
L-R: Dale Neis, George Bowman, Gary Hanson, Lamont Albers, Carol Strackbein, Kay Curtin, Tom Mulcahy

Honorary members

Carol Strackbein, Leo Templeton, Pete Albers
Past presidents

Seated: Kelly Zimmer, Leo Templeton, Pete Albers, Sharon Thieszen, Carol Strackbein
Standing L-R: Tim Nenning, Jim Thalke, Gary Hanson, Dale Neis, Lamont Albers, Kay Curtin, Kevin Freber, John Bond, Lyle Lutz

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2018 board of directors

Front Row: Jeff Bratz, President, Sharon Thieszen, Past President, Jeff Simpson, President-Elect Rick Mealy, Director,
Back Row: Jeremy Cramer, Director, Don Lintner, Director, Jeff Smudde, Vice-President, Sue Leith, Director
Missing: Ryan Hennessy, Director
Service award

Karen Harter, WWOA (presenter),
Jeff Simpson, Crane Engineering

Membership award

Rick Mealy, WDNR (presenter),
George Bowman, Retired-Lab of Hygiene

Lifetime members 2017

Roy Van Gheem, Jeff Simpson, Crane Engineering,
Dan Waala, Village of Jackson

Special award

50th conference attended

Leo Templeton and Pete Albers

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Ostara Nutrient Recovery Technologies
Scholarship recipients

**WWOA/Crane scholarship**

Jeff Simpson, Crane Engineering, Margaret Johnson

**WWOA scholarship**

Rick Mealy, WDNR, Ryan Gardner

**NCL scholarship**

Mike Raynovic, NCL, Billie Komorowski

**WWOA would like to recognize the following individuals and organizations for their special contributions to the conference**

**On-Site Pre-conference registrations:**
Mona Johnson (ByTec Resources)

**Registration help:**
Mary Knude (Fond du Lac WWTP), Wendy Hanley (Baraboo WWTP), Jan Bance (Baraboo WWP), Teresa Lintner (New Holstein), Steve Meifert (Sheboygan WWTP), Chris Meifert (Plymouth)

**Signage:**
Troy Larson, Randy Langer, and Sara Treffert (Strand Associates)

**Abstract booklet:**
Amy Kistner (AECOM)

**Photography:**
Tom Crouse (Donohue & Associates)

**Exhibitor video production:**
Ryan Mulcahy (Mulcahy Shaw Water)

**Awards:**
Randy Herwig (MSA Professional Services)

The WWOA Board offers special thanks to everyone that contributed to the Conference.

Your hard work is appreciated by all.
Call for technical papers 2018

The WWOA Technical Program Committee is requesting your assistance in developing the Technical Program for our 52nd Annual Conference to be held October 16 – October 19, 2018, at the Grand Geneva Resort, in Lake Geneva, WI.

Technical papers are being solicited at this time for the Technical Program. The Committee is especially encouraging members actively involved in the day-to-day operations of a wastewater facility to prepare and present technical papers at the Conference. The following are some of major subject areas that presentations may cover. Papers dealing with other topics will definitely receive consideration/use by the Committee.

1. Activated Sludge
2. Biosolids: Handling and Processing
3. Nutrient Removal – Biological and Chemical
4. SCADA/PLC: Design and utilization
5. Plant Operations: Replacement/Repair
6. Ordinances/Public Relations
7. Septage/Compliance
8. Municipal/Industrial Relations
9. Maintenance Practices & Methods
10. Safety & Health Issues, Personnel & Process
11. Regulations, Watershed Issues
12. Laboratory Practices & QA/QC with analysis
13. Excel and Word: Make record keeping easier
14. Treatment Facility Performance
15. Receiving Water Quality Issues
16. Collection System I&I / CMOM/Lift Stations

Submit your outline(s) on the 2018 Conference Submittal Form (via e-mail in a word document preferred) by January 19, 2018 to:

Jeff Smudde
Phone: 920.438.1071
New Water
2231 N Quincy Street, Green Bay, WI 54302
Email: jsmudde@newwater.us

Please consider responding to this request or forwarding it on to someone who may be interested in participating. The strength of the WWOA is in the sharing of ideas and information. The success of this organization is dependent upon you the professional in water reclamation. Please consider making a difference!

Sincerely,
Jeff Smudde 2018 Technical Program Chairperson

(continued on page 31)
52nd Annual WWOA conference submittal form

Major Subject Area* _________________________________________________________________________________
*Pick subject area from previous page. If other please explain

Technical Presentation Subject _________________________________________________________________________

Author(s) / Presenter(s) _______________________________________________________________________________

Employer / Affiliation ________________________________________________________________________________

Address ___________________________________________________________________________________________

Email Address __________________________________ Phone _____________________ Fax _____________________

Author is actively involved in the day-to-day operation of a WWTP? Yes________ No________

Author is an active member of WWOA? Yes_______ No_______

Brief Description of Presentation (please type or print clearly; attach additional pages if necessary):

__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________

Submit your outline(s) on the 2018 Conference Submittal Form (via e-mail - preferred in a word document format, or mail)
by Jan. 19, 2018 to: Jeff Smudde, New Water, 2231 N Quincy Street, Green Bay, WI  54302
920-438-1071    jsmudde@newater.us

Word file for 3-submission at www.wwoa.org/organization/annual-conference/
2017 operators competition had six teams

This year's Operators Competition was a huge success. With six teams competing, it was bound to be a very tight competition. The six teams worked through four tough events prepared for them with focus on Collection Systems, Maintenance, Laboratory and Process Control.

Without teams, there would be no competition, so my thanks to all the competitors!

A special thanks to our volunteers who acted as Judges for all the events. I would like to acknowledge and thank for their hard work and time making this another excellent event.

Matt Schmidt, Mark Duerr, Marc Zimmerman, Holly Blazer, Jeff Mayou, Krista Edmunds, Aaron Eichhorst, Josh Voight, Bobby Zepnick and Jim Miller.

In addition, I wish to recognize Jake Becken, Justin Jerabek, and Jenny Pagel who volunteered to serve as stand-by judges.

Thank you to all the sponsors of the event with supplies and equipment;
NCL of Wisconsin
Flygt a Xylem Brand
Core & Main (aka HD Supply)
JF Ahern
Mulcahy Shaw Water
Ferguson Waterworks
Central States Water Environment Association

A special thanks to Jeff Bratz and Karen Harter for prompting me when I needed it…which was frequently, and to Board Members Jeremy Cramer and Jeff Smudde for helping me set up the competition area. It was a busy day!!

The Collections Event had the teams fixing a section of 8” PVC pipe with another piece of 8” PVC pipe using a saddle. Each section of pipe had to be cut and made by the teams. At the same time, they had to set up a flow meter in a flume to send a signal to the sampler to sample at a given rate.

The Maintenance Event was replacing a seal in a submersible pump. Teams had to lift the pump with a tripod, set it in the work area, disassemble the pump, replace the wear parts, reassemble it and reinstall the pump into its original location. This proved again, to be a great event, challenging the team’s mechanical knowledge and skills.

The Lab Event was a completely different challenge this year that involved a mock lab audit. Instead of demonstrating technique for a specific test, teams were asked to put on an auditor’s hat and use their knowledge of testing to identify deficient practices. This event also included a written test.

The plant Process Control Event tested the team’s knowledge of plant operations and problems that are encountered in treatment facilities.

CONGRATULATIONS to all the participants, well done!

After all the dust cleared…
In 3rd place, was the Rag Babies, team from the Southeast Region
In 2nd place, was Lake Michigan Defenders, team from the Lake Michigan Region

And the winner of the 2017 Operators Competition was…. Stinks Like Team Spirit, team from the Lake Michigan Region

A big thank you to all the teams and their participants in the 2017 Operators Competition

<table>
<thead>
<tr>
<th>Team Name</th>
<th>Members</th>
<th>Region/ School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Activated Squad</td>
<td>Josh Ritchie, Ryan Gardner</td>
<td>NWTC Captain</td>
</tr>
<tr>
<td></td>
<td>Brandi Saylor, Cody Lax</td>
<td></td>
</tr>
<tr>
<td>Poo Crew</td>
<td>Zach Thomas, Alex Smudde</td>
<td>North Central</td>
</tr>
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<td></td>
<td>Capt. Travis Dulek, Jacob Wilcox</td>
<td></td>
</tr>
<tr>
<td>Lake Michigan Defenders</td>
<td>Corey Evers, Ed Bellin</td>
<td>Lake Michigan</td>
</tr>
<tr>
<td></td>
<td>Ashley Lloyd</td>
<td></td>
</tr>
<tr>
<td>Stinks Like Team Spirit</td>
<td>Joe Watson, Billie Komorowski</td>
<td>Lake Michigan</td>
</tr>
<tr>
<td></td>
<td>Andrew Vitek</td>
<td></td>
</tr>
<tr>
<td>Pointer Pride</td>
<td>Jacob Olson, Melissa Ludke</td>
<td>UWSP</td>
</tr>
<tr>
<td></td>
<td>Hunter Willis, Bob Biedrzycki</td>
<td></td>
</tr>
<tr>
<td>Rag Babies</td>
<td>Ben Huffman, Melissa Ludke</td>
<td>Southeast</td>
</tr>
<tr>
<td></td>
<td>Tyler Wollersheim</td>
<td></td>
</tr>
</tbody>
</table>

We look forward to the 2018 Operators Competition at the Grand Geneva Resort in Lake Geneva, WI.

-Rick Mealy
2017 operators competition winners

First Place: Stinks Like Team Spirit

Second Place: Lake Michigan Defenders

Third Place: Rag Babies

Midwest Water and Wastewater Operator Expo

Feb. 6 and 7
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Public Works Sales Holding  
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Xylem Analytics/YSI  
Xylem Flygt  
Xylem Water Solutions  
Zoeller Pump Co.
2017 WWOA conference at a glance, Madison Marriott West
Wrap up of the 2017 conference at Middleton

The 2017 WWOA Annual conference in Middleton this year was a huge success with over 840 registered attendees and “walk-ins”. We had a record number of Bicycle Riders and Sporting Clays participants and the golf outing was also well attended.

The pre-conference secessions kicked off our Technical program followed by the “meet and greet” in the Hotel atrium.

Our Keynote Speaker, LeRoy Butler from the Green Bay Packers was very funny and gave a summary of his career from childhood to the pros. He also had fun picking on the WWOA Board members sitting in the front row with Purple shirts and asked if they were in all Viking fans!

The conference continued with the vendor displays and Technical secessions. We had a record number of vendors this year with 159 booths. Hats Off to Karen Harter for her diligence and hard work getting the vendors registered.

Thursday continued with the final Technical secessions including a special Septage Compliance secession in the afternoon. The business lunch and elections were held as normal and new board members were elected. Thursday night featured the awards banquet and entertainment provided by comedian Dobie Maxwell who had the crowd smiling and laughing.

The conference concluded with our Farewell Breakfast on Friday and our featured speaker Mr. Greg Paul who gave a talk on “The Gut-Bug Connection”.

The WWOA Board would like to thank all our sponsors and helpers and we look forward to seeing you next year at our annual conference at The Grand Geneva Resort in Lake Geneva, October 16-19, 2018

LIST OF SPECIAL SPONSORS AND HELPERS
Coffee sponsor for Wednesday and Thursday: 4RF and General Engineering Company along with WWOA
On-site Pre-Conference Registrations - Mona Jackson, (ByTec Resources)
Registration Help - Mary Kunde (Fond du Lac WWTP), Wendy Hanley (Baraboo WWTP), Jan Bance (Baraboo WWP), Teresa Lintner (New Holstein), Steve Meifert (Sheboygan WWTP), Chris Meifert (Plymouth)
Signage - Tory Larson (Strand Associates), Randy Langer (Strand Associates), Sara Trefert (Strand Associates)

Respectfully submitted,
Jeff “Juice” Simpson
2017 Technical Committee Chair

Farewell breakfast
New Holstein hosts Lake Michigan August WWOA meeting

The August 17th Lake Michigan District meeting in New Holstein was another successful meeting with approximately 82 operators and septage haulers, along with 14 equipment and process vendors. A special thanks to Donohue & Associates for sponsoring the treats during the breaks and for William/Reid for sponsoring the lunch.

The first presentation of the day was by Don Lintner of City of New Holstein and Nathan Cassity of Donohue & Associates who spoke on Not Your Typical Turbo Blower. Don explained the type, condition, and horsepower of the existing aeration blowers. Nathan next went into discussing the Facilities Plan components where rotary lobe blowers were compared to single-stage centrifugal blowers. The Facilities Plan further broke down and analyzed the single-stage centrifugal blowers into high speed turbo, integrally geared with sliding vane, and integrally geared with VFD. Following the blower analysis, Don and Nathan showed construction photos from the project. Nathan ended the presentation by describing the operation and results from using the selected integrally geared with VFD blowers that were installed.

Next on the agenda was Bill Sprague of L & S Electric. Bill had a presentation titled Electric Motor Basics. Bill began the presentation by describing what is an induction motor. Then Bill went on to discuss the building of an electro magnet and induction motor construction. Bill explained that AC induction motors can be single or 3-phase. Next, Bill elaborated on the different motor frame enclosure styles and specific duty types that are available. Lastly, Bill listed the different insulation classes that are available and what maximum winding temperature they are associated to. Bill then ended his presentation by providing information regarding motor bearing lubrication practices.

Aaron Eichhorst called the WWOA-LMD business meeting to order. Last quarter’s minutes and treasurer’s report were approved. Following the approval of the last meeting’s minutes, Aaron displayed and read the treasurer’s report. Aaron’s first item of new business was that the Lake Michigan District was fielding two operator competition teams for 2017.

The second item was that Aaron reminded everyone to start thinking of nominations for vice chair for the 2018 term because elections will take place at the December meeting. Dick Sachs of the WDNR gave the DNR update. First off, for the DNR update, was that applications for the November 1st Operator Certification exams are currently being sent out. The second item was that the study guide for Subclass N, Total Nitrogen Removal, is not yet available and will not be offered in November. For the third item, Dick discussed all of the DNR personnel changes that have recently occurred. Lastly, Dick stated a new SSO reporting form was sent out to all permittees in early July. If you experience a SSO or TFO, make sure to use the current form to report it. Following the DNR update, Jeff Smudde gave the WWOA Board of Director’s update.

continued on page 38
The third presentation of the day was by Loretta Anderson of Kennedy Valve. Loretta's presentation was titled 2” – 12” AWWA Valves In-Plant Valve Products. Loretta discussed the McWane and Kennedy valve, along with the number of manufacturing plants and foundries that they currently operate. Loretta provided the list of the different rubber seated valves currently offered and the associated uses of each valve type.

Loretta went on to discuss the rotating disk gate valve, which is the only metal seated valve currently offered by McWane. Loretta explained how the rotating disk gate valve is different from the rubber seated valves and shared recent reliability stories they have had regarding the valves operation. Loretta ended his presentation by exploring the different accessories that can be added to valves to assist operators with their different needs.

The last presentation of the day was by Megan Levy of Focus on Energy. Megan's presentation was titled Tracking Energy Use in Wisconsin’s Wastewater Treatment Plants. Megan started off by giving an introduction of the Office of Energy Innovation. Megan stated that the Office of Energy Innovation and Focus on Energy are now partners. Megan explained what Focus on Energy is and what they do.

Megan then went on to discuss the Wastewater Bridge program and presented top 25 low cost or no cost measures to implement at your WWTP to reduce energy use. Next in the presentation Megan explained the new energy section to the CMAR, along with why it was added. In addition, Megan went through the energy audit requirements of the Clean Water Fund Program. Megan ended the presentation by showing the different Focus on Energy Incentives currently available for water and wastewater projects.

Don Lintner, New Holstein Water/Wastewater Foreman, gave an introduction of the WWTP location and collection system, flows, loadings, and treatment processes. A plant tour followed the plant introduction.

The next meeting will be in Wautoma on December 14, 2017. Special thanks to the New Holstein utility staff for hosting this meeting.

Minutes submitted by Josh Steffeck, Lake Michigan District Secretary/Treasurer

2018 Conference Hotel Accommodations

Reserve your rooms now for the 2018 WWOA Conference at the Grand Geneva Resort in Lake Geneva, WI.

For rates and registration information, go to: https://www.wwoa.org/organization/annual-conference/
**MATC looking for photos and stories**

Milwaukee Area Technical College will be celebrating 50 years of educating past, present and future professionals in air, water, and food protection in March of 2018.

Everyone is invited to attend and see previous classmates, network and learn about potential careers in air, water and food from MATC graduates and employers.

They are seeking pictures and stories related to the following MATC programs:

- Environmental Health (1968 - 1986)
- Water and Wastewater Technology (1968 - 1986)
- Environmental and Pollution Control Technology (1986 - 2009)
- Environmental Health and Water Quality Technology (2010 to current) program graduates.

Please contact Instructor/Club Advisor Kathy at batesks@matc.edu.

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**Southern region tuition aid**

The Southern region is proud to announce their tuition aid program for continued education of WWOA Southern Members through the attendance of Wisconsin DNR approved advanced course work related to wastewater treatment or for credit courses at an accredited university, college or technical school while working towards a degree related to the wastewater/water industry.

For more information and tuition aid criteria, go to https://www.wwoa.org/member-tools/scholarship-and-tuition-aid/.  

Questions, please contact Marc Zimmerman at zimmermannm@ci.janesville.wi.us.

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Robert E. Lee adds senior project manager

Robert E. Lee & Associates, is pleased to announce the addition of Dean LaFleur, P.E. as a Senior Project Manager in the firm’s Water & Wastewater Engineering Department. Dean has over 25 years of experience working in design, construction and operations of water and wastewater treatment plants. He has a Bachelor of Science degree in Civil Engineering from Michigan Technological University, and a member of the American Society of Civil Engineers, National Society of Professional Engineers & Wisconsin Wastewater Operators’ Association.

Robert E. Lee & Associates, Inc., located in Hobart, Wisconsin, is a consulting firm providing engineering, environmental, natural resource and surveying services. The firm provides these services to public and private clients throughout Wisconsin and upper Michigan.

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Jon Butt, Clarifier Editor
c/o Symbiont
6737 W. Washington St., Suite 3440
Milwaukee, WI 53214
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MARK YOUR CALENDAR

February 22, 2018
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Middleton

March 20, 2018
Spring Biosolids Symposium
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As the temperatures continue to decrease it is important to consider potential seasonal impacts on our wastewater plants. Of note, different types of bacteria grow in different temperature ranges. (The types of bacteria in your plant may be significantly different in the summer vs. the winter). Also, the metabolic rate for bacteria decrease by 50% for every 10 degree C decrease in temperature so a higher MLSS is often needed in the colder months vs. the warmer months. It is relatively common for certain plants to have target MLSS concentrations up to 1 ½ times greater in the winter months than the summer.

**Nitrification Impact**
Nitrifying bacteria grow slowly and require longer sludge ages (generally at least >5 days and longer as temperatures decrease). Most municipal plants nitrify well and it is uncommon to have elevated concentrations of ammonia in the effluent. If ammonia increases to above 1-2 mg/L it is a good idea to determine the cause of this and take appropriate action immediately. Note that in addition to ammonia permit levels, elevated concentrations of ammonia have the potential to increase BOD through nitrification within the 5 day BOD test. Below is a checklist of certain things to take into consideration in the event of elevated ammonia concentrations.

- **Dissolved Oxygen**
- **Recommended approximately 2 mg/L or >**
- **Sludge Age**
- **Must be long enough to sustain population of nitrifying organisms (general minimum 5-10 days)**
- **Alkalinity/pH**
- **pH should be >7 at all times**
- **Alkalinity (not carbonaceous BOD) is the “food” for nitrifying bacteria. Alkalinity concentrations should be >100 mg/L at the end of treatment at all times.**
- **Health**
- **Nitrifying bacteria are sensitive and often the first bacteria impacted by stress and inhibition**
- **Microscopic evaluation is a good tool to determine if a recent stress has been present within the system (i.e. dead/damaged filamentous bacteria, break-up of floc structure, loss of higher life form organisms etc.)**
- **High volatile acids (especially odd #carbon ones) are a common reason for inhibition of nitrification. Microscopic evaluation can determine if septicity is a potential concern.**

**Summary**
It is important to remember that our wastewater plants are complex biological processes. Temperature impact is a major consideration to consider as we head into the winter months. Best wishes to everyone and stay warm!

rhennessy@mco-us.com (920) 573-2820

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**Exhibitor registration for 2018 WWOA Conference in Lake Geneva is now open**

For more information and a registration form, check out the WWOA website
Elkhart Lake hosts Southeast September WWOA meeting

By: Nate Tillis

The WWOA Southeast District Regional Meeting on September 14th, was hosted by the Northern Moraine Utility Commission and held at Three Guys and a Grill East in Elkhart Lake. A warm welcome was given by Scott Randall, WWTP Superintendent, Northern Moraine Utility Commission. He spoke about the unique challenges of their plant which began with a BOD limit only WPDES permit. Northern Moraine Utility is a regional treatment facility for 4 communities: Glenbuelah, Crystal Lake, Elkhart Lake, and Greenbush.

Following the introduction to the February meeting, Southeast District Chair, Ben Huffman began the meeting. Our first speaker of the day was Cullen Braun of VPC who spoke on Blower Auditing Techniques and Efficiency Improvements. Cullen demonstrated how common variables on aeration blower instrumentation such as discharge temperature, blower speed, power consumption and discharge pressure could be used to verify blower performance and areas for improvement. The procedure also provides predictive maintenance indicators such as blower wear and blower speed concerns. Sample calculations on the increased operating costs associated with excessive pressure drop in distribution piping, inlet filter cleanliness and discharge silencers were provided. The importance of developing a baseline of blower performance was discussed when considering new technologies and how to interpret the data to determine system operating range.

The second speaker was Greg Schwartz of Aquafix to speak on Eliminating Redworms and Midge Flies in Wastewater. Greg

*continued on page 44*
explained the conditions favorable to midge fly propagation and the hazards associated with their presence. They often consume nutrient rich solids and can cause poor settling. Redworm are red in color due to their absorption of hemoglobin in sludge. They can be found in final clarifiers, sand filters or anywhere water is still and dormant for longer lengths of time. Greg proposes chemical inhibitors to control their populations.

After a break, Rob Jansen of Salsnes filter gave a talk on a primary settling basin alternative entitled ‘Time to Re-Think Primary Treatment.’ A Salsnes Filter system combines three critical processes into one compact unit – solids separation, sludge thickening and dewatering. The rotating filtermesh removes >50% TSS, and >20% BOD from effluent and produces drier sludge (20-30% dry matter). The units can be arranged in parallel to increase flow capacity and can be installed indoors or outdoors. By using about 1/10 of the footprint of traditional settling basins, it can be an ideal solution when space is at a premium. The Salsnes units also have a smaller carbon footprint and may reduce volume of total sludge.

The next speaker was Alec Bartolai of Sargento Foods. Sargento Foods is a family-owned and –operated business headquartered in Plymouth, Wisconsin. Alec is an engineer in the Sustainability division of the company. He spoke on The Importance of Communicating with Local Industries. Alec emphasized the idea that both treatment facilities and industries have a common goal of reducing wastewater and loadings. Communication with industry is critical to manage slug loads that might cause treatment plant upsets. Many industries partner with treatment facilities to broker deals with high-strength waste, solid wastes or disposal. Often, industries have outreach campaigns and programs that may be able to reach customers in a more efficient fashion.

The DNR update was given by Curt Nickles who spoke about the operator certification exams deadline and updates on the Total Nitrogen Removal subclass. There have been many staffing changes including The OpCert coordinator and the CMAR/CMOM coordinator. A new SSO form has been released. Refer to the DNR website for details.

The business meeting was called to order and Southeast Region officers introduced. There was a motion carried to adopt the May minutes and another motion carried to accept the treasury report. An award was given to Scott Randall of Northern Moraine Utilities for hosting the Fall Meeting. After a few announcements on upcoming meetings and events the floor was open for comment. A passionate argument was made...
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opposing changing the name from Wisconsin Wastewaster Operator Association to Wisconsin Resource Recovery Specialists. The meeting was then adjourned and a delicious lunch was served.

The final speaker of the day was Jessica Noegel of Aquarius Technologies to speak on an alternative secondary treatment technology: Aquarius NEBULA MultiStage Biofilm System. Treatment is achieved through spatial separation of microbial populations fixed to a media surface.

Successive stages of biofilm media create separate microbial living conditions and food sources within the process resulting in a highly effective food chain. High food to microorganism (F/M) ratios create feast conditions in the first stages encouraging rapid growth of lower life forms. Low F/M ratios and famine conditions in later stages promote higher life forms that consume the lower life forms. This process can yield less biosolids, tolerate flow fluctuations and reduce or eliminate the amount of return activated sludge volume.

CSWEA-WI section, WWOA, DNR, WI League Municipalities, and MEG are busy planning the next Government Affairs Seminar scheduled for Thursday, February 22, 2018 at the Marriott in Middleton, WI. This seminar promises to be as good as ever covering topics such as:

- New news on the DNR and regulations
- Understanding your role in the regulatory political process
- Updates on watershed nutrient strategies for compliance
- Why the past is no longer good enough for variances such as chloride and mercury and why you should want to know
- Risk assessments of various phosphorus treatment technologies

This year’s seminar will have something for everyone, large or small. Whenever possible, cases studies will be used to help illustrate changing regulations. Experts will be available to field questions throughout the day.

New this year – in an effort to save cost, we will not be mailing a conference brochure. Conference information will be sent by email and will be posted at CSWEA and WWOA websites.

Help us spread the news of the seminar to make this the best year ever.
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Baxter & Woodman appoints new water department manager

Mr. Patrick Planton, PE, has joined Baxter & Woodman, Inc. Consulting Engineers, as Water Department Manager. He brings over 34 years of extensive experience in design, engineering, and project management of drinking water supply, pumping, storage and treatment facility projects across the US.

As Department Manager, Mr. Planton’s focus will be maintaining superior client service and adhering to high quality technical standards in Baxter & Woodman’s water system projects.

He has a B.S. in Civil and Environmental Engineering from the University of Wisconsin- Madison, an MBA from University of Wisconsin-Oshkosh, and is a registered Professional Engineer in Wisconsin.

Mr. Planton regularly shares his knowledge with industry professionals through active participation in many technical organizations, including the American Water Works Association, Wisconsin Rural Water Association, Wisconsin Wastewater Operators’ Association, and the American Public Works Association. He served as AWWA-Wisconsin Section Chair in 2015.

“Pat is an excellent fit for this leadership position. He brings invaluable experience related to public works water infrastructure projects throughout Wisconsin. I am excited for the new opportunities and fresh perspective his addition will bring to Baxter & Woodman and our clients.” said Louis D. Haussmann, PE, Vice President and Chief Operating Officer.

Baxter & Woodman, Inc. is an employee-owned Engineering News-Record Top 500 Design Firm that provides planning, design, construction and technology services for water, wastewater, stormwater and transportation facilities for municipalities, counties and state agencies. Environmental, geographic information systems (GIS), water and wastewater operations, and advanced technology needs complement the firm’s civil engineering expertise. Clients are served from nine office locations throughout the US.

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