Aerial view of Bluffview Sanitary District

46th Annual W.W.O.A. Conference
October 9-12, 2012
Kalahari Resort, Wisconsin Dells
Host: Bluffview Sanitary District and Badger Army Ammunition Plant

Aerial view of Bluffview Sanitary District
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.
Presidents message: Post aeration blues

I was thinking of suggesting “WWOA President Randy Thater inspecting post aeration system” as the caption for the accompanying photo. As the more astute of you will notice, I’m actually slipping in a vacation photo. This was taken at McDonald Falls in Glacier National Park on our annual road trip in June. And no, even though this would help with post aeration issues to be addressed in our upcoming plant upgrade, I didn’t have the chutzpah to pass it off as work travel.

On the home front, June was one of the driest on record. Our official total at the plant was 0.58 inches for the entire month. Like many other plants, we are a cooperative weather observer reporting to the National Weather Service. Combined with a dry late May and early July, that left everything golden brown and the farmers in a world of hurt. But as weather has a habit of doing, late July got us caught up near average and things have greened up nicely, at least as far as lawns go. Of course, that will also end our break from having to mow - not only at the plant, but at lift stations, retention ponds, etc. around the city. Contrast that with the prior three years of abnormally wet Junes and at least we didn’t have to deal with I&I issues here at the plant and in our collection system this year.

It has been a rather busy six weeks. Between the aforementioned road trip and my annual trip to the NASCAR race at the Brickyard, I sandwiched in my trip to attend the Northwest region meeting in Luck. As usual it was well attended and was very educational. Among topics were a talk on road construction signage and another on fracking sand mining for the oil industry. Lunch was up to the usual high standards as well. Coincidentally, the caterer was the same establishment where I had dinner the night before. Fortuitously the lunch entrée was pulled pork, while my dinner selection was a nice brisket sandwich – so I was able to sample a good selection of their offerings. The restaurant operators also compete in regional barbeque competitions and display numerous trophies in their entryway. Being a loyal Waukeshavian, I’d match the product from Pat’s Place just down the road from our plant against them, but it was very good.

Anyway, my congratulations to the regional officers, Jeremy Boe, Brian Akason, Mike Romsos, and Wally Thom, for putting together another wonderful meeting. And thanks also to the Luck staff for agreeing to be the hosts. It was especially nice seeing Wally again. He was on the state board back when I was a regional officer. Along with the recently retired Ron Dickrell from Marshfield, he is one of my role models for serving the members of this fine organization. I did take a couple vacation days off and spent the weekend after the meeting taking in the sights of Polk County. Mostly just drove around taking in the natural beauty of the place, the roads along the St Croix National Scenic River (both sides) and the Fish Lake Wildlife area were two of the highlights. We also stopped in at the small museums in Balsam Lake and Frederic. I enjoy going to those types of places and seeing what the locals find special about their communities.

Next up is my final regional meeting visit to the Southern district in Janesville. Then the next week is our final board meeting prior to the annual conference. At this point everything is pretty well set up. I just checked out the website and the conference brochure, exhibit rules and exhibitor letter and application are all posted on line. And my hard copy just arrived in yesterday’s mail. By the time this makes print, the exhibitor registration will be long closed, but you should have another couple weeks to make the advanced registration.

Web registration is again offered this year. As I’ve mentioned in previous messages, we’ve put significant work in fixing some of the problems encountered last year. We hope you find it a much better experience this year. In addition we now offer new member application and existing membership renewal on line. I just recently signed up two new employees at the plant and found the process quite painless. And the new member packets followed in short order.

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If you are planning on attending the conference and you are not a member, you should consider our non-member plus membership option. It is the same price as our member rate plus the new membership fee, and it is five dollars less than the non-member rate. So you can save five dollars and get a two year membership to WWOA in the process. Of course if you are not a member, you are reading this from a ‘borrowed’ copy of the Clarifier, since that is one of the perks of membership!

This is my last presidential message before my term as president ends. As I look forward to my last quarter as president, I can’t help but ponder how easy it has went thanks to the work from all those that give of their time to WWOA. As soon as I start naming names, I know that I will be forgetting someone. In this and previous messages, I’ve mentioned a few of the regional officers by name. This is not to minimize the contribution of all twenty seven regional officers from the six regions. They have all volunteered their time to put on the regional meetings. They also serve as judges for the regional operator of the year award nominations, they stump to get nominees for the state-wide awards, push to put together teams for the operator competition, and generally do all it takes at the local level to keep this organization functioning.

There are the committee chairs and committee members that are not members of the state board. Just to mention a few are John Leonhard and Dean Faulkner working with other members of the Permanent Arraignments committee. They work to select the sites for future state conferences. Jon Butt is the Clarifier editor guiding the helm and handling the business aspects, while Doralee Piering is in the trenches doing the issue layouts. (I’m sitting here last minute, trying to get this message out to them by the issue deadline!) Carol Strackbein and Jim Shaw chair the Exhibits, Manufacturers & Consultants committee putting together the Exhibition portion of the conference. Tom Crouse chairs the Historical committee, working with Ron Altmann and Richard McKee to put together the displays at the conference.

Finally, there is your board of directors. Directors Sharon Thieszen, Jim Bergles, Jeff Bratz, Lyle Lutz, and Kelly Zimmer each chair or serve on two or three committees. As Vice President, Kevin Freber chairs the technical committee and is in charge of the state conference planning. On Thursday evening I will be passing the gavel to President-Elect Wade Peterson. We will bid farewell to Past President Dave Carlson who will finish his eight years of service on the board. And I will join him in the ranks with the other past presidents I was proud to serve under; Tom Kruzick, Kay (not Jane!) Curtin, Jim Thalke (enjoy your retirement, Jim!), John Bond, and Bruce Bartel.

To all these people, and to all the members of WWOA, I want to express my heartfelt thanks for your contributions to our organization and our profession. Hoping to see all of you in Wisconsin Dells.

Sincerely,
Randy Thater,
President, WWOA
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In 1942, the U.S. Government built the Badger Army Ammunition Plant (BAAP) located in Sauk County, Wisconsin, to manufacture nitrocellulose-based propellants to support the United States’ efforts in World War II. BAAP is a government-owned, contractor-operated military industrial installation that spans approximately 7,275 acres. BAAP operated in full production mode during World War II, the Korean War and the Vietnam War. During these periods, BAAP employed in excess of 5,000 people. After each conflict subsided, the facility was placed in standby status, employing a much smaller staff that focused on maintenance and upkeep, with the goal of rapid re-initiation in times of national crisis.

After being placed on standby status in 1975, it was finally declared excess property by the Army in 1998. Since that time, the Army has been demolishing and disposing of the extensive plant infrastructure, which includes buildings, railroad lines, water and sewer lines, roadways and bunkers in preparation for the transfer of the property to various public entities. The four new proposed owners of BAAP lands are the U.S. Department of Agriculture, Ho-Chunk Nation, Wisconsin Department of Natural Resources, and the Bluffview Sanitary District. After demolition is complete, the only remaining process structure that will be left from the original Army installation is an Imhoff tank from 1942.

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The original wastewater treatment facility at BAAP was constructed in 1942 and consisted of a coarse bar screen, grit removal and Imhoff tank.

The facility was upgraded in 1971 to include secondary treatment with a trickling filter, final clarifier and chlorine contact tank. Chlorination is no longer needed because treated effluent is discharged to a small ditch that conveys the effluent to an absorption cell for groundwater disposal. The facility also contains a series of sludge drying beds used to dewater and store sludge generated in the primary and secondary process. (Insert #2 – Aerial view of Bluffview Wastewater Treatment Facility)

What is unique about this treatment facility is that it utilizes an Imhoff tank in the treatment process. The Imhoff tank is 60 feet long by 30 feet wide and approximately 30 feet deep. The process relies on gravity settling of solids which collect in sludge hoppers at the bottom of the tank. The Imhoff tank completes both primary settling and anaerobic digestion in one tank.

The upper chamber promotes sedimentation where solids slide down steep slopes into the lower chamber where sludge is collected and digested. Anaerobic sludge is periodically pumped from the bottom of the Imhoff tank to the sludge drying beds.

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The facility is designed to treat an average flow of 600,000 gallons per day (gpd) and 110 pounds of BOD per day. Currently, the facility receives approximately 50,000 gpd and 73 lbs of BOD per day. The Bluffview Sanitary District (District) was formed in 2002 as a municipal entity of the Town of Sumpter to provide the residents of Bluffview with sanitary sewer service. Bluffview is a rural residential community that was built in 1942 to provide housing for workers at the BAAP. Many of the original housing units still remain in Bluffview. Currently, there are approximately 500 residents living in Bluffview. In July 2012, the District took ownership of BAAP’s existing sewer infrastructure.

Since the District took ownership, a Wastewater Facility Plan was completed. The Plan evaluated alternatives to provide wastewater treatment for the District over the next 20 years. The improvement alternatives included treatment plant upgrades as well as alternatives for regionalization. The selected alternative may include a plant upgrade that will continue to use groundwater disposal. The upgrade will utilize the Imhoff tank in some capacity, which ensures that this 70-year-old process will continue to provide service for another 20 to 40 years.

There’s Still Time!

The deadline for registering your operator’s competition team for the annual conference has been extended until September 15. Do not delay.

If you have questions, contact any Board Member. Their contact information is found on the side of the front cover. The competition is fun and rewarding. You will not be disappointed if you form a team.

Act now, do not delay.
BREAKING NEWS...

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Phosphorus Removal from Aerated Lagoons: Feasible? Yes. But at What Cost?

By Pat Morrow, P.E., MSA Professional Services

How much does it cost to reduce effluent phosphorus in lagoons? This question will be on the minds of many Wisconsin municipalities and sanitary districts as they receive new Wisconsin Pollutant Discharge Elimination System permits that require lower phosphorus limits. Facility owners will evaluate the best methods for removal of as much phosphorus as possible, both from treated effluent and use of watershed-based approaches, such as adaptive management and pollutant trading, where eligible. It has been demonstrated that chemical-based phosphorus removal is possible for stabilization ponds and aerated lagoons using chemical precipitation methods. The question is how much phosphorus can be removed from lagoons and at what expense?

Chemical precipitation-based phosphorus removal at lagoon facilities can eliminate a significant portion of the phosphorus that would otherwise be going to the receiving stream. However, since all lagoons are not equal in terms of effluent quality for BOD and TSS, each system will be capable of varying degrees of phosphorus removal. Further, covered lagoons can generally achieve lower effluent phosphorus levels than uncovered lagoons.

The O’Dell’s Bay Sanitary District (New Lisbon, Wisconsin) owns and operates a 60,000 gpd aerated-lagoon facility. The District knew that it would eventually have to remove phosphorus from the final effluent, because of Wisconsin’s new Water Quality-Based Effluent Limits. Since the O’Dell’s Bay facility discharges into Castle Rock Lake, a man-made lake in central Wisconsin, a phosphorus limit of 0.30 mg/L or less could be expected.

Faced with the future effluent requirements, the O’Dell’s Bay Sanitary District was interested in testing the phosphorus removal capabilities of its existing lagoon system, which currently does not have to remove phosphorus. In order to determine a reasonable baseline for phosphorus removal, MSA Professional Services (Baraboo, Wisconsin) performed a pilot study to measure the overall chemical costs per pound of phosphorus removed at varying levels of treatment. The goal of the pilot study was to determine overall feasibility of achieving low level effluent phosphorus and the incremental cost of removal as the phosphorus concentration in the effluent was reduced even further. Like many aerated lagoon systems in Wisconsin, O’Dell’s Bay has three lagoons in series. Mixing is achieved through aeration to maintain a completely mixed reactor in the complete-mix cell, while in the partial-mix cell, aeration is supplied only for the carbonaceous and nitrogenous oxygen demands and solids stabilization. Settling of biological solids occurs in the third cell, followed by UV disinfection. Floating covers are installed on all three cells. They provide insulation to enable nitrification year-round and prevent algae blooms and associated TSS peaks that are common to uncovered lagoons. Because effluent phosphorus concentrations are impacted by effluent TSS concentrations, the floating covers also help maintain consistent phosphorus removal.

In cooperation with the Sanitary District, the pilot study team conducted three pilot runs from July 2010 to September 2011. Samples were collected on a weekly basis and the overall chemical costs per pound of phosphorus

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removed were measured. The pilot study team knew that lagoons typically require more alum than corresponding activated sludge-type systems. Further, as the phosphorus concentration decreases, the dosage of alum must increase in order to remove an equivalent mass of phosphorus. Therefore, the goal of the study was to feed between 3.5:1 and 1.5:1 molar ratios (aluminum:phosphorus) and document the associated phosphorus removal and corresponding expense.

To perform the study, alum was fed between the complete-mix and partial-mix lagoon cells. Storage and delivery tanks for the alum were installed next to an existing building. A chemical feed pump was mounted on a wall inside the building and chemical feed tubing was extended to the transfer manhole between the two lagoon cells. The goal was to maximize contact with the wastewater so the alum would attach itself to as much phosphorus as possible. Therefore, an alum injection apparatus, consisting of a recirculation pump, injection quill, and recirculation piping was devised to provide effective mixing and adequate contact time for the alum to scavenge available phosphorus.

Chemical costs for the three pilot studies supported industry-standard knowledge that (per pound) removal costs are lower when phosphorus concentrations are higher, ranging from $5.14 per pound of phosphorus removed to achieve effluent concentrations of 2 mg/L, to $10.88 per pound of phosphorus removed to achieve effluent concentrations of 0.4 mg/L. Results further
showed that the unit costs significantly increased once effluent phosphorus concentrations were reduced below 0.8 mg/L (see Figure 1). A summary of the pilot tests is contained in Table 1.

Table 1. Summary of Pilot Tests

<table>
<thead>
<tr>
<th>Pilot Test</th>
<th>Alum:P Ratio</th>
<th>Influent Total P</th>
<th>Effluent Total P</th>
<th>Cost/lb of P Removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.6:1</td>
<td>3.6 mg/L</td>
<td>0.43 mg/L</td>
<td>$10.88</td>
</tr>
<tr>
<td>2</td>
<td>1.7:1</td>
<td>6.0 mg/L</td>
<td>2.05 mg/L</td>
<td>$5.14</td>
</tr>
<tr>
<td>3</td>
<td>2.2:1</td>
<td>4.92 mg/L</td>
<td>0.91 mg/L</td>
<td>$6.65</td>
</tr>
</tbody>
</table>

The pilot study supported the common observation that removal of any target species by chemical precipitation exhibits diminishing returns as the concentration of the target species (phosphorus) decreases. In terms of dollars, the incremental chemical cost per pound of phosphorus removed increases dramatically as the effluent phosphorus concentration gets lower (see Figure 2). More alum is needed to remove the few remaining molecules of phosphate, because the alum has to ‘work harder’ to locate and bind with remaining phosphate molecules. This also results in more wasted chemical and higher dosages.

To help understand the concept, consider a bucket that is full of minnows. It is easy to get 20 minnows or more in a single scoop. Now consider the same bucket with only a few remaining minnows. Scoop after scoop, a few elusive minnows remain in the bucket. The effort required to remove those few remaining minnows can be compared to the chemical effort (and associated cost) required to get those few remaining phosphate molecules out of the waste stream.

These results demonstrate that although technological limitations do exist for achieving sub 1.0 mg/L effluent phosphorus levels at lagoon facilities, phosphorus removal to roughly 1.0 to 0.80 mg/L can be achieved at relatively

Figure 2

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low unit costs per pound of phosphorus removed. The O’Dell’s Bay pilot study provides another tool for owners and designers to use when evaluating the cost-benefit of varying levels of phosphorus removal in lagoon treatment systems. Lagoon owners need to keep in mind that economic hardship must be demonstrated to the Wisconsin Department of Natural Resources in order to receive a variance to the new water quality-based effluent limits.

There’s no easy answer. Owners must investigate all possible avenues for compliance, including treatment system upgrades and watershed-based approaches, if eligible. When evaluating the costs for compliance, an option to consider could involve retrofitting an existing lagoon system to remove phosphorus to roughly 0.8 mg/L using chemical precipitation methods. This level of phosphorus reduction could then be paired with pollutant trading within the watershed (if eligible) to offset the remaining phosphorus load.

This approach to compliance could be more cost effective than large-scale upgrades at the facility or wholesale replacement of the lagoon-based treatment technology already in place.

New Glarus Hosts WWOA Southern Meeting

The Southern region of WWOA held its meeting at the Edelweiss Chalet Country Club in New Glarus on Tuesday, May 22. There were several vendors at the club presenting their products allowing attendees to visit booths during the morning. The morning session included Owen Smith with the DWP presenting the Operator Apprenticeship Program; Jon Butt with Symbiont, who presented New WPDES permits; and Jack Saltes/ Amy Schmidt with DNR update. Lunch was served at the club. The afternoon started with the business meeting followed by Kevin Hopkins of Strand & Associates and Chris Collins of H&H Solar of Madison. The meeting finished at 3PM and participants could visit New Glarus WWTP. A total of 55 people attended the meeting.

The morning session started promptly at 9:00am with Jim Johnson introducing Nic Owen (City Administrator). He introduced the city from a tourism perspective and explained that the brewery expansion necessitated the WWTP expansion. He also mentioned the solar panel project as a part of the WWTP modifications.

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Following his presentation, Owen Smith of the Department of Workforce Development introduced participants to WWTP Operator Apprenticeship Program with all important elements in it. Those include on-the-job learning (90% equaling ~5568 hours) and paid related instruction (10% equaling ~ 432 hours.) The program uses a “hybrid” model where each apprentice must successfully complete learning hours and competencies as described in the program provisions. The program will prepare students to pass the industry certification from the DNR consisting of one general exam and three exams in the subclasses. Program details are available at http://sage.wi.gov/greening.htm

Next speaker, Jon Butt of Symbiont, presented new looks of WPDS Permits. Permits have been finalized and will be incorporated in the new permit renewal process. Jon has covered each section in WPDES permits including phosphorus limits, thermal limits, and other characteristics which are very specific to each plant. Data will have to be provided to DNR as part of the permit renewal process. He has also provided several examples of how the limits are calculated based on particular watershed (it may be TMDL or WQBEL) and explained the importance of paying attention to details (such as units). Dissipating Cooling (DC) is also an important issue for effluent discharge facilities as well as facility planning completed by certain dates. DNR is working on guidance document on operation and needs review (ONR), which will be coming out in couple of months. The new permits references future concentration limits and may include mass loading, DC criteria and will include compliance schedules. It will be necessary to gather data, talk to consultants and be prepared for a new renewal cycle (including adaptive management and trading.) It pays to be proactive.

Next speaker Jack Saltes of DNR spoke about several important topics. The phosphorus compliance schedule will be different. It may be looking at facilities at Water Quality Based Effluent Limits (WQBEL) & its basic facility continued on page 18
Cheese to power!

When the Beaver Dam Upgrade and Bioenergy Project is complete, Kraft Food’s high-strength cheese waste will be pumped to the Beaver Dam WWTF, where it will produce biogas and generate revenue.

To learn more, contact ATI at (262) 784-7690 or visit www.ati-ac.com.
Following that raffle prizes, courtesy of the City of New Glarus and participating vendors, were drawn and distributed.

Kevin Hopkins of Strand & Associates presented participants with the historical and technical information relating to expansion of the New Glarus WWTP.

The next speaker was Chris Collins of H&H Solar Energy Services (ccollins@hhsolar.org).

He covered the basics of photovoltaic cells, connectivity inverters to the grid, economics and technical installation details of many systems installed by the company.

Then he talked about minimal maintenance associated with the solar power and stated that business customers may count for more tax breaks as compared to individual customers to make solar power economically more feasible.

Motion was made to adjourn.

Motion was seconded and approved.

The meeting was adjourned and attendees were directed to New Glarus WWTP.

The next meeting is scheduled for Thursday, August 16 in Janesville.

Submitted By
Ryszard Zolnik
WWOA Southern District Secretary
Hmmmm……so you just sampled your stabilization pond effluent early in the morning and the pH is 6.8. You sampled it yesterday afternoon and it was 7.9. So now you sample it that evening at sunset and the pH is 9.2. What the heck is going on?! Is my pH meter not working?

Let’s take a look at what is happening. In the above illustration, let’s say the maple leaf is algae in a wastewater treatment pond. During the day, when the sun is out, all the algae that contain chlorophyll, a chemical that can absorb and convert the sun’s energy in the presence of water (H2O) and carbon dioxide (CO2), produces food (carbohydrates or sugars– C6H12O6) to grow and in the process gives off oxygen–O2.

Wow, now that’s a true “green” process! Mother Nature at her best, making sugar “simply” from water, carbon dioxide and sunlight. How cool is that!

When photosynthesis is occurring and taking up carbon dioxide, the pH in the water rises. There is less carbonic acid in the water. During the day, photosynthesis is going gangbusters and thus the pH will be highest in the wastewater pond at sunset. Make sense?

Now as the evening and night arrives, and with no sun, photosynthesis shuts down and instead, an opposite process called respiration takes place.

Now the oxygen is used up and produces carbon dioxide and water. When carbon dioxide dissolves in water it exists in chemical equilibrium producing carbonic acid: CO2 + H2O –> H2CO3

There is now more carbonic acid in the water and the pH goes down. With respiration occurring all night, the lowest pH will be at sunrise.

When carbon dioxide dissolves in water it exists in equilibrium with carbonic acid. During the night, this equation moves to the right, producing more carbonic acid (acidity) and thus pH goes down. During the day, this biochemical reaction moves to the left, and thus there is less carbon acid (acidity) and the pH goes up. Water hardness and alkalinity buffer the change in pH. Hard waters will not be affected by this process as are softer waters.

There you have it. Understand now?

So what can you do about it? Nothing. Nature rules!

But it can effect your pH results depending when you sample. If you sample at sunrise and sunset and the pH is within your limits of 6-9, then it is not an issue, which most of the time it is not. But if you are seeing significant variability between morning and night and is an issue relative to meeting your pH limits, give you District Wastewater Engineer a call to discuss the best pH sampling protocol for your pond system.

Hope you enjoyed the summer. See you at the WWOA Annual Conference in The Wisconsin Dells in October.
Energenecs and Best Systems merge

Energenecs and Best Systems, strategic partners for more than 25 years, are excited to announce the acquisition and integration of Best Systems’ talents and capabilities into Energenecs’ control system integration business. According to Jared Feider, president of Energenecs, “The combined companies strengthen our position in the market, and allow us to better serve our clients.”

Best Systems, headquartered in Oostburg, Wis., has served the municipal market for more than 25 years and has specialized in HMI graphical software design, PLC and communications software integration, and the assembly of superior quality UL recognized control panels and motor control centers.

Jared adds, “The acquisition complements our overall technical resources and will allow us to support our client’s process control systems by a single responsible company.

We now possess additional electrical engineering, master electricians, programming, UL panel shop, emergency or scheduled field service depth and expertise that we trust will greatly benefit our clients.”

Energenecs, established in 1979 and headquartered in Cedarburg, Wis., is a process and controls system integrator for the municipal water and industrial markets providing professional services to the upper Midwest region for more than 30 years.

For information about energenecs, visit www.energenecs.com or call 262-377-6360.

Experts through Experience

In the last 10 years, Ahern has completed more than 665 wastewater treatment plant projects in Wisconsin, ranging from $100 to more than $20 million.
Methods for cleaning up flocculants

By Marta Broge, President, Innovative Next Generation Products, Inc.

Flocculants are long chained hydrocarbons used extensively in the water treatment industry to aide in the separation of solids from liquids. The basic function of a flocculant is to attract and hold small, coagulated particles (floc) in water to create a much larger, denser floc which can then easily be removed from the water utilizing a flotation process (dissolved air flotation) or a settling process (clarifier) depending on the type of solid to be removed.

The types of solids removed from water utilizing flocculants varies from organic (food processing, municipal waste water treatment, etc.) to inorganic (metal plating, manufacturing, etc.). With such a wide variety of applications, flocculants are designed to come in a variety of molar charges (anionic, cationic, or non-ionic), varying strength of the molar charge (low to high %), and variations of their relative molecular weight (very low to very high).

What makes flocculants especially effective at their designed function also makes them messy to use and very difficult to clean-up when spilled or misplaced. Flocculants are hydrophilic (the more water that is added to it, the more slippery and tacky they become). This creates a challenge when repairing equipment associated with the use of flocculants or cleaning up a flocculant spill created by a process leak, batch mixing or product transfer, since hands and tools become very slippery and floors become hazardous creating a safety issue.

There are three common methods for cleaning up flocculants. The first method involves liquid cleaners acids to caustics, that attempt to chemically convert the flocculants from hydrophilic to hydrophobic thereby allowing the flocculant to be dissolved into the cleaning solution.

The second method involves using a strong oxidant like bleach to breakdown the long polymer chains making them more hydrophobic. Both of these methods tend to provide marginal results in part because the molecular weights of the flocculants are so large that a lot of cleaning product is needed and because the flocculants are so concentrated that a lot of water is need to dissolve the flocculant. Also, there are dangers with each of these as they require protective clothing and proper handling to prevent injury.

A relatively new method for cleaning up flocculants involves using dry powders that can neutralize the flocculant through absorption and adsorption. In the same manner an oil absorbent is used to collect spilled oil, these new dry new powders can be applied directly to the spilled flocculant and allowed to set for a period of time.

Operators can return to the spill and either scoop up or sweep up the dried up flocculant. In most cases, the dried up material can be safely disposed in waste baskets, or washed down the drain when used on hands, however, you should consult with the MSDS information to be safe. Some of the dry powder products are non-hazardous and “all natural” (green).

Marta Broge is President of Innovative Next Generation Products makers of Floc-off™, a new granular product for cleaning up polymer and other flocculant products. Floc-off™ is a new patented product specifically formulated to be non-hazardous and all natural. For more information, Marta can be reached at 414-430-0391 or by e-mail at mbroge@flocoff.com.
Operator’s Ride turns 25!

2013 will be the 25th Anniversary of the WWOA Professional Operators Ride. It is a milestone that wasn’t even thought about when the first ride of seven motorcycles occurred in 1988.

The 2013 Operators Ride will be hosted by P.J. and Chris Nolan in Waterford, WI. They have already begun planning for this Anniversary Event and they want to make it “The Best Ever.”

We are extending an invitation to all the Operators and their guests to make every effort to participate in this event in August 2013. So, if you ride a motorcycle and have been on an Operators Ride, have wanted to go, or even if this is first time you have been aware of it, this is the year to attend this ride.

To get information and be placed on the mailing/contact list please contact William/Reid Ltd at 888-272-1722 or by email to reid@williamreidltd.com. with your information. We look forward to your presence in Waterford in 2013.

Brodhead dome restored

Fiberglass domes weather over time, and years of UV exposure can cause wear, exposing glass fibers and cracks to appear. The fiberglass can be restored with a gel coat specifically designed for these structures.

The restoration process starts with a thorough pressure wash to clean the fiberglass surfaces. Environmentally safe detergents may be needed to remove mold and mildew.

Once clean, patching of any holes/voids/cracks in the fiberglass can be performed, using resin to adhere fiberglass patches. If the voids are small enough, resin alone can be used for these repairs. The top coat over the entire dome is a spray-applied gel coat, which can be pigmented.

The TMI Coatings team completed a recoating project for the City of Brodhead Wastewater Treatment Facility.

The facility has two fiberglass domes, each 45’ in diameter with a connecting entrance area of 13’ long. The total work area for the project was 7,000 sq. ft.
The WWOA Board of Directors cordially invites you to the 46th Annual WWOA Conference to be held October 9 to October 12, 2012. This year’s conference will be held at the Kalahari Resorts in Wisconsin Dells, WI.

WWOA activities kick off Tuesday afternoon with the ever popular Pre-Conference Workshops. There are two concurrent workshop sessions to choose from, running from 1:00 p.m. to 4:00 p.m. Workshop #1 “Time to Get Back to the Basics in Lab Testing.” Workshop #2 offers four speakers on one topic “Industrial Network Hacking and Awareness Seminar, The New World of SCADA Security, SCADA System Maintenance Really? and Communication is the Key! (To Successful SCADA Design and Implementation).” The workshops will be held at the Kalahari convention center in rooms Guava/Tamarind and Portia/Wisteria.

At 6:00 p.m. Tuesday evening, please join us for the traditional Meet and Greet, an informal gathering of friends featuring an open buffet of brats, burgers, munchies, and refreshments in Kalahari Convention Center A/B/G/H. Come rekindle old friendships and make new friends.

Wednesday morning activities will begin at 9:00 a.m. with an Opening Address by WWOA President Randy Thater. Following will be our Keynote Address provided by Mike McKinley. The title of his speech is “Working Together to Get Better… You Make the Difference.” Vendor exhibits will open at 10:00 a.m. and run through 5:00 p.m. In addition, the vendor exhibits will be open Thursday morning from 8:00 a.m. until 11:45 a.m. The Operator Competition will be on Wednesday afternoon in rooms B/G from 12:30 pm – 4:30 pm.

Concurrent Technical Sessions are scheduled for the mornings and afternoons on Wednesday and Thursday of the Conference. Thursday includes significant training opportunities for Phosphorus. Training opportunities for large and small system operators will be the primary focus throughout the Conference.

The WWOA Operators Luncheon and Annual Business Meeting are scheduled for 12:00 p.m. Thursday; the Social Hour & Awards Banquet is scheduled for Thursday evening beginning at 6:00 p.m. We invite you to get involved in the organization and honor our fellow operators at the Awards Banquet. The Awards Banquet will close with a Dueling Piano Act. We will be holding the popular Farewell Breakfast once again on Friday morning. Paul Kent from Stafford and Rosenbaum will be discussing changes in DNR and the Phosphorus rule.

The Bluffview Sanitary District tour will have two parts: 1st part will be Bluffview Sanitary District Wastewater Treatment Facility and 2nd part is US Army Facility at Badger Army Ammunition Plant (BAAP); Groundwater Remediation System located at same facility. The Tours are scheduled for Thursday afternoon beginning at 1:30 p.m. Space for the tours will be limited, so be sure to sign-up in advance. This year’s Spouse/Guest Program will offer a great mix of planned excursions to enjoy the many opportunities that the area has to offer. Please review the Spouse’s Program schedule for a complete list of activities and offerings.

Enclosed are the Conference Information and Registration Forms. PRE-REGISTRATION IS STRONGLY ENCOURAGED! On-line registration with credit card payment is available at www.wwoa.org. On behalf of the Board of Directors, Technical, Spouses’s Program, and Local Arrangements Committees, we hope to see you this fall.

Sincerely,
Kevin l. Freber, Technical Program Committee Chair
Welcome back to the exciting Kalahari Resort and Convention Center in the Lake Delton-Wisconsin Dells area! As a registered guest of someone attending the 46th Annual WWOA Conference, October 9-12, we are pleased to invite you to take part in the Spouse and Guest Program. The Lake Delton-Wisconsin Dells area offers the scenic beauty of the famed Dells of the Wisconsin River. In addition to natural beauty, the Dells area has developed into the Midwest’s premier family tourist attraction.

The Spouse and Guest Program that has been designed for you this year includes access to all conference activities, including the Meet and Greet, Spouse Hospitality Room, Keynote Address, Walkaround Lunch, and Farewell Breakfast. Wednesday morning, the Program will start with Keynote Address at 9 a.m. “Working Together to Get Better… You Make the Difference” by Mike McKinley. At 10 a.m., pick up a $10 Kalahari gift card, and depart the Kalahari from the East Convention Center entrance on a shuttle bus to the Ho-Chunk Casino. You can return to the Kalahari at either 1:30 or 3:30 pm. If you choose not to go to the Casino, you are invited to the walkaround lunch in the exhibit area. The $10 gift card will be available for you at the East Convention Center entrance.

Thursday begins at 8 a.m. with a continental breakfast offered in the Cypress Room of the Kalahari Convention Center. At 9 a.m. a bus will depart from the East Convention Center entrance for the day’s activities. The tour starts with the Al Ringling Theater. While one group is touring the theater, the other will be provided a list of different shops to explore in Downtown Baraboo. After lunch at the Garden Party Cafe, the two groups will experience wine and dessert tasting at Bekah Kates and a choice of a petite manicure, petite pedicure, facial, or massage at Spa Serenity. A gift bag will be provided and you’re back to the Kalahari by 5 p.m. The day ends with the annual WWOA Awards Banquet. On Friday, you are invited to join all WWOA members for the Farewell Breakfast. The Wisconsin Dells area is an exciting place, and we sincerely hope you will join us for a fun and exciting program!

Sincerely,
Kelly Zimmer & Kevin Freber
Spouse/Guest Program and Local Arrangements

Spouse/Guest Program Registration

| First name: _______________________ | Last Name: ______________________________ | Nickname _______________________ |

**Spouse/Guest Program Includes:**
- Meet & Greet
- Admission to exhibits
- Wednesday lunch in Exhibit Hall
- Wednesday Social Hour
- Hospitality Room
- Farewell Breakfast
- Keynote Address
- Ho-Chunk Casino
- Kalahari gift card
- Tour of Al Ringling Theater
- Wine & Dessert tasting-Bekah Kates
- Specialty service at Spa Serenity
- Lunch at Garden Party Café
- Personalized gift bag

**PRE-REGISTRATION** (On or Before September 28, 2012)
- Spouse/Guest Program $70.00 (banquet not included)

**ON-SITE REGISTRATION** (After September 28, 2012)
- Spouse/Guest Program $80.00 (banquet not included)

Admittance to events by badge only including exhibit hall, walk around lunch, etc.

**TUESDAY, OCTOBER 9**  6 p.m. Meet & Greet  A/B/G/H Convention Center

**WEDNESDAY, OCTOBER 10**
9 – 10 a.m. Conference Opening and Keynote Speaker
10 a.m. Kalahari Gift Cards and Departure to Ho-Chunk Casino
1:30 p.m. or 3:30 p.m. Return to Kalahari
4 – 5 p.m. Social Hour in Exhibit Area

**THURSDAY, OCTOBER 11**
8 – 9 a.m. Spouse Hospitality, Cypress Room. Continental breakfast by Aquafix
9 a.m. Bus departs for daily activities. Bussing by Mulcahy/Shaw
10 – 11:30 a.m. Al Ringling Theater tour by Flygt
11:30 – 12:30 p.m. – Lunch at Garden Party
12:30 – 4:30 p.m. – Spa Serenity & Bekah Kates
## WWOA TECHNICAL PROGRAM SCHEDULE

### Wednesday  October 10, 2012

**Welcome Address – President Randy Thater**  9:00 am  
**Keynote Speaker - Mike McKinley**  
**Convention Center A/H**

**Exhibits in Convention Center I-VIII 10:00 am - 5:00 pm**

<table>
<thead>
<tr>
<th>TIME</th>
<th>Session A: Phosphorus Regulations</th>
<th>Session B: Maintenance</th>
<th>Session C: Blending</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45-11:20 am</td>
<td>Simple, Early Steps Toward Meeting Lower Phosphorus Effluent Limits</td>
<td>Preventive, Predictive &amp; Corrective Maintenance</td>
<td>If Blending Ends - What Now?</td>
</tr>
<tr>
<td></td>
<td>Troy Larson</td>
<td>John Szwedow</td>
<td>Bill Marten</td>
</tr>
<tr>
<td>11:25-12:00 pm</td>
<td>My Reissued Permit Includes a Very Low Phosphorus Limit - Now What?</td>
<td>Rehabilitating Clarifiers</td>
<td>Treatment Plant Blending</td>
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<tr>
<td></td>
<td>Dan Greve</td>
<td>David Dehart</td>
<td>Dave Arnott</td>
</tr>
</tbody>
</table>

### Walk Around Lunch in Exhibit Hall 12:00 pm - 1:30 pm

- Operators Competition  Rooms B/G 12:30 pm - 4:30 pm

<table>
<thead>
<tr>
<th>TIME</th>
<th>Session D: Safety</th>
<th>Session E: Energy</th>
<th>Session F: Collection Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 - 2:00 pm</td>
<td>Distracted Driving</td>
<td>Cutting Power Costs</td>
<td>Techniques for Public &amp; Private I &amp; I Identification &amp; Elimination</td>
</tr>
<tr>
<td></td>
<td>Brad Ten Pas</td>
<td>Greg Droessler</td>
<td>Randy Belanger, Chris Stamborski</td>
</tr>
<tr>
<td>2:05 - 2:40 pm</td>
<td>Distracted Driving</td>
<td>Energy Savings - High Speed Blowers &amp; Micro Turbine</td>
<td>Collection System Rehabilitation</td>
</tr>
<tr>
<td></td>
<td>Brad Ten Pas</td>
<td>Ken Ligman, David Erickson</td>
<td>Brandon Foss</td>
</tr>
</tbody>
</table>

**Break in Exhibit Area  2:40 pm - 2:55 pm**

<table>
<thead>
<tr>
<th>TIME</th>
<th>How electrical safety regulations apply to public employees in Wisconsin</th>
<th>Oconomowoc Sustainable Energy Saving Design</th>
<th>What is FOG? And What are FOG Ordinances</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:55 - 3:25 pm</td>
<td>Bruce Grindeland</td>
<td>Tom Steinbach, Ken Sedmak</td>
<td>Rand Ackroyd</td>
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<tr>
<td>3:30 - 4:00 pm</td>
<td>Understanding NFPA 820 - Fire and Explosion Protection in Wastewater Treatment Facilities</td>
<td>Plover WI - Incorporating Energy Conservation into Plant Upgrades</td>
<td>&quot;Pay-as-you-go&quot; Sewer Charge System</td>
</tr>
<tr>
<td></td>
<td>Joe Berktold</td>
<td>Nathan Cassity</td>
<td>Scott Chilson, Jared Feider</td>
</tr>
</tbody>
</table>

**Social Hour in Exhibit Hall 4:00 pm - 5:00 pm**
<table>
<thead>
<tr>
<th>TIME</th>
<th>Session G: Phosphorus Removal</th>
<th>Session H: Laboratory QA</th>
<th>Session I: Biosolids</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moderator: Jeremy Cramer</td>
<td>Moderator: Sharon Thieszen</td>
<td>Moderator: Jeffery Smudde</td>
</tr>
<tr>
<td></td>
<td>Room: Guava / Tamarind</td>
<td>Room: Portia / Wisteria</td>
<td>Room: Tamboti/Aloeswood</td>
</tr>
</tbody>
</table>

8:00 – 8:45 am  
Evaluation of an "Off the Shelf" Automated Chemical Phosphorus Removal System  
Jim Burke  

8:50 – 9:35 am  
Phosphorus Removal Improvements: Evaluation of carbon addition, operational modifications, and filtrate treatment  
Leon Downing  

Break in Exhibit Area 9:35 am – 10:00 am  

<table>
<thead>
<tr>
<th>TIME</th>
<th>Session J: Phosphorus Removal</th>
<th>Session K: Process Control</th>
<th>Session L: Potpourri</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moderator: Troy Larson</td>
<td>Moderator: Tom Kruzick</td>
<td>Moderator: Kay Curtin</td>
</tr>
<tr>
<td></td>
<td>Room: Guava / Tamarind</td>
<td>Room: Portia / Wisteria</td>
<td>Room: Tamboti/Aloeswood</td>
</tr>
</tbody>
</table>

10:00 - 10:50 am  
Fermentation Enhanced Nutrient Removal at Janesville WWTP  
Nathan Cassity  

10:55 – 11:45 am  
Implementing and Troubleshooting Biological Phosphorus Removal  
Jeremiah Wendt  

Operators’ Luncheon 12:00pm  
Business Meeting 12:30 pm  
Convention Center D/E  

Plant Tour: 1:30 pm to 4:00 pm Badger Army Ammunition Plant (BAAP) / Bluffview Sanitary District  

<table>
<thead>
<tr>
<th>TIME</th>
<th>Session M: Attached Growth Systems</th>
<th>Session N: Small Systems</th>
<th>Session O: Potpourri</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moderator: Jon Butt</td>
<td>Moderator: Wally Thom</td>
<td>Moderator: Don Lintner</td>
</tr>
<tr>
<td></td>
<td>Room: Guava / Tamarind</td>
<td>Room: Portia / Wisteria</td>
<td>Room: Tamboti/Aloeswood</td>
</tr>
</tbody>
</table>

1:30 - 2:15 pm  
Biofilm Reactors: Operational Overview and Applications for Nutrient Removal  
Leon Downing  

2:20 - 3:05 pm  
Industrial Pretreatment when there is Trouble Downstream. A Case Study Using Complete Mix Fixed Film Biological Treatment  
Ken Neu  

3:15 - 4:00 pm  
Wetlands - a Phosphorus Treatment Alternative  
Dave Sauer  

Social Hour in Convention Center III-IV 6 PM  
Awards Banquet/Entertainment in Convention Center A/B/G/H 7PM
CURRENT YEAR NAME BADGE REQUIRED FOR ADMISSION TO ALL CONFERENCE FUNCTIONS.
DNR Credit Slips will be available at the Conference Registration Area Only!

WWOA Conference Oct. 9-12 Kalahari Resort Fee Schedule

President Randy Thater                     Director (2013) Kelly Zimmer
President Elect Wade Peterson               Director (2012) Lyle Lutz
Vice President Kevin L. Freber              Director (2013) Jim Bergles
Past President Dave Carlson                 Director (2013) Jeff Bratz
Executive Secretary Richard McKee           Director (2012) Sharon Thieszen

Pre-Registration: (On or before September 28, 2012)

Member $80.00
Non-Member $135.00
Non-Member with Membership Offer $130.00
Spouse/Guest Program - Full Package $70.00
Student, Retiree $40.00
Substitution (Re-print charge) $15.00

On-Site: (After September 28, 2012)

Member $130.00
Non-Member $185.00
Spouse/Guest Program - Full Package $80.00
Student, Retiree $45.00
Substitution (Re-print charge) $20.00
### 46th Annual WWOA Conference Schedule of Events

**Tues., Oct. 9**

<table>
<thead>
<tr>
<th>AM</th>
<th>Event</th>
<th>Time</th>
<th>Location Details</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Board of Directors Meeting</td>
<td></td>
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<tr>
<td></td>
<td>Golf Outing: Christmas Mountain Village</td>
<td>10 a.m.</td>
<td>Shotgun start</td>
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<tr>
<td></td>
<td>Sporting Clays: Woods and Meadow</td>
<td>10 a.m.</td>
<td>Shotgun start</td>
</tr>
<tr>
<td></td>
<td>Pre-Conference Workshops: Guava/Tamarind &amp; Portia/Wisteria</td>
<td>1-4 p.m.</td>
<td>See schedule</td>
</tr>
<tr>
<td>PM</td>
<td>Registration Opens: Convention Center Entrance</td>
<td>1-4:30 p.m.</td>
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<tr>
<td></td>
<td>Regional Officers Meeting: Cypress</td>
<td>4:30-6 p.m.</td>
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<tr>
<td></td>
<td>Meet and Greet: A/B/G/H</td>
<td>6-7 p.m.</td>
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<td></td>
<td>Open Buffet w/ Brats, Hamburgers, &amp; Snacks</td>
<td>7-9 p.m.</td>
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**Wed., Oct. 10**

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<thead>
<tr>
<th>AM</th>
<th>Event</th>
<th>Time</th>
<th>Location Details</th>
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<tbody>
<tr>
<td></td>
<td>Registration Opens: Convention Center Entrance</td>
<td>8 a.m.</td>
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<tr>
<td></td>
<td>Welcome Address: Convention Center A/H</td>
<td>9 a.m.</td>
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<tr>
<td></td>
<td>WWOA President Randy Thater</td>
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<tr>
<td></td>
<td>Keynote Address: Convention Center A/H Mike McKinley</td>
<td>9:15 a.m.</td>
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<tr>
<td></td>
<td>Vendor Exhibits: Convention Center I-VIII</td>
<td>10 a.m.-5 p.m.</td>
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<tr>
<td></td>
<td>Technical Sessions: Guava/Tamarind, Tamboti/Aloeswood, &amp; Portia/Wisteria</td>
<td>10:45-11:55 a.m.</td>
<td>See Schedule</td>
</tr>
<tr>
<td>PM</td>
<td>Walk Around Lunch: In Exhibit Area</td>
<td>noon-1:30 p.m.</td>
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<td></td>
<td>Operator Competition: B/G</td>
<td>12:30-4:30 p.m.</td>
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<tr>
<td></td>
<td>Technical Sessions: Same as Wednesday a.m.</td>
<td>1:30-4 p.m.</td>
<td>See Schedule</td>
</tr>
<tr>
<td></td>
<td>Exhibits Social Hour: In Exhibit Area</td>
<td>4-5 p.m.</td>
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**Thurs. Oct. 11**

<table>
<thead>
<tr>
<th>AM</th>
<th>Event</th>
<th>Time</th>
<th>Location Details</th>
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<tbody>
<tr>
<td></td>
<td>Registration Opens: Convention Center Entrance</td>
<td>8 a.m.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vendor Exhibits: Convention Center I-VIII</td>
<td>8-11:45 a.m.</td>
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<tr>
<td></td>
<td>Technical Sessions: Same as Wednesday a.m.</td>
<td>8-11:45 a.m.</td>
<td>See Schedule</td>
</tr>
<tr>
<td>PM</td>
<td>Operator Luncheon: Convention Center D/E</td>
<td>noon-1:20 p.m.</td>
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<tr>
<td></td>
<td>Business Meeting Convention Center D/E</td>
<td>12:30-1:20 p.m.</td>
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<td></td>
<td>Plant Tour Departure: East Entrance</td>
<td>1:30-4:30 p.m.</td>
<td>Presign@reg</td>
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<td></td>
<td>Bluffview Sanitary District &amp; Badger Army Ammunition Plant</td>
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<td></td>
<td>Groundwater Remediation System</td>
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<tr>
<td></td>
<td>Technical Sessions: Same as Wednesday a.m.</td>
<td>1:30-4p.m.</td>
<td>See Schedule</td>
</tr>
<tr>
<td></td>
<td>Social Hour: III&amp;IV&amp;V&amp;VI</td>
<td>6 p.m.</td>
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<tr>
<td></td>
<td>Awards Banquet: A/B/G/H</td>
<td>7 p.m.</td>
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<td></td>
<td>Entertainment: A/B/G/H</td>
<td>9 p.m.</td>
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**Fri. Oct. 12**

<table>
<thead>
<tr>
<th>AM</th>
<th>Event</th>
<th>Time</th>
<th>Location Details</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Farewell Breakfast: A/B/G/H</td>
<td>8:30-10:30 a.m.</td>
<td>Paul Kent</td>
</tr>
</tbody>
</table>
2012 WWOA GOLF OUTING

Christmas Mountain Village, S944 Christmas Mountain Rd.
Wisconsin Dells

Date: Tuesday, October 9, 2012
Time: 10 a.m. Sharp “Shotgun Start”
Type: 18 Hole Scramble Format
Prizes: Longest drive, longest putt, closest to pin, door prizes, and other special awards.
Cost: $58 WWOA Members, Manufacturers, Engineers, Suppliers and Conference Attendees

Includes: 1/2 motorized cart, 18 holes golf, box lunch, 2 drink tickets, snacks provided and cash bar during award/prize drawing at Christmas Mountain Club House.

Payment must be received no later than September 28, 2012 with names of foursome or individuals. (Committee will assign if not in foursome). Please RSVP early as we are limited to 100 participants. No refunds after September 28, 2012 unless course is closed by decision of Club Management. Day of event, rain checks would be issued for play, accepted through 2013 season.

Appropriate golf attire required.

www.christmasmountainvillage.com for more information

2012 WWOA GOLF OUTING REGISTRATION FORM

Name: ________________________________________
Address: _______________________________________
City: __________________________________________
State/Zip: ______________________________________

Part of a Foursome? Yes No

Others in My Foursome:
______________________________________________
______________________________________________
______________________________________________

# paid _______ X $58 each

Make check payable to WWOA.

Mail registration card and check to:

Richard D. McKee
WWOA Executive Secretary
24184 Fawn Meadow Lane,
Richland Center, WI 53581
2012 WWOA SPORTING CLAYS

REGISTRATION FORM

Name: ________________________________________

Address: ______________________________________

City: _________________________________________

State/Zip: _____________________________________

Part of a Foursome?    Yes       No

Others in My Foursome:

______________________________________________

______________________________________________

______________________________________________

# paid ______ X $58 each

Make check payable to WWOA.

Mail registration card and check to:

Richard D. McKee
WWOA Executive Secretary
24184 Fawn Meadow Lane,
Richland Center, WI  53581

2012 WWOA SPORTING CLAYS
Woods & Meadow, N4335 Potter Road, Warrens, WI 54666
Date:    Tuesday, October 9, 2012
Time:    10:00 A.M.  Sharp “Shot Gun Start”
Prizes:  1st, 2nd, & 3rd place team, Best Individual Score
Cost:    $35  WWOA Members, Manufacturers,
         Engineers, Suppliers, and Conference Attendees
Includes: 10 station/50 target shoot, (you may bring your
         own shells or purchase at Woods & Meadows)
         scorecards, lunch served during awards/prize
drawing. Cash Bar after shoot!

Payment must be received no later than September 28, 2012
with names of three/foursome or individuals. (Committee
will assign if not in three/foursome).

Please RSVP early as we are limited to 80 participants. No
refunds after September 28, 2012 unless course is closed by
decision of Club.

Driving Directions from I-94: Exit at #128, Millston. Turn
East onto County O, 7 miles. Turn Left (North) on Potter
Rd. (There is a Woods & Meadow sign at this intersection.)
One Mile on Potter Rd. Woods & Meadow is on the left.
Pre-Conference Workshops
Tues., Oct. 9, 1 to 4 p.m.

Registration Form

Name: _______________________________________
Address: ______________________________________
City: _________________________________________
State/Zip: ______________________________________
Phone: _______________________________________
Employer: _____________________________________
Workshop #: ___________________________________

Cost: $25 Pre-Registration
$30 On-Site
Includes refreshments between workshops
DNR credit hours available for full 1 to 4 p.m.
workshop attendance.
Make check payable to WWOA.
Mail registration card and check to
Richard D. McKee, WWOA Executive Secretary
24184 Fawn Meadow Lane,
Richland Center, WI 53581
WWOA 46th Annual Conference Registration
October 9 – 12, 2012 – Wisconsin Dells, WI

Registration Form (fill out one registration form for each person attending)

Name (Last, First, M.I.) ____________________________ Nickname (For Name Tag) ____________________________
Employer: ____________________________ Firm Name (If Manufacturer or Consultant): ____________________________
Mailing Address: __________________ City __________________ State _____ Zip Code __________________
Phone: __________________ Position/Title: __________________
Regional Affiliation: SE __ NW __ Southern ___ LM ___ NC ___ WC ___
Member Affiliation: Municipal ___ Consultant ___ Industrial Operator ___ Manufacturer/Sales ___ Educator ___
Septage Operator ___ DNR/EPA ___ Student ___

Pre-Registration (Prior to September 28, 2012)
- WWOA Member……………………………………………………………………………. $80.00 ___
- Non-Member………………………………………………………………………………... $135.00 ___
- Non-Member plus WWOA Membership (Pre-Registration only)………………………….. $130.00 ___
- Retiree (Must be at least 60 years old & retired from wastewater industry)……………….. $40.00 ___
- Student (Must send copy of valid student ID)……………………………………………… $40.00 ___

On-Site Registration (After September 28, 2012)
- WWOA Member……………………………………………………………………………. $130.00 ___
- Non-Member………………………………………………………………………………... $185.00 ___
- Retiree (Must be at least 60 years old & retired from wastewater industry)……………….. $45.00 ___
- Student (Must provide copy of valid student ID)…………………………………………… $45.00 ___
- Substitute or Re-Print Charge………………………………………………………………… $20.00 ___

Additional Functions
- Operators Business Lunch (Poulet Champignon)……………………………………………… No. of Tickets _______ @ $20 each
- Awards Banquet…………………………………………………………………………………… No. of Tickets _______ @ $30 each
- Circle Meal Choice: New York Strip  North Atlantic Haddock  Pork Tenderloin
- Farewell Breakfast (All registered Spouse/Guest are welcome)………………. No. of Tickets _______ Included with Reg.
- Social Hour (Courtesy of Manufacturers & Consultants)…………………………………… No Charge
- Pre-Conference Workshop (Please include separate registration form)……………… $ ______
- Sporting Clays (Please include separate registration form)…………………………… $ ______
- Golf Outing (Please include separate registration form)………………………………… $ ______
- Spouse/Guest Program (Please check if planning to attend)…………………………… $ ______

WWOA Dues – Two Years (If Applicable)
- Complete membership application on back of form and return with registration…………… $50.00 ___

Total Enclosed $__________

Enter credit card information in box at top of registration form.

Mail registration form and fees to:
Richard McKee
WWOA Executive Secretary
24184 Fawn Meadow Lane
Richland Center, WI 53581

On-line registration available at:
www.wwoa.org

Make checks payable to: WWOA
Manufacturers & Consultants

Sponsorship Fee (In Addition to Conference Registration)
Manufacturing, Consultant Engineering Firms, Sales Firms, 
Exhibitors, and Contract Operation Firms (one fee per firm)……………….. $75.00_____

Exhibit Fee (In Addition to Booth Registration & Sponsorship)
Before August 15, 2012 – 8’ x 10’
(One member registration fee included)…………………………………… $360.00_____

After August 15, 2012 – 8’ x 10’
(One member registration fee included)…………………………………… $550.00_____

New Membership Option (Registration/Membership Package)

This package is available to non-members only and is available through pre-registration only.
Package includes: Conference registration and a two-year membership in WWOA for $130.00. You must fill out the Membership Application section AND the Conference Registration section. Take advantage of this opportunity to add a WWOA Membership – save $5.00 when compared to non-membership registration and save on registration for next year.

Membership Application Form

Name (Last, First, M.I.) ________________________________
Mailing Address: __________________________ City ____________ State _______ Zip Code ______
Phone: ______________________ E-Mail Address: ______________________________
Regional Affiliation: SE ____ NW____ Southern ____ LM____ NC____ WC____
Member Affiliation: Municipal ____ Consultant ____ Industrial Operator ____ Manufacturer/Sales ____ Educator ____
Septage Operator ____ DNR/EPA ____ Student ____

This applicant is recommended by:
Member Name: ____________________________
City: __________________________ State: ______

PLEASE

send membership application along with conference registration.
Thank you.
Kalalari Room Guide
2012 WWOA Conference

Registration Booth
Booths 1, 2 North Atrium (Conference Lobby)

WWOA Promotions
Booth 2, North Atrium

Pre-Conference Workshops
Portia/Wisteria and Guava/Tamarind

Regional Officers Meeting, Cypress

Meet and Greet, Convention A/B/G/H

Welcome Address & Keynote, Convention A/H

Technical Sessions,
Tamboti/Aloeswood, Portia/Wisteria, Guava/Tamarind

Vendor Exhibits, Convention 1 thru 8

Spouse/Friends Bus Departs
East Entrance both days

Wednesday Walk Around Lunch
Vendor Exhibit Area

Operator Competition, Convention B/G

Wednesday Social Hour, Vendor Exhibit Area

Spouse/Friends Hospitality Room, Cypress

Thursday Luncheon and Business Meeting
Convention Center D/E

Plant Tour Departs, East Entrance

Social Hour (Thursday), Convention 3/4/5/6

Awards Banquet, Convention A/B/G/H

Entertainment, Convention A/B/G/H

Farewell Breakfast, Convention A/B/G/H

2012 Conference Committees

Local Arrangements & Spouse/Guest Program: Kelly Zimmer
Technical Program: Chair: Kevin L. Freber
Sharon Thieszen
John Bond
Rick Mealy
Dave Carlson
Lyle Lutz
Jonathan Butt
Richard McKee
Bruce Bartel
Bernie Robertson
Tom Fitzwilliams
Troy Larson
James Bergles
Kelly Zimmer
Jeremy Cramer
Randy Thater
Jeff Bratz
Gary Hanson
Tom Krzick
Wade Peterson
Bill Ericson
Ken Sedmak
Kay Curtin
Doug Nelson
Tim Reel

Exhibit & Manufacturers & Consultants Committee: Chair: Carol Strackbein
Jim Shaw
Dave Dorner
Tom Mulcahy
Dave Dodge

CURRENT YEAR NAME BADGE REQUIRED FOR ADMISSION TO ALL CONFERENCE FUNCTIONS.
Kalahlari Waterpark Resort and Convention Center Reservation Form

All reservations must be received by September 8, 2012. Please mention you will be attending the Wisconsin Wastewater Operators Association conference to receive group rate. Reservation requests received after September 8, 2012 are subject to resort availability. Block is from October 8-11, 2012. To make reservations complete the form below and mail or fax to Kalahari Resorts.

Name: ____________________________________________
Address: __________________________________________
City, State, Zip: ______________________________________

Arrival Date: _______________ Departure Date: _______________

Email Address: _______________________________________

Type of Room: Hut________ Desert_______ Lodge_________
Number of Adults: ________________________________
Kids ________________________________
($20 per additional person over 4 people)

Only guests that have 5 or 6 people, can request a Desert room that will have 2 queen beds with a pull out sofa sleeper.

To guarantee your reservation, enclose a check for the first night's room and tax or provide a credit card number in the space below. If paying by Purchase Order, the Purchase Order must accompany this form. The Kalahari Resort does not accept checks at check in for payment. All credit cards used will be charged immediately for the first night's lodging and tax. Please bring credit card provided and photo ID at check in. A $25 fee applies to all cancellations. If you cancel your reservation 72 hours or less before the date of arrival, you will forfeit your deposit.

Payment info (Mark One):
Check (In advance): __________ Purchase Order: _____________

Credit Card (Put information below)
Card Type: Mastercard____ Visa____ American Express____ Discover_____

Credit Card Number: ________________________________
Expiration Date: ______________

Name on Card: ________________________________________

Tax Exempt: Yes_____ No____ If you mark yes, an S211 taxexempt form must accompany this form

Guest Room Rates:
Hut or Desert $99
Lodge $109
Additional Person $20
(More than 4 people)

Tax 11.5%

Guest Room Styles:
Hut: 2 Queen Beds
Desert: 2 Queen Beds with Sofa Sleeper
Lodge: 1 King Bed with Sofa Sleeper

Check in time 4 pm
Check out time 11 am

Mail form to:
Reservation Department
Kalahari Resorts & Convention Center
PO Box 590
Wisconsin Dells, WI 53965
Reservations: (877) 525-2427
Fax to: (608) 254-6116

To make reservations online:
(You must pay by credit card and not be tax exempt to use this option)
Visit us at www.KalahariResorts.com
1. Click on Wisconsin Dells, WI
2. Click on RESERVE NOW
3. Click on Groups
4. Your group ID: 19907
5. Your password: 239
Attention all potential WWOA exhibitors

The WWOA 46th Annual Conference will be held October 9 - 12, 2012 at the Kalahari Conference Center in Wisconsin Dells. Exhibits are Wednesday, Oct. 10 and Thursday, Oct. 11 only.

There are approximately 115 8’ wide x 10’ deep exhibit spaces available during the WWOA conference being held at the Kalahari Conference Center in Wisconsin Dells.

Total cost for the exhibit space is $360 for applications received prior to Aug. 15, 2012 for a 8x10’ exhibit space. After August 15, the cost is $550. A sponsor fee of $75.00 is included in this cost. This fee includes:

- One member Conference Registration
- Backdrop and side drapery
- Table with Drapery
- One 110-volt outlet
- Sponsor Fee

Everyone staffing the booth must register. Anyone who is not registered will not be allowed in the exhibit hall. In order to save you time and frustration, please be sure to have everyone staffing your booth pre-register.

Because of the amount of exhibit space available this year, we will allow four exhibit spaces per company and five contiguous exhibit spaces for representative firms and their principles. If all space is not sold by Aug. 15, 2012, exhibitors may purchase additional space. Please use line item on the application form to request the extra space.

Please remember the Board of Directors ruled, “Any events sponsored by manufacturers and consultants, such as luncheons, training sessions, hospitality suites, etc. that interfere with the conference (including exhibit hours) will not be allowed.”

The sponsor fee of $75 (included in the exhibit cost) is to be paid only once per firm. It is charged to ALL manufacturers and consultants attending the conference. The sponsor fee is used for:

- Refreshments during exhibit hours
- The walking lunch on Wednesday in the exhibit area.
- The social hour before the banquet.

Exhibit hours are: Wednesday, October 10 10:00 A.M. to 5:00 P.M. and Thursday, October 11 8:00 A.M. to 11:45 A.M. Exhibits may be set up Tuesday afternoon after 4 P.M. or on Wednesday morning.

All exhibits must be set up by 9:30 A.M. on Wednesday and cannot be dismantled before 11:45 A.M. on Thursday. All items must be removed from the exhibit hall by 1:30 P.M. on Thursday.

Exhibits will be assigned per item 2 of the rules and regulations. A check or credit card for $360 ($550 after Aug. 15) must accompany each application for exhibit space. One conference registration fee is included per booth.

All applications must be received prior to August 15, 2012, as the space assignment date is September 1, 2012. Exhibitors will be notified of the space assignment at the beginning of September.

If you have any questions or need any more information, please send me an e-mail at cstrackbein@earthlink.net. Thank you for your continued support of the WWOA.

Carol Strackbein,  
WWOA Exhibit Committee Chairman

P.S. Please note that each person staffing the booth must register for the conference.

We recommend that you preregister to save you time and frustration.
2012 WWOA exhibitor display application form

Please reserve an exhibit space for us at the WWOA Annual Conference to be held at the Kalahari Resort, Wisconsin Dells, WI on October 10 & 11, 2012. The display fee will be $360 for applications received prior to Aug. 15 and $550 for applications received after this date. A sponsor fee of $75.00 is included in this price. The exhibit fee will include: one member conference registration, booth drapery, table with drapery and chair, one 110 volt electrical connection, and sponsor fee. Additional electrical connections or supplies may be ordered from the exhibit set-up company.

We understand and agree that, upon acceptance of this application, we will be bound by the WWOA exhibit rules and regulations. Please provide the following information:

COMPANY _____________________________________________________________

CONTACT NAME ______________________________________________________

E-MAIL ADDRESS ______________________________________________________

MAILING ADDRESS ____________________________________________________

CITY & STATE, ZIP and TELEPHONE: ______________________________________

Names & titles of people who will staff your booth at the conference: Please attach a registration card for these individuals along with the appropriate registration fee.

________________________________________________________________________

Type of Equipment your company supplies ___________________________________

(Please be specific, i.e. coatings, safety equipment, etc.)

Please name any competitors who should not be placed near your booth:

________________________________________________________________________

Please list the name of another exhibitor you would like placed adjacent to your booth

________________________________________________________________________

We would like to purchase another exhibit space if one is available (One Application/ Booth): YES NO

Please make checks payable to WWOA for $360 or $540.00 plus conference registration fees (Four booth maximum per firm - five contiguous booths for reps and principals.) You can also register online (www.wwoa.org) using a credit card.

VISA  MASTERCARD  DISCOVER

Name on card: __________________________________________________________

Card number: ________________________________________________________ Expiration date: _______________

Please return a copy of this application (or register online) to: Wisconsin Wastewater Operators' Association c/o Richard McKee, 24184 Fawn Meadow Lane, Richland Center, WI 53581.
Kewaskum WWTP hosts Southeast WWOA meeting in May

WWOA Southeast Regional spring meeting was held at Hon-E-Kor Golf Club, hosted by Kewaskum Waste Water Treatment Plant in Kewaskum, WI on May 16, 2012. Attendance at the meeting was 89. First and foremost we would like to thank everyone involved in putting this meeting together, especially the personnel from Kewaskum WWTP.

The Southeast Chairman, Jeff Deitsch, opened the meeting by introducing the Village Administrator, Matt Heiser, who welcomed us to the village and shared many interesting facts about beautiful Kewaskum: “The Gateway to The Kettle Moraine State Forest.” Matt also emphasized the difficult times public employees are going through, how our work is essential and challenging, yet our compensation and appreciation seems to be going in the opposite direction.

Jared Feider from Energenecs and Ken Tebeest from Best Systems gave presentations on SCADA and HACH WIMS Upgrades. They started with the prior system used at Kewaskum and the upgrades that took place which was a combined effort by Best Systems, LLC and Energenecs. New control hardware, upgraded software, communication/information, ethernet-wired, ethernet-wireless, and phone lines where covered under this presentation.

In summary, Kewaskum WWTP has the latest technology for fast troubleshooting with remote access. Easy upgrades using Allen Bradley, Wonderware, Win-911 and Hach Wims. One very impressive cutting edge feature was the I-pad that an operator could take home with him and check the condition of the plant at anytime.

The next two speakers where Jim and Jackie Fratrick from the WDNR. Jackie presented an overview on the TMDL program. What are TMDLs, how did we get to TMDLs, impaired waters list, phosphorous TMDL, TMDL allocations, trading and point sources, and developing a program were just a few of the areas covered. Jim Fratrick returned from retirement to assist the DNR part time. Jim covered the changes to the operator certification program, NR114. Jim covered the reason for change, operator in training, certificate program, grandfathering, and timelines to name a few.

We had a brief business meeting. Jeff Deitsch asked if any plants were interested in hosting a SE regional meeting in 2013 to please contact one of the officers. Also a motion was made and seconded that The SE district purchase their own laptop computer so we wouldn’t need to borrow one for every meeting. The business meeting was closed in due form.

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Phosphorus 101: The Pinch on Phosphorus

Bill Marten, Donohue & Associates

This is the first of a five-part series discussing issues related to phosphorus. Future editions of The Clarifier will present additional parts of the series. For reference, the series will include:

Phosphorus 101: The Pinch on Phosphorus
Phosphorus 102: Phosphorus Removal As We Know It
Phosphorus 103: Low Level Phosphorus Removal
Phosphorus 104: Phosphorus, Sidestreams and Struvite
Phosphorus 105: Phosphorus as a Renewable Resource

“Phosphorus – can’t live with it, can’t live without it.” We’ve all heard and used this phrase in various ways through the years, haven’t we? Well in the case of phosphorus, the second part of that phrase is almost entirely true (if you don’t include some weird arsenic-based microorganisms NASA has discovered), while the first part may be true under certain conditions, and for certain creatures on our planet. We’ll discuss that more in a bit.

What is Phosphorus?
Phosphorus is a very important element for life on our planet. First and foremost – it is one of the building blocks of life, an important component of DNA, RNA, proteins, and cell membranes. Thus virtually all living organisms (except the aforementioned arsenic organisms) need phosphorus to grow and reproduce.

Secondly, it is an important chemical used in many applications such as fertilizers, animal feeds, pesticides, cleaning agents, and many others.

Phosphorus occurs naturally (as phosphate – PO4) as mineral deposits in the Earth’s crust, and phosphorus production involves mining these deposits. To date these deposits have only been found in limited locations, with 5 countries (Morocco, China, South Africa, Russia and the United States) holding about 90% of the known reserves.

There is some uncertainty as to the extent of the remaining phosphorus available on our planet, with estimates of when the world’s phosphorus supply dwindling anywhere from 50-200 or more years out. Whatever the value, the bottom line is that there are limited phosphorus reserves on our planet, and at some point phosphorus produced through mining will fall off. As such, our industry is in a unique position in that we have the technology to not only remove phosphorus from wastewater, but to recover and return it as a renewable resource. This will be covered in greater detail in a future installment.

Phosphorus in Water and Wastewater
So how does phosphorus get into our water and wastewater? The answer is, in many ways, including:

- Phosphate-based chemicals added to municipal drinking water supplies to control corrosion.
- Detergents and cleaning agents used in homes and industries. (Note Wisconsin has banned phosphorus in household detergents since the early 1970s and in dishwashing soap since 2010.)
- Decaying organic matter from humans and from plants and animals in the natural environment.
- Manure, biosolids, septage and commercial fertilizers applied to agricultural land.

The entry of these sources into our natural waters varies, but typically occurs due to point sources (wastewater...
treatment plants) or non-point sources (runoff and erosion from urban and agricultural areas).

Ok, so phosphorus gets into our natural waterways, what’s the big deal? Well, it all comes down to trying to protect the health of our lakes, streams and oceans for all living organisms. And one key factor in achieving this is ensuring our natural waters have sufficient oxygen levels to support all the forms of life that are natural to those waters.

When waters have excessive levels of nutrients, in particular phosphorus and nitrogen, a condition termed eutrophication can occur. Eutrophication is a condition where too much plants and algae grow in the water. The excessive growth can cause several problems, but the most significant is large swings in dissolved oxygen concentration in the water. During the daytime, provided sunlight reaches these organisms, they can produce high levels of dissolved oxygen due to photosynthesis. However at night the algae may switch to aerobic respiration and use up the dissolved oxygen in the water, suffocating fish and other aquatic organisms. And further depletion occurs when this aquatic plant life dies, as microorganisms feed on the decaying material, consuming even more oxygen.

So how to prevent eutrophication? The commonly accepted approach is to control nutrient concentrations so that such excessive plant and algae growth can’t occur. And this approach usually targets a single nutrient – as long as one nutrient is limiting the excessive growth won’t occur, thus eutrophication is prevented.

Using this approach, often phosphorus is the limiting nutrient in fresh water eco-systems and nitrogen is the limiting nutrient in coastal and salt water eco-systems. Phosphorus is the nutrient of concern because of its affect on local and regional waters. Nitrogen may also be targeted in the future because of downstream impacts to coastal waters such as the Gulf of Mexico.

A 1999 USGS report (Review of Phosphorus Control Measures in the United States and Their Effects on Water Quality) estimated that of the phosphorus added to the

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Algae bloom

Built to last

Introducing
Isco’s new
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Purpose-built to survive outdoors
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- Highly resistant to weather and corrosion
- Sample temperature logging
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- Flow or time paced sampling
- Modular Design – Easy Serviceability
- EPA-recommended line velocity of 2 ft/sec at head heights up to 25 feet

For more information contact:
www.mulcahyshaw.com
Mulcahy/Shaw Water
Mequon, WI • (262) 241-1199
info@mulcahyshaw.com

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environment, in the United States, about 70% was from agricultural uses (fertilizer and manure application), 25% was from other non-point sources, and 5% was from point sources (i.e., wastewater treatment plants). This doesn't mean that 95% of phosphorus loads to the nation's waters came from non-point sources, however, as only a fraction of that load actually makes its way to waterways. The fraction that does reach waterways is difficult to estimate, dependent on a wide variety of factors, and is estimated to vary from 5% to 50% of the environmental load, depending on local site-specific conditions. So, depending on location, phosphorus loads to our nation's waters may represent a 50%/50% split between non-point and point sources, to a 90%/10% split between non-point and point sources.

The Pinch on Phosphorus
In response to increasing concerns over eutrophication and restoring the nation's waterways, there are multi-pronged efforts occurring to try and control phosphorus loadings to waterways. Among these are:

• Trying to revise agricultural practices to limit manure and other fertilizer loadings to only provide enough phosphorus to meet the crops actual needs. (Historically the nitrogen needs of the crops have been used, resulting in excessive phosphorus applications and increasing phosphorus levels in the soils.)
• Trying to minimize runoff and erosion from agricultural lands, to waterways, through revised cropping practices and establishment of riparian buffer zones.
• Trying to control sediment loads to waterways from urbanized areas through a range of emerging runoff control methods such as constructed wetlands, green building roofs, porous pavement, etc.
• Limiting phosphorus concentrations in the effluent of point sources, in particular wastewater treatment plants.

This last approach is a key to our industry, obviously. Wisconsin has been a leader in controlling point source discharge of phosphorus, beginning in the 1970s through today. Among the steps our state has taken are:

• Placing a 1 mg/L effluent phosphorus limit, in the early 1970s, on all treatment plants whose discharge made its way to Lake Michigan or Lake Superior.
• Banning phosphorus in laundry detergents in the early 1980s, which resulted in a significant reduction in the phosphorus concentration of typical municipal raw wastewater.
• Establishment of a statewide effluent phosphorus standard of 1 mg/L (with allowance for some exceptions) through the original NR 217, in 1994.

With the 2010 revisions to NR 217, Wisconsin continues to be a leader in efforts to control phosphorus from point sources. With these revisions, many treatment plants will have to take further steps to reduce their effluent phosphorus concentration, potentially at significant cost.

There are two issues that can be frustrating to our industry:
• Will further restricting effluent phosphorus concentrations, from 1 mg/L down to as low as 0.075 mg/L, have a significant effect on the phosphorus concentration of our receiving waters? In particular, if non-point sources of phosphorus to these same receiving waters are not similarly controlled. There is no clear-cut answer to this question.
• The way we remove phosphorus from wastewater is to convert it to a solid, and remove it with our waste sludge. And for most treatment plants in Wisconsin, that means the phosphorus ends up in biosolids, much of which is destined for agricultural land. As noted earlier, historically biosolids loading rates have been determined based on crop nitrogen requirements, but the shift is now going toward limiting such applications based on crop phosphorus needs. This will in effect double to triple the acreage required for the same amount of biosolids.

So, there defines the pinch on phosphorus that our industry is feeling. Removing higher levels of phosphorus, potentially at significant capital and operating cost, results in higher levels of phosphorus in biosolids. Shifting to phosphorus based biosolids loadings on agricultural lands, needing more and more acreage to recycle those biosolids, potentially represents significant increases in operating costs.

We are all in this business because we care about our environment, and want to do what we can to maintain and improve it. WDNR is to be commended for its proactive actions with regard to phosphorus control through the years, in particular with the recent rule changes which allows flexibility in compliance approaches. We can only hope that through these efforts, along with similar efforts to control agricultural and other non-point sources of phosphorus, our state will be successful in controlling/preventing eutrophication and maintaining high levels of water quality throughout.

So as our industry feels the pinch on phosphorus, future installments of this series will review how we remove phosphorus through standard and low-level approaches, the impacts such approaches may have on other parts of our treatment plants, and what to do as the phosphorus concentration of our biosolids increases and phosphorus becomes a limiting resource. Stay tuned.
Winneconne hosts May WWOA Lake Michigan meeting

Our meeting was held at the Fin n’ Feather in Winneconne. The setting was nice, the weather was perfect, the food was wonderful and the speakers’ presentations were very good. We had a total of 83 attendees including nine at the door registrations. We also had 100% attendance with zero no-shows for the day.

The meeting kicked off with Chairman Smudde introducing the Village President, John Rogers. Of the many interesting facts about Winneconne, we were surprised to hear that Winneconne is a “drinking community with a fishing problem.” It was apparent on this day as there were 40 people fishing from the bridge outside the conference center windows and probably another 40 boats within view on the river. White bass and walleyes seemed to be the catch of the day.

Our first presentation of the day was from Jim Klauer, regional manager from Danfoss. The presentation was entitled “VFDs – The Basics.” One of the key take-away messages was that VFDs save energy and improve system operation. This message must have gotten through, as I received requests from members asking for a copy of this presentation so that they may carry on their own facility review.

Chairman Smudde shuffled the agenda a bit and moved into the business meeting next. First up was a motion by Kevin Skogman and a second by Travis Coenen to accept the posted minutes from the Feb. 2012 meeting. All said aye. Motion approved. Next up was Bernie Hengels to present the current treasurer’s report. There was no old business to discuss, so Chairman Smudde moved right into new business. Chairman Smudde thanked Chris Hardy of Winneconne and the Fin n’ Feather for hosting our meeting. Also a thank you to MSA Professional Services for being the day’s break sponsor. Chairman Smudde recognized WWOA President Randy Thater and Committee Chair

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Jim Thalke for being in attendance today. Also recognized were five members of the Wisconsin DNR that were at today’s meeting, including Dick Sachs, Bob Hannes, Kendall Kamke, Jack Saltes and David Stertz.

Dick Sachs was asked to present the DNR update as follows; Scores from the May 2 operator certification exams will be mailed in the next few weeks. If you have not received them by Memorial Day then contact Dick Sachs. Secondly it is CMAR time – the electronic CMARs are now available.

Chairman Smudde then mentioned the upcoming position openings within LMD, one being Vice-Chair and the other being Secretary/Treasurer. Nominations will be ongoing until the August meeting where we will vote for these two openings. Additionally, there was an update on the operator competition and a mention of all of the annual conference awards that are up for nomination. It was also mentioned that there will be new WWOA clothing and promotional items later in the year as well as nominations taken for several scholarships. Applications are available online at www.wwoa.org Chairman Smudde asked President Thater if he wanted the floor to add anything. President Thater complimented Chairman Smudde for covering most of the items that he was going to mention and went on to congratulate LMD for hosting the meeting and for putting two teams together for this fall’s operator competition. At the conclusion of the business meeting a motion to adjourn was taken by Kevin Skogman and seconded by Travis Coenen. All voiced aye in favor of adjourning the meeting. We then took a 20 minute break sponsored by MSA Professional Services.

Following our morning break we viewed a presentation on “Construction Ahead: An Owner’s Guide to Construction Management,” by Jeff Montpas of MSA Professional Services. Jeff graduated from The Michigan State University, has 17 years in the engineering business with the last five being with MSA working on water and wastewater as a project engineer.

Next up was Kendall Kamke of the DNR. Kendall holds a BS and MS from UW-Stevens Point and has been with the DNR since 1986 as a biologist and specialist as a fisheries biologist. Kendall gave a very interesting presentation on habitat changes on the Upper Winnebago pool lakes.

Lunch was a trip (or two) through the bountiful buffet put on by the folks at the Fin n’ Feather. Many of the members mentioned to me on the way out that the food was very good and we should come back again. Immediately after lunch, Jack Saltes of the DNR engaged us in a discussion of DNR updates, including streamlining of license classes and testing requirements. This was a topic enjoyed by many who attended.

Jeff Montpas of MSA Professional Services came back to the podium to go over the plant upgrades and to give us directions to the plant. Our next meeting will be Aug. 22 in Cleveland (WI). See you all there.

Respectfully submitted: Bernie Hengels
Secretary and Treasurer – WWOA/LMD
The measurement of energy use has many important applications in the management of water and wastewater facilities. A few common metering applications include total energy costs, energy generation revenue and monitoring of equipment operations.

Management consultant Peter Drucker once said: “If you can’t measure it, you can’t manage it.” When making energy measurements are hazardous (high voltage areas) or expensive (energy audit) the measurements are made infrequently, making it impossible to effectively manage energy use.

AC (Alternating Current) measurement opportunities exist in every water treatment process. These opportunities often raise the question of what parameters and where to make measurements such as voltage, current, watts, VARS and frequency.

Knowledge of basic AC parameters is important in energy management at a water treatment facility. Voltage is the most basic measurement. Simply put it is the magnitude of the waveform measured across a source or a load. Voltage is comparable to the pressure of water in a pipe. Current is measured in amperes and can be compared to the flow of water in a pipe. Frequency is the rate in cycles per second that AC voltage alternates. While standard voltage is provided at 60 cycles per second VFDs or Variable Frequency Drives are commonly used for variable speed applications and energy conservation.

Watts or Kilowatts (kW=Watts x 1000) is an instantaneous measure of energy used. The basic unit of energy use is energy kilowatt-hours. KWh which is the average kilowatts used during a one hour period of time. Other parameters that may affect the energy readings (not discussed here) include VARS, phase angle and power factor.

Why would you want to monitor power or energy use at a wastewater plant? Establishing and refining energy use in an energy intensive environment is an effective way to control operation costs. Tracking process changes and the resultant energy use can help validate the most efficient methods of operating the various processes at a wastewater facility.

Data on system energy use enables analysis of performance. Measurement allows managers to understand process current and future capacity. Setting benchmark standards helps to ensure the facility operations are operating at high efficiency levels. Measurement data can help reveal areas where future conservation projects will be most beneficial.

Many of the treatment facilities built over the past decades have not invested in energy metering. Cheap energy, insufficient funds, lack of incentives and a lack of focus on operating costs all contributed to this deficiency.

In recent years the cost of metering has decreased and many new control devices being used in the industry incorporate energy metering into their controls.

I am often asked where and what to measure. At wastewater facilities I typically recommend:
1. At the facility main circuit breaker or power meter to identify the total power consumption and track the diurnal variations.
2. At each MCC to identify the power consumption associated with the process area.
3. On each of the major systems such as aeration blowers to ensure and validate optimum operational efficiency.

Visualization tools such as an energy use viewing dashboard are useful for all staff in optimizing the operation of the facility.

For additional information on developing cost effective energy management solutions for your facility contact Ray Grosch (rgrosch1@wi.rr.com).
In our last issue, Rick Mealy discussed one of the foremost challenges that we encounter in our field—public relations. I thought that I would extend that discussion with an example of a rare success story in increasing public awareness of the importance of our infrastructure. As managers (and employees) of cities, villages, sanitary districts and industries, we have been handed the task of not only doing our jobs well, but trying to educate the public on our work, our needs, and our goals. As you’ve probably noticed, wastewater treatment isn’t very high on people’s radar, let alone their wish list for their tax dollars.

A few years ago, a very impressive young employee named Andrew Sullivan from the City of Eden Prairie, MN began to develop a project that he hoped would educate the public through one of their favorite outlets—television. The organization that he formed, “Blueprint Minnesota”, began working with Twin Cities public television to produce a documentary film about Minnesota’s critical water infrastructure. Putting together a professional-grade documentary is by no means an easy or inexpensive project; nevertheless, Andrew reached out and acquired sponsors and partners such as professional organizations, engineering firms, and utilities. They filmed in cities both large and small, and interviewed public works employees, management, city officials, engineers and other players in the industry. The resulting one-hour documentary has been shown consistently on public television stations, and by popular demand, is still being shown.

Other states have joined in; Blueprint Nebraska, Blueprint Pennsylvania and Blueprint North Carolina. There is also a Blueprint America, in which PBS reports infrastructure issues across the nation. Does Wisconsin have the time and resources to join in? No one is going to tell our story as well as we do.

The entire documentary can be watched online at http://blueprintminnesota.com/watch-online/. I hope that you can take an hour out of a busy day to view it.
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