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44th Annual W.W.O.A. Conference:
October 19-22, 2010, Kalahari Resort, Wisconsin Dells
Kalahari Convention Center
Portage Wastewater Treatment Facility – Host
President’s Message

Being the baseball fan that I am, I know that the real beginning of spring is when the Major League Spring Training Camps open. The camps have been open since the end of February and the regular season is about to begin. Spring is here! In our business, spring means that times will be getting much busier - if that is possible. It is time to deal with biosolids inventories that have increased during the winter months, and increased flows that come with the spring thaw. Busier times are certainly here.

The program for the WWOA Annual Conference at the Kalahari Resort in Wisconsin Dells is pretty much set. Randy Thater and the Technical Committee (sounds like a rock band to me) met in February to review the presentations that were submitted. There were 70+ presentations submitted to fill the 35 to 40 available spots for the conference. It was not an easy task to choose the presentations, and unfortunately, some interesting presentations were not selected due to unavailable space. This is a nice problem to have and leads to what should be another interesting and beneficial conference. My hat goes off to Randy for putting this all together. He is one of the most organized people that I know and his efforts will show at conference time.

I had the opportunity to attend several training sessions in February: two WWOA Regional Meetings and the Government Affairs Seminar. It continues to amaze me the quality of the Regional Meetings that the Regional Officers put together. These folks do a great job in putting their agendas together. With everyone’s budget getting tighter and tighter, the Regional Meetings offer excellent training opportunities for a nominal fee. For those of you unable to attend the more costly training opportunities, please remember your local meetings are a great chance to receive quality training at a very reasonable cost.

The Government Affairs Seminar offered very timely and pertinent information. Congratulations to the committee members that put together this training session. The big topic of the day was the upcoming new phosphorus limits. The seminar revealed what the new limits will be and the cost associated with meeting these limits. Hopefully you are all aware of the proposed limits that are coming. If not, you need to do whatever you can to get yourself and your community informed.

I would also like to recognize those that put together the Spring Biosolids Symposium. I was unable to attend the symposium, but from what I hear, it was another quality program.

In closing, I would like to share a passage that a friend of mine shared with me a few weeks ago. He was telling me about a seafood place that he had been to and its motto, which I’ve listed below. It is a helpful reminder to me and will hopefully be the same for you.

“The longer I live, the more I realize the impact of attitude on life. Attitude, to me, is more important than education, than money, than circumstances, than failures, than success, than what other people think or say or do. It is more important than appearances, giftedness, or skill. It will make or break a company… a church… a home. The remarkable thing is we have a choice everyday regarding the attitude we embrace for that day. We cannot change our past… we cannot change the fact that people act in a certain way. We cannot change the inevitable. The only thing we can do is play on the one string we have, and that is our attitude… I am convinced that life is 10% what happens to me and 90% how I react to it. And so it is with you… we are in charge of our ATTITUDES.” Chuck Swindall

Until next time – take care.

Bruce Bartel, WWOA President
Process Improvements Yield Operational Savings

James E. Kleinschmidt, P.E.
Senior Project Manager
Strand Associates, Inc.

FOND DU LAC REGIONAL WASTEWATER TREATMENT FACILITIES

The City of Fond du Lac provides wastewater treatment for the City of Fond du Lac and contract users adjacent to the southern half of Lake Winnebago. Wastewater treatment has been provided by the City since 1913 with treatment provided at the current site since 1928. Major projects at the facility were constructed in 1928, 1949, and 1975 prior to the most recent major project that was completed in 2008.

Planning for the project began in mid 2002 with several key goals. The goals included:

- Reuse Existing Facilities
- Focus Capital Costs on Routinely Used Facilities
- Reduce Overall Operational Costs
- Reduce Carbon Footprint and Energy Use

Adaptive reuse of structures constructed in 1949 and 1975 saved the City approximately $20,000,000 in potential capital costs. The focus on the facility was for routinely used forward flow facilities. Flows exceeding 34 mgd are routed through the existing primary clarifiers and aeration tanks to provide storage and enhanced primary treatment.

Energy efficient processes were provided that have reduced overall electrical consumption and a Thermophilic Phased Anaerobic Digestion process provides self-sufficient biosolids stabilization.

FACILITY OVERVIEW

The Fond du Lac Regional Wastewater Treatment Facilities has an average day design flow of 9.84 mgd with a maximum hourly flow of 50 mgd. Flows up to 34 mgd are routed through biological treatment. Flows exceeding 34 mgd are routed to excess flow storage and treatment. Approximately 2,000,000 gallons of storage are provided before excess flow effluent blends with the forward flow.

A 50 mgd firm capacity with 66 mgd total capacity submersible pumping station was included in the upgrade. The overall sewer hydraulic grade line was lowered about 7 feet to reduce the potential for basement backups and reduce the potential use of a nearby bypass pumping station.

Wastewater is lifted to twin Parshall flumes where the influent flow is metered prior to fine screening (1/8 inch opening perforated plate screen), grit removal and grit washing. Downstream of the grit removal process are the primary clarifier and excess flow splitter structure where flows are routed either to forward flow or the excess flow storage and treatment. The normal forward flow is routed to two 120 foot diameter primary clarifiers that also serve as thickeners to condition store biosolids prior to anaerobic digestion.

Primary effluent flows to an MLE (modified Lutzak Ettinger) configured activated sludge process that takes advantage of denitrification for a reduction in energy use as well as alkalinity recovery.
The existing final clarifiers and return activated sludge pumping station from the 1975 project were reused in the recent upgrade. Following final clarification, the wastewater flows through an ultraviolet (UV) disinfection system housed in one of the 1975 aeration tanks. Under certain flow conditions, effluent pumps are available to lift the wastewater into the plant effluent sewer for a 1,700 foot trip to Lake Winnebago.

**OPERATIONAL COST REDUCTIONS**

Operating costs were reduced through facility automation that allowed the facility staffing to be reduced to a single shift, five days a week. This net reduction resulted in an overall staffing reduction of about six full time positions. Detailed planning by the City resulted in no job losses for existing employees as a result of this change to a single shift.

Significant energy cost reductions were obtained through process modifications and the installation of high efficient motors. Electrical usage was reduced from about an average of 700 kW to 550 kW for an annual savings of about $100,000 per year. Figure 1 shows the impact of process improvements on electrical use.

An energy self-sufficient Temperature Phased Anaerobic Digestion Process produces about 140,000 cubic feet of biogas a day, which is more than sufficient to provide heat for the thermophilic process. The City is currently
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evaluating the addition of electrical generation capacity of between 400 kW and 800 kW. Any generation greater than 600 kW would make the facility self-sufficient with regard to electrical demand.

Preliminary testing of the dewatered stabilized biosolids indicates that the facility maintains a Class A quality biosolid with respect to fecal coliforms. The geometric mean of measured data was significantly less than the 1,000 MPN/gm Total Solids.

**ENERGY EFFICIENT ACTIVATED SLUDGE**

The process configuration for the activated sludge system is a modified MLE process that takes advantage of denitrification to reduce overall energy use for the activated sludge system.

Blowers (high speed centrifugal with magnetic variable speed drives) provide for efficient operation across the range of required air flow.

Coupled with automatic blower control and operator interface, the blowers are maintained in the optimal efficient range of operations.

**EXCESS FLOW STORAGE AND TREATMENT**

A key focus for the City was to concentrate resources on routinely used facilities. Flows exceeding 34 mgd are routed to approximately 2,000,000 gallons of storage/treatment.
prior to blending with the 34 mgd forward flow for UV disinfection. Total cost for this 16 mgd of additional peak flow capacity was about $1,200,000.

Since initiation of operations for excess flow in July 2007, there have been two events where the storage capacity was reached and the excess flow blended with the forward flow. The first event occurred during a major flooding event in the City where significant portions of the downtown area of Fond du Lac flooded after sanitary sewers surcharged sufficiently to lift manhole covers.

The second event occurred on April 26, 2009. Flows exceeded 34 mgd for about 12 hours. Flows were stored for about the first five hours and then blending occurred for about 7 hours.
SUMMARY OF 2009 OPERATIONS

The first full year of operation for the facility was 2009. Flows for the year averaged 7.28 mgd or about 73 percent of the annual average design flow of 9.84 mgd.

However, the design flow was exceeded for the months of March and April.

Figure 2 shows the effluent quality on a monthly average basis for effluent BOD5 and effluent nitrate. Average values for 2009 were 5.9 mg/L and 9.2 mg/L, respectively.

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<tbody>
<tr>
<td>BOD</td>
<td>4.7</td>
<td>5.3</td>
<td>13.9</td>
<td>4.9</td>
</tr>
<tr>
<td>TSS</td>
<td>2.9</td>
<td>3.8</td>
<td>22.0</td>
<td>3.0</td>
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<tr>
<td>Phosphorus</td>
<td>0.58</td>
<td>0.76</td>
<td>1.04</td>
<td>0.32</td>
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WWOA Conference Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
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<tbody>
<tr>
<td>2010</td>
<td>Kalahari Resort, WI Dells</td>
</tr>
<tr>
<td>2011</td>
<td>La Crosse Civic Center, La Crosse</td>
</tr>
<tr>
<td>2012</td>
<td>Kalahari Resort, WI Dells</td>
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Fieldbus
A modular approach to Fieldbus physical layer components from Phoenix Contact provides infrastructure connection between the process Fieldbus controller and field devices. This new concept combines industrial electronic packaging and data communications competencies to deliver high-value Fieldbus infrastructure solution.

nanoLine
nanoLine is a small programmable controller/relay with unique features such as Ethernet connectivity, removable operator display and easy flow-chart or RRL programming. The modular design allows for connections of up to 3 I/O expansion modules (RS 232, RS485, USB). It allows for easy data exchange with Modbus TCP or Modbus RTU master devices.

Managed Ethernet Switch
Economical managed Ethernet switch supporting SNMP, RSTP, Web Based Management capability are standard features. This Switch supports applications where Multicast traffic is a concern (like Ethernet I/P), a “-E” version is available with default enabled IGMP Snooping.

SFN Switch
The SFN family of unmanaged Ethernet switches provide low cost, fully industrially hardened, entry-level switch functions with 5 or 8 ports (10/100 Mbps) in a narrow housing width. Complete range of 100 Mbps glass fiber configurations to support 1 or 2 ports with SC or ST style connectors. The new SFNT group of Ethernet switches are for applications where extreme temperature conditions (-40C to 75C) exist.

Ethernet Modem
The Ethernet modem makes remote servicing and diagnostics of distant ethernet network devices as simple as dialing into an Internet connection. Ethernet control systems and operation panels anywhere in the world can be controlled remotely via a modem and a telephone line.

UT Terminal Blocks
UT screw connection terminal blocks are designed in a compact profile for easy, maintenance-free handling. UT terminal blocks have a dual bridging channel for power distribution (chain, skip, step-down). Manufactured with nickel and tin plated copper alloy components to protect against corrosion and eliminate thermal expansion issues.

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Brain Teasers
March 2010

SUBJECT: Solids Thickening and Dewatering

Introductory:

What is another term for polymer, the synthetic organic chemical used in the coagulation of sludges during thickening processes.

a. Metal salts
b. Polysaccharide
c. Struvite
d. Polyelectrolyte

Advanced:

A waste activated sludge is pumped at 50 gallons per minute with a concentration of 4.0 percent solids. Jar tests have shown that 32 pounds of dry polymer are necessary for successful thickening of the sludge. What is the polymer dosage in pounds of polymer per ton of dry sludge solids?

a. 2.7 pounds/ton
b. 5.6 pounds/ton
c. 9.3 pounds/ton
d. 14.9 pounds/ton

Answers to February Brain Teasers

SUBJECT: BIOLOGICAL NITROGEN REMOVAL

Introductory

Answer: C. Anaerobic. Under anaerobic conditions, oxygen molecules are released, changing nitrates to nitrogen gas.

Advanced

Answer: D. 7.14 mg of CaCO₃ is required to nitrify 1 mg. of nitrogen. The nitification process also requires 4.57 mg. of oxygen used for each 1 mg. of nitrogen removed.
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Rick Kutcher  PAGER    262-775-0106
North Central Regional WWOA Meeting
February 2, 2010
Merrill, WI

The winter meeting of the North Central Region of the WWOA was held on February 2, 2010. The Merrill Wastewater Treatment Facility hosted the meeting. The meeting was held at the Arena Banquet Facility in Merrill. There were 67 attendees and 7 vendor displays.

Terry Vanden Heuvel opened the meeting at 8:30 am. He introduced Doug Williams, the Mayor of Merrill. Mr. Williams welcomed attendees to the City of Merrill. He mentioned a few highlights and interesting facts about the City and expressed his hope that people will come back to visit the City again.

After the Mayor’s remarks, Terry introduced Grant Weaver of The Water Planet Company. Mr. Weaver’s specialty is helping treatment facilities assess their facility to make it more efficient and take advantage of existing facilities in different ways that avoid expensive, capital costs to address nutrient removal, and operational problems.

He began by explaining the basic principles and mechanisms of how nutrient removal is accomplished. He explained volatile fatty acid production to drive nutrient removal. He discussed how alkalinity is destroyed and recreated through the nitrification/de-nitrification cycle. He proceeded to focus on anoxic zones and how they can improve plant operations and nutrient removal. He discussed simple ways to create anoxic zones, such as turning blowers off for short periods of time.

After the morning break, he continued with a case study of Suffield, NH and led a group exercise to examine possible improvements to the Merrill WWTF.

Joe Cantwell, Wisconsin Focus on Energy, followed with a presentation on the programs and assistance available from FOE and case studies of improvements at various facilities.

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2. He thanked Terry Vanden Heuvel and the Merrill WWTF staff for hosting the meeting.
3. Lutz introduced Regional Operator of the Year recipient, Jeff Wunrow, who was in attendance.
4. Lutz announced that the North Central Region was selected as the 2009 Region of the Year.
5. Lutz introduced WWOA State President Bruce Bartel. Bartel announced several upcoming events and WWOA activities.
6. Ron Dickrell announced the date of the 2010 Northwood’s Collection System Seminar and some of the planned activities for the meeting.
7. Lutz called for any questions, comments, and/or changes to meeting minutes from the September Whiting meeting as posted on the WWOA website. Hearing none, the minutes were accepted as printed.
8. The Treasurer’s report was presented and accepted.
9. The Steering Committee held a meeting on November 17, 2009. The minutes of the meeting are posted on the North Central Region section of the WWOA website.
10. Spencer will host the next regional meeting in mid-May. Northern Lake Service will host the summer meeting in Crandon. Wausau will host the 2011 winter meeting.
11. Lutz congratulated Chris Helgestad and the Spencer WWTF for receiving the 2009 Registered Lab of the Year Award.
12. Lutz and Ken Bloom gave a short summary of their experiences at the national operator’s competition at WEFTEC. They strongly encourage anyone interested to get involved in the operator’s competition at the State conference as a first step.
13. The WWOA annual conference will be October 19 - 21 at the Kalahari in Wisconsin Dells. Registration information is available online on the WWOA website.
14. Membership for all non-members is encouraged. Benefits include: discounted rates to annual convention and training opportunities, student scholarships, tuition aides, the Clarifier Magazine, the Membership Directory, and eligibility for WWOA awards.
15. Scholarships - two for $1,000 each are available for either two or four year program students. Candidate must be a child or grandchild of a member and in an eligible program this academic year. More information is available on the WWOA website.

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16. Attendees were encouraged to nominate deserving operators for the Regional Operator of the Year Award. Nomination forms are available on the WWOA website.

17. Tuition reimbursements - six for $150 each academic year, credit courses or advanced non-credit seminars. Contact Wade Peterson for more information.

18. Anyone interested in having your community host a future meeting should contact a Steering Committee member for details. The Steering Committee members are available to provide you with as little or as much help as you need. It is a great way to showcase your community and your facilities.

19. There was no new business. The meeting was adjourned.

Lunch was served, followed by the raffle giveaway.

Jack Saltes kicked off the afternoon session with a rousing discussion of several topics. He discussed electronic reporting including an EDMR update. He discussed the status of operator certification exams, the updated study guides, and their potential use as training materials for plant staff. He finished his presentation with a review of resources available to help develop a CMOM and a focused discussion of the collection system section of the CMAR report.

Lamont Albers closed the afternoon with a presentation on the concept of using service life assessments to make decisions on whether to rebuild existing equipment or replace it with new equipment.

Terry thanked everyone for attending and invited everyone to tour the Merrill WWTF.

Submitted by Rich Boden, Secretary, North Central Region Nasco Sludge Judge Division

Lamont Albers
Single-use applications range from storm water run-off storage, equalization and trickling filters to sludge digestion and sludge storage/mixing. Suitable for total system applications, AQUASTORE tanks are used in Sequential Batch Reactor (SBR) systems, package treatment plants, anaerobic sludge digestion systems and conventional large volume treatment.
Optimization of Phosphorus Removal Processes

By: Troy Larson, Wastewater Operations Specialist and Jane Carlson P.E., Project Manager for Strand Associates Inc.® in Madison, WI

A note from the Editor….

Phosphorus is a nutrient that will be discussed much in 2010. The Wisconsin Department of Natural Resources is set to release for public comment new proposed water quality based phosphorus concentration limits for receiving streams, rivers, and lakes. The impact of new limits will be significant to treatment operators.

For those who attended the annual conference, the information in this article will be familiar. Troy accepted the Clarifier staff’s offer to write an article based on his presentation. The information he presented was worth repeating. The Clarifier staff would like to thank Troy for his contribution.

Phosphorus removal at Wisconsin wastewater treatment plants (WWTPs) is not a new topic; however, regulatory changes and fluctuations in chemical prices have made optimization of these processes a hot topic. Many WWTPs use phosphorus removal chemicals (PRCs) such as aluminum sulfate (alum) or an iron salt like ferric chloride to remove phosphorus chemically. Costs of these chemicals can vary wildly because of swings in supply and demand. Ferric chloride is frequently derived from byproducts of manufacturing, so reductions in manufacturing results in less chemical and higher chemical prices. Many factors are and will be increasing demand on chemicals including growth in our communities, adoption of phosphorus standards in surrounding states, and more stringent standards in Wisconsin. Increasingly stringent standards may mean that some facilities will be using chemical for the first time and others will be using more chemical than before, possibly considerably more. Even if your facility
is not directly impacted by the regulatory changes, you may need to pay more for chemical as the supply dwindles and demand soars. These potential increases in cost are especially unwelcome in an economy that has seen budgets being cut. There may have never been a better time to review your own processes and attempt to optimize them.

The first step in optimizing a WWTP for phosphorus removal is to identify the forms of phosphorus that are being discharged. For example, if particulate phosphorus is being discharged, increasing the amount of PRC may not be the best recourse because the primary role of PRC addition is to convert the soluble phosphorus into particulate phosphorus that can be removed by clarification or filtration. The particulate phosphorus is then removed with the sludge. To determine which form of phosphorus is being discharged, a facility can test for orthophosphate (PO4) to determine the soluble phosphorus and compare the data with the total phosphorus (TP) information they are already producing to meet state testing requirements. At facilities with low effluent suspended solids concentrations, the PO4 and TP concentrations should be fairly similar. As the effluent total suspended solids (TSS) concentrations increase, the gap between the PO4 and TP will tend to widen because of the additional particulate P. The effluent TSS concentrations may not be too high to meet the TSS limit for the facility, but the TSS may make it more difficult to meet the TP limit. In this situation, the facility needs to consider if an improvement in the effluent TSS is not the more cost-effective approach to handling its effluent TP needs. Figure 1 illustrates the potential relationships between particulate and soluble phosphorus, particulate phosphorus can be estimated by subtracting the soluble phosphorus from the TP.

It should be noted that phosphorus may also be colloidal in nature. Colloidal phosphorus is not as reactive as PO4 so additional chemical may not improve removal, and because these compounds are so small they won’t settle with the particulate solids very effectively. They will be removed with filtration, particularly if membrane filtration is used. Typical effluent concentrations of these colloidal compounds is generally low (0.0 to 0.2 mg/L) when operating to meet a 1 mg/L TP limit and is therefore not elaborated on further in this article. If future limits do become as stringent as currently suggested the colloidal phosphorus fraction will become a relevant concern.
Many facilities outsource their wet chemistry to a subcontract lab. Most facilities need to get information quickly enough to make process control decisions during the month, and PO4 analysis is a great way to do this. Digital colorimeters can be purchased for a few hundred dollars and are simple to operate. When facilities do not have current data, they often overdose chemical to be certain that they can meet their limits. Other times they fall behind early in the month, and at midmonth when they get their data back from the lab, they then need to drastically increase the PRC dose in hopes of meeting their limit. These dosing practices tend to result in increased chemical use and sometimes an exceedance of the monthly phosphorus limit.

Some facilities are designed with biological phosphorus removal (BPR) processes, many of which have not been optimized to meet their full potential. As a result, these facilities often need to polish their effluent with PRC to meet their limits. These facilities might benefit from optimization of their activated sludge controls in a way that better compliments the BPR process. The fundamental activated sludge control parameters that affect BPR are

Note 1 – Remove excess soluble P by increasing chemical dose or improve BPR.
Note 2 – Remove excess particulate P by improving TSS removal.
return activated sludge (RAS) volumes, waste activated sludge (WAS) quantities, and aeration targets. Take a look at your facility with the following fundamentals in mind. First, BPR is dependent on an anaerobic zone. High RAS rates can compromise anaerobic conditions by allowing additional nitrate to be returned (at facilities that nitrify). High dissolved oxygen (DO) targets in the aeration tanks can also allow oxygen to be returned to the anaerobic zone with the RAS. The less nitrate and oxygen returned into the anaerobic zone the greater the BPR efficiency will be. Second, phosphorus needs to be wasted to be removed from the system. Excessively long sludge ages will cause the phosphorus to be recycled within the system through endogenous decay activities and will tend to lower removal efficiencies. It is important to note that if some adjustment is good, more might not be better. For example, lowering the dissolved oxygen too far might result in a secondary release of phosphorus in the final clarifier. It is also important to note that phosphorus is only one of the limits that you are trying to meet. An increase in wasting that might help your phosphorus removal efficiencies but hurt your ammonia removal processes should not be attempted; we can always remove the phosphorus chemically, but the ammonia removal process generally does not have a chemical backup.

Facilities that did not choose to include a BPR process previously should consider doing so in future planning efforts. This will reduce chemical and sludge management costs. Some facilities have current aeration tanks that could easily be retrofitted to pilot test the BPR process. These facilities should give this consideration regardless of previous assumptions because frequently these assumptions were based on a relatively high phosphorus limit and readily available and affordable chemical supplies. As these supplies become more in demand and effluent limits are lowered, the benefit from even a partially successful BPR system may pay dividends.

Looking ahead to the prospect of more stringent limits, it is likely that more intensive technologies will be required. To meet limits of 0.25 or 0.1 mg/L of effluent TP, facilities will be equipped with more chemical addition capacity to convert the soluble P to particulate P, filtration to remove more particulate P, and increased monitoring. These future technologies can serve as a model for optimizing our current facilities designed to meet 1 mg/L limits; if the problem is soluble phosphorus, add chemical (or improve BPR); if the problem is particulate phosphorus, improve TSS capture, and monitor often enough to allow timely decision making.

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**IN CONTROL**
**Successful Operations through Process Control**

*By Jack Saltes, Wastewater Operations Engineer*

Department of Natural Resources

**April 2010**

Design and Performance Provisions is the fifth of the eight elements of a Capacity, Management, Operation & Maintenance (CMOM) Program.

Design and performance standards are often contained in state or municipal codes. These standards establish requirements for collection system design, construction, inspection and final approval. Some municipalities have employees that review, approve, and/or inspect collection system design and construction. Other municipalities or utilities contract with a registered professional engineer to perform these services or require the company constructing sewers to hire a qualified professional to provide these services. The CMOM Program summary should include the procedures followed to maintain control over the design, construction, and inspection of the collection system.

Design and Performance Standards Procedures

Check those that apply to your collection system and include these documents in your written CMOM Program.

- **State Plumbing Code**
  *Department of Commerce COMM 82, Wisconsin Administrative Code—Design, Construction, Installation, Supervision, Maintenance and Inspection of Plumbing* must be followed when designing and constructing residential and commercial plumbing and pipes. An important installation is the connection of the private laterals to the sewer main. Often these connections, if not installed properly, can be significant sources of infiltration, so a municipal program that ensures proper construction and connection of private lateral pipes will significantly control infiltration.

- **State Sewerage System Code(s)**
  *Department of Natural Resources Chapter NR 110, Wisconsin Administrative Code—Sewerage Systems* must be followed when designing and constructing sewage conveyance systems.

- **Local Municipal Code Requirement**
  Local communities may have their own set of standards and requirements, specific to community needs, in the design and construction of building plumbing and sewerage systems.
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Who designs your sewer system and what standards do they follow? Who inspects sewer construction work and what procedures are followed?

Check those that apply below and identify the standards and procedures that are followed for each.

- Municipal employees for sewer design work
- Contracted services for sewer design work
- Municipal employees for sewer construction inspection work
- Contracted services for sewer construction inspection work

I/I reduction starts with construction. Being sure your sewer pipes, both mainlines and private laterals, are constructed and installed properly, is an investment in the long-term life and integrity of the pipes and maintaining a tight sewer system, with very low I/I. Before the pipes are covered, it is especially important to be sure that all joints and connections are properly installed because once it is backfilled, you may not see that pipe again in your lifetime. Getting the job done right from the start will serve your community residents well for many years and keep I/I to a minimum. So this construction season, take the time to inspect new sewers and private lateral connections! After all, “An inspection, in time, saves I (infiltration)”. Dig safely and enjoy your summer.

**WWOA Golf Outing**

Mark your calendars now! The annual WWOA golf outing will be held at Trappers Turn Golf Club in Wisconsin Dells on Tuesday, October 19, 2010. Donations, prizes, and hole sponsorship fees ($50) can be sent to Kelly Zimmer, MSA Professional Services, Inc., 1230 South Boulevard, Baraboo, WI 53913. Please make checks payable to "MSA Professional Services, Inc."

If you wish to make a donation or sponsor a hole, please e-mail a .pdf of your company logo to kzimmer@msa-ps.com.

If you have questions, please call Randy Herwig at (608) 219-4219 or Kelly Zimmer at (608) 963-7385.

---

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West Central District Meeting
Black River Falls – February 17, 2010

On February 17, 2010, the West Central District’s first meeting of the year was held at the Skyline Golf Course in Black River Falls.

The meeting opened with a welcome address by Jerry Ewert, the Utilities Director for the City of Black River Falls. Jerry spoke about the unique situation they have in Black River Falls where the City owns and operates the hydroelectric dam and the many challenges they face.

Paul Sterk, the Chair of the West Central District, started the business meeting and made a few announcements. He informed everyone that the district would prefer to e-mail meeting notices out to the members. The WCD currently mails out about 300 announcements for each meeting, which is costly and time consuming. The WCD is also looking for nominations for Operator of the Year, as well as volunteers for the Operators Competition and regional officers for next year.

The WWOA President, Bruce Bartel, was in attendance and announced a few upcoming events such as the Spring Biosolids Symposium and the Government Affairs Seminar. Bruce also recommended that members take a look at the WWOA website and to feel free to comment about the site.

The first speaker of the morning was Chris Groh of Wisconsin Rural Water. Chris mentioned the upcoming Rural Water Convention in Green Bay on March 23 – 26. Chris also spoke about some changes being considered to the NR114 Certification rules. He said the State is considering getting rid of the advanced tests, moving to a point system, and allowing certification advancement through experience rather than testing. They are also considering new certification subclasses for recirculating sand filters and collection systems.

Chris then switched gears and moved on to a discussion of the CMOM program. Chris suggested going to the DNR website and doing a search using the phrase “why CMOM”. This will lead to the DNR’s CMOM page where various hyper links can be selected to learn more about the CMOM program or to view a short CMOM media site presentation. Chris noted that along the left side of this screen is a link to precipitation data. This link can be useful for finding the precipitation data for your area when completing your CMARs. Chris also recommended using the Wisconsin CMOM Handbook when developing your own CMOM program. He suggested that you print the handbook, separate the sections, and put them in a three-ring binder. Then take the binder and add your own written program into each section, such as Goals, Organization, O & M, etc. His final tip was to be sure and use the help button if you have questions when completing your CMAR.

The morning’s second speaker was Jeff Carlson of Northern Balance and Scale. Jeff discussed the fundamentals of weighing and using analytical balances. Jeff said the most important factor in weighing is repeatability. For example, when weighing for total suspended solids, if your balance is off by a few tenths of a milligram and this deviation is consistent, it will not affect your results. Jeff mentioned that your position on the earth and your elevation will affect your analytical balance; therefore, it is critical to calibrate new balances. The location of your balance in the lab is also important. The balance should not be placed in direct sunlight, high traffic areas, close to load...
bearing walls, exterior walls, or near drafty windows. The room temperature where the balance is located should be consistent. Static electricity can cause weighing results to drift. If you suspect you have a static electricity problem, place a coin on the pan. If the problem goes away, then it is being caused by static electricity. Jeff also mentioned that heavy marble or granite tables will reduce vibration from nearby pumps, trains, and vehicle traffic. Make sure that tweezers are always used for handling samples and standard weights since fingers leave oil and dirt behind. Make sure your balance is kept clean. Balances should be cleaned with a fine brush or light vacuum. Be sure to soak up any spilled liquids with a lint free cloth or absorbent pad. Jeff also recommended exercising the balance daily by lightly touching the pan with a tweezers, letting the balance return to zero, and repeating this a few times.

Jim Miller of Boonestro was the third speaker. Jim gave a presentation on Membrane Bioreactor (MBR) technology. Jim defined MBR’s as a form of tertiary filtration using membranes to filter out solids. MBRs can typically produce final effluent with a BOD of less than 2 mg/L and a TSS of less than 0.5 mg/L. Most allow for a very thick mixed liquor concentration of 8,000 to 12,000 mg/L. MBRs are mainly used in treatment plants that have been unable to meet their permit limits or have very low discharge limits. MBRs have high capital costs, electrical and maintenance costs. Costs can be as high as $100 per month per residential customer. In addition to meeting strict discharge limits, MBR’s other advantages include their compact size and dependability. They can be used in the bio-P mode, and usually do not require additional staff to operate them. Jim stated that although MBR costs are high today, they are coming down as more of these systems are installed and as competition develops.

One of the scheduled speakers for the day was unable to attend, so Chris Groh of Wisconsin Rural Water volunteered to give a presentation on fats, oil and grease and its impact on wastewater treatment. Chris emphasized the importance of keeping grease out of the system by having an effective sewer use ordinance in place. Chris also talked about grease trap design, operation, and maintenance. Chris said that the City of Clintonville’s sewer use ordinance has a nice example of a grease trap code that can be viewed on their website.

The last speaker of the day was Jerry Doriott of SEH. Jerry’s presentation was on anaerobic digestion. Jerry talked about the fundamentals of anaerobic digesters and their design characteristics. He also talked about the components of
digester gas and recovery of digester gas as a fuel for boilers or generators.

The day was then wrapped up with a tour of the Black River Falls Wastewater Treatment Facility.

Thank you to all of the speakers, vendors, and to those who donated door prizes for the meeting.

Paul Sterk
Vice Chairman
West Central District, WWOA

2010 Clarifier Due Dates

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Seminar on Emerging Issues for Wastewater Treatment Plants

SAVE THE DATE! THURSDAY, April 29, 2010

Symbiont will be hosting a seminar on emerging issues for wastewater treatment. This seminar is designed for treatment plant supervisors and operators to help understand critical issues that will affect operations. The seminar will start about 8:00 am and last until 4:30 pm.

Presentations include updates on Wisconsin’s phosphorous and thermal standards, phosphorous control basics, equipment summary for nutrients, and case studies involving tertiary phosphorous treatment and side stream phosphorous harvesting.

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For more information, please contact Amber Burke at 414-291-8840.

Wisconsin Wastewater Operators’ Association, Inc.
Board of Directors Meeting

Monday, October 5 and Tuesday, October 6, 2009
Hotel Sierra and KI Center Green Bay, WI

1. President J. Bond called the meeting to order at 10:15 a.m. on Monday, October 5, 2009. All Board Members were present.

2. No agenda changes, addition or correspondence.

3. After review and corrections were made, R. Thater made a motion to approve the August 14, 2009 minutes as corrected, D. Doerr seconded the motion. Motion carried.

4. McKee presented the Financial Statement. McKee reported that as of September 15, 2009, WWOA had $111,646.04 in revenue with $94,588.22 in expenditures with excess revenue over expenditures of $17,057.82. After discussion, D. Carlson made a motion to approve the financial statement as presented, seconded by B. Bartel. Motion carried.

McKee presented vouchers 97-136. After review and explanation of some of the vouchers, D. Doerr made a motion to approve the vouchers as presented, K. Freber seconded the motion. Motion carried.

5. COMMITTEE REPORT

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Packed with ideas to help you implement energy-efficient practices and equipment in your facility, this invaluable resource is the perfect starting point for creating your own energy management program. Visit focusonenergy.com/guidebooks to download your free copy today!
a. **Nominations** - Chairperson J. Thalke reported that he had one nomination for the office of President Elect and he is Dave Carlson. J. Thalke informed the Board that he has one nomination for Vice President and he is Randy Thater. Thalke reported that he has four Board of Director nominations for three 2-year terms, and if Thater is elected to Vice President, there will be one 1-year term. The nominations are Kelly Zimmer, and incumbents Wade Peterson, Dennis Egge, and Dale Doerr.

b. **Promotional** - K. Freber reported that 10 shirts were ordered to use as promotional items for the conference. Hats were ordered for the sporting clays shoot. He also ordered hats to be sold at the conference.

c. **Membership** - McKee reported that there are 2,121 active and lifetime members.

d. **Scholarship** - W. Peterson reported that he had one qualifying person. At the August meeting the Board awarded a $1,000 scholarship to Patrick M. Redmond from St. Cloud, MN. He is attending the North Dakota State University. His sponsor is his father, Keith Redmond.

e. **Executive Committee** - No Report.

f. **Clarifier** - J. Butt reported that the committee has not been able to replace Jeff Haack. Butt provided the Board with the 2010 schedule and deadline. Butt informed the Board that the September issue included 47 ads including 8 first time advertisers. The 8 new advertisers are Banner Engineering, Biolonics, BioRem, Focus on Energy, GPM, Headworks Inc., Liquid Process Equipment, and Siemens. The September Clarifier was 25 pages long. Butt requested the Board consider going from 5 issues per year to 4 issues.

g. **Career Development** - No Report.

h. **Awards** - B. Bartel provided the Board with a list of Awards: Koby Crabtree - Kay Curtin; Newcomer of the Year - Jeff Duda; Service Award - Jean Van Sistine; Bernauer - Charles Case; and Region of the Year - North Central. B. Bartel reported that all regions had nominations for Operator of the Year. They are: North Central - Jeff Wunrow; Southeast - Robert Wilson; Lake Michigan - David Lefebvre; Northwest- John Radloff; West Central - Dennis Holtz; and Southern - Don Quarford.
i. **Operator Training** - K. Ferber and W. Peterson reported that the WWOA sponsored seminars on “Phosphorus Training”. The presenters were Dan Tomaro of Wastewater Training Solutions and Chris Groh of Wastewater Trainer of Wisconsin Rural Water. One was held on August 24 at the in Onalaska Omnicenter, and on August 25 at the Green Bay Metropolitan Sewerage District. Both were well attended.

j. **Directory** - R. McKee reported the new Directories are available for the Conference this year. R. McKee will provide a box of Directories for the Regional Officer meeting. One box per Region.

k. **Publicity** - D. Doerr reported that he has assembled packets for each of the award. The award winners will be asked to fill them out and return them to Doerr and he will get them to the proper news outlet.

l. **Regional Coordinator** - Thater reported that he made it to all six regions for at least one meeting. Thater sent a newsletter in July to all officers for the summer meetings. Thater made a slide show available for each of the region meetings. All meeting flyers were posted on the web site except the West Central Region. Thater has provided the regional officers with an agenda for the regional officers meeting at the KI Conference Center. Thater will also remind the regional office that the presentations at their regional meeting must be informational or educational subject matter and not a sales pitch.

m. **Government Affairs** - R. Thater reported that the Government Affairs seminar was a success this year and each sponsoring group received $926.65.

n. **Biosolids Symposium** - D. Egge reported that the first meeting for the 2010 Spring Biosolids Symposium was held on September 30, 2009.

o. **Liaison** - D. Egge reported CSWEA met on August 12, 2009. CSWEA noted that the University Library needs to change the verbiage in the first line of the agreement giving CSWEA Wisconsin Section recognition for its part in supporting the library. CSWEA discussed allowing the WWOA to host a regional meeting at the Monona Terrace in conjunction with the CSWEA.
Annual Meeting. The annual CSWEA meeting will be held in Madison, Wisconsin at the Monona Terrace May 11 through May 14, 2010. There will be a separate room provided for the WWOA meeting.

p. **Web Committee** - B. Bartel reported that online registration for the annual conference was the main focus this year. Seventy-five people registered online this year. The goal is to make available next year for all the registration on line including exhibits. There are still a lot of bugs in the system and the goal is be totally online by conference time next year. This year the PowerPoint papers will be posted on the web. The top three visited pages at wwoa.org are: 1) Photo Gallery, 2) Events, 3) Employment.

q. **Technical Program** - D. Carlson reported that everything is set for the technical sessions, and each presenter is to have their PowerPoint presentation to McKee so that he can pre-load them on the laptops. D. Carlson informed the Board that he has notified the moderators of their duties, including their session, locations, and time. The moderators will have their registration packets with their moderator’s packets included in their registration packets. Troy Larson has all the signage ready. R. McKee has the credit slips for the conference (maximum 15) and the credit slips for the pre-conference (maximum 4.5). The Keynote and the entertainment for Thursday night have been confirmed.

r. **Exhibit Committee and M&C** - McKee reported for C. Strackbein. There are 112 booths sold this year. Green Bay Expo will provide pipe and drape and will be setup by 4:00 p.m. so the exhibit can set up.

s. **Operators Competition** - D. Doerr reported that there are three teams this year: Southern Region “Deuce Is Loose”, Lake Michigan Region “Bay Bowl Busters”, and Southeast region “The Corn Elves”. There will be only first place awarded. Also the Judges have been lined up. They are: Bill Schill, Dan Waala, and Roger Timm for the Collection System Event; Jeff Duda, Jim Gomand, and Kevin Skogman for the Safety Event; Ron Hicks, Pat Linssen, and Brent Bailey for the Maintenance Event; All Zengler, Tom Tocco, and Jeff Bratz for the Lab Event; and Dawn Bartel for Process Control event.

t. **Local Arrangements** - B. Bartel reported the tours have been confirmed and set. There will be a sign up sheet at registration for the two tours. The two tours are FEEOC/ENCAP limited to 48 people and Heart of the Valley Metropolitan Sewerage District (HOV) limited to 56 people. The Mayor of Green Bay will give a short welcome before the Keynote welcoming all the attendees to Green Bay.

u. **Spouse Program** - B. Bartel reported for Jean Van Sistine. Wednesday, the continental breakfast will be provided by Donohue & Associates. All other programmed events are set and confirmed. Thursday the continental breakfast for the Spouse/Guest program will be provided by Robert E. Lee & Associates.

v. **Golf Outing** - B. Bartel reported for Jeff Czypinski. The golf outing will be held at the Royal St. Patrick’s Golf Links in Wrightstown. The cost of the outing is $65.00 and includes ½ motorized cart, 18 holes golf, buffet lunch, two drink tickets, Hors d’oeuvres, and cash bar.

**Sporting Clays** - The event will take place at J&H Game Farm located near Shiocton. We are expecting 50+ to participate. Vendor support signs will be posted at each station. The Committee will recognize top gun
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and the top three teams along with drawings for door prizes.

w. Permanent Arrangement - No Report

x. Resolutions and Bylaws - No Report

y. Historical - No Report

z. Others

There being no further reports, B. Bartel made a motion to accept the Committee reports as presented, W. Peterson seconded the motion. Motion carried.

6. OLD BUSINESS

a. None

7. NEW BUSINESS

a. Review and approval of the agenda for the Annual Business Meeting. After review, R. Thater made a motion to approve the Annual Business Meeting agenda as presented. D. Carlson seconded the motion. Motion carried.

b. Other - December Board Meeting. After discussion, the Board rescheduled the regular December Board meeting to December 10 and 11, 2009. The meeting will start at 10:00 a.m. on December 10, 2009.

8. ADJOURNMENT - There being no further business, D. Doerr made a motion to adjourn, W. Peterson seconded the motion. Motion carried. Adjourned at 3:30 p.m. on October 5, 2009.

Respectfully submitted,
Richard D. McKee

**WWOA Scholarships and Tuition Aid**

Are you thinking about going back to school to finish up a degree or just to further your wastewater knowledge? Is one of your children or grandchildren in college or headed to college?

Go to the WWOA website and check out the criteria and applications for a scholarship or tuition aid. You will find it in the Member Services Tab.

The WWOA offers two $1,000 scholarships annually. The student’s studies must be related to the water/wastewater field. The student must be in his/her 2nd, 3rd, or 4th year of college and enrolled in a minimum of 12 credits per semester.

The WWOA also offers six $150 tuition aid reimbursements annually to its members. The members must be in good standing for a minimum of three years and are eligible for one reimbursement per school year.

Again, check us out on the web or contact the scholarship committee chairperson!! ☛
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**WWOA Annual Awards**

It is that time of year where the WWOA is looking for qualified applicants for the various annual awards that are given out during the Awards Banquet at the Annual Conference. Please consider nominating a deserving individual.

The awards are as follows:

The George Bernauer Award is named after Mr. George F. Bernauer and the criteria includes successful plant performance, and/or successful solution of important or complicated operational problems, and/or outstanding contributions in the field of wastewater technology in the State of Wisconsin.

The Koby Crabtree Award is named after Dr. Koby Crabtree and is given out to recognize excellence in technical support provided to others in the field of wastewater treatment.

The Service Award is presented to a person who has made an outstanding contribution to the WWOA in the areas of promotion, operation, management, program participation, or education.

The Newcomer of the Year Award is given out to a person who is new to the wastewater field (less than three years of experience) and has shown higher than average growth in his/her place of employment, a willingness to learn, and exceptional enthusiasm for his/her profession.

Regional Operator of the Year Awards is given out to someone who has demonstrated excellent plant performance, and/or successful solution to a problem, and/or contributions to the wastewater field.

An award nomination form is included in this issue of the Clarifier. All of the award nominations, except the Operator of the Year, need to be received by August 1 and should be sent to Dave Carlson. The Operator of the Year deadline is July 1 and the nomination form should be submitted to each individual region.

There are plenty of people who fit the criteria for the above awards in the wastewater field. It is the membership that knows best who these people are. Please take the time to submit the name of a deserving individual.
WWOA Award Nomination Form

Deadline: August 1, 2010 (Note: Regional Operator of the Year is due by July 1, 2010)

Check Award Nomination: Bernauer ____ Crabtree ____

Newcomer of the Year ____ Service ____ Regional Operator ____ (regional affiliation) ______

Nominee’s Name __________________________________________ Address:___________________________

City: __________________________________________________ State: __________ Zip: _______________

Home Phone:___________________________________________ Work Phone:___________________________

Employer: ______________________________________________________________________________

Occupation/Job Title: _____________________________________________________________________

Date Joined WWOA: __________________________ WWOA Membership Number:____________________

Regional Affiliation: __________________________ Regional Officer Positions? __________________

Brief Description of Nominee Activities and Achievements: (attach sheets if needed)
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

Why Do You Feel Nominee is Deserving of Award Being Nominated For?
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

Please Complete the Following: Submitter Name: ________________________________

Address: ______________________________________________________________________________

City: __________________________________________________ State: __________ Zip: _______________

Please mail or email nomination forms – For Bernauer, Service, Crabtree, and Newcomer of the Year to:

Dave Carlson – President Elect Fond du Lac WPCF
700 Doty Street
Fond du Lac, WI 54935
Work: 920-322-3664
Fax: 920-322-3661
dcarlson@ci.fond-du-lac.wi.us

For Regional Operator to:

Regional Award Contact

# 2009-2010 W.W.O.A. OFFICIAL DIRECTORY

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<th><strong>Dave Carlson</strong>, President Elect</th>
<th><strong>Randy Thater</strong>, Vice President</th>
<th><strong>John Bond</strong>, Past President</th>
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<th><strong>Kelly Zimmer</strong>, Director (11)</th>
<th><strong>Richard McKee</strong>, Executive Secretary</th>
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<td>24184 Fawn Meadow Lane</td>
</tr>
<tr>
<td>P.O. Box 19015</td>
<td>700 Doty St.</td>
<td>600 Sentry Drive</td>
<td>107 East Maple Street</td>
<td>W3514 McClintock Rd.</td>
<td>Janesville, WI 53546</td>
<td>S6648 Maple Hill Road</td>
<td>Richland Center, WI 53581</td>
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<tr>
<td>Green Bay, WI 54307-9015</td>
<td>Fond du Lac, WI 54935</td>
<td>Waukesha, WI 53186</td>
<td>Roberts, WI 54023</td>
<td>Mindoro, WI 54644</td>
<td>Janesville, WI 53546</td>
<td>Rock Springs, WI 53961</td>
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<tr>
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<td>Fax: 920-322-3664</td>
<td>Fax: 262-524-3632</td>
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<tr>
<th><strong>Dale Doerr</strong>, Director (11)</th>
<th><strong>Kevin L. Freber</strong>, Director (10)</th>
<th><strong>2010 Convention Contacts</strong></th>
<th><strong>Clarifier Staff</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheboygan Regional WWTP</td>
<td>Assistant Water Systems Manager WWTP</td>
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