Grafton Water and Wastewater Utility

42nd Annual W.W.O.A. Conference
September 30 - October 3, 2008
Holiday Inn Hotel & Convention Center
Stevens Point, WI

HOST:
Stevens Point Wastewater Treatment Facility
President’s Message

I hope all of you had a good transition from winter to spring. At the time I am writing this (March 10th), there is still 10 inches of snow on the ground. Many areas of the state have reported record amounts of snow this winter. We all know that a rapid temperature rise and rain can produce some flooding and I/I for us operators. I remember a few of those 100-year floods that happen about every 10 years or less. When this situation occurred you are trying to push six million gallons into a one million gallon a day plant. The storm sewers are overwhelmed and most of your lift stations are running almost 24-hours a day and you and your staff are putting in many extra hours for several days until the weather breaks and the high flows subside. In general your system is tested to the max. At times like these you wish you had chosen a different profession. A few days later you can reflect on what happened in your system and facility, maybe when you are filing your report to the DNR. Through the whole unpleasant situation you know that you did everything possible to protect the community from flooded basements and maintained the best wastewater treatment possible.

My intentions are not to bring back bad memories to all the operators that have witnessed these high water events, but to point out that every time you undergo such an event you become better for it and in turn your collection system and facility become improved. Because you have knowledge of the worst case scenario of your system and can make adjustments and corrections accordingly. If it is lining sewer mains, installing manhole inserts, grouting leaks, increasing capacity on pumps, or whatever I/I correction measures you take, it will be an easier undergoing when the next 100-year flood that hits your community every 10 years or less.

Wishing all of you a warm, sunny, and DRY Spring.

Jim Thalke

WWOA Conference Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Holiday Inn, Stevens Point</td>
</tr>
<tr>
<td>2009</td>
<td>Regency Suites &amp; KI Center, Green Bay</td>
</tr>
<tr>
<td>2010</td>
<td>Kalahari Resort, WI Dells</td>
</tr>
<tr>
<td>2011</td>
<td>La Crosse Civic Center</td>
</tr>
</tbody>
</table>

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Grafton Water and Wastewater Utility

By Thomas Krueger, Utility Manager

The Village of Grafton is located in the heart of Ozaukee County, approximately 20 miles north of Milwaukee. The Milwaukee River meanders through the Village, providing a park-like atmosphere to this beautiful community.

The first inhabitants to this area were Indians who settled along the Milwaukee River. The first known explorers to visit the area were Fathers Allouez and Bablon. Later, German and Irish immigrants cleared the land and farmed grain. The Village grew and became the center for commerce to transport goods west into the county. The Village of Grafton was created from the Town of Grafton in 1846. At one time, it was called “Hamburg.” The Village’s original water and sewer system was constructed in 1931 and governed by a five-member non-partisan Water Commission created in 1932. Water and wastewater services were later combined into a single public utility in 1959.

With a current population of approximately 11,420, Grafton has grown to provide commercial and industrial opportunities for the Village and surrounding residents. Manufacturing entities include fabricated metal and plastic products, machinery, printing and publishing, electric and electronic equipment, and others.

To support this growth, the Utility’s wastewater treatment plant was expanded in 1983 to treat an average daily flow of 2.15 million gallons per day (MGD). Treatment facilities included fine screening, aerated grit removal, raw wastewater screw pumping, primary clarification, two-stage activated sludge for nitrification in a compact plant arrangement, final clarification, disinfection with chlorine gas and dechlorination, chemical phosphorous removal, co-thickening, and anaerobic digestion with limited sludge storage. The plant also had dissolved air flotation thickening and belt filter press processes that were abandoned due to inefficient operation.

In the late 1990s, wastewater flow to the plant averaged 1.40 mgd; however, due to septage and low infiltration/inflow (I/I), the organic loadings were near capacity. The treatment plant site had limited room for expansion. Although the Village has contemplated with Cedarburg on the possibility of a future regional facility, the timing was not yet a ‘good fit’ for both communities, so Grafton considered making plant improvements in the interest of assuring continued compliance with its discharge permit.
In 1997, the Village teamed with Donohue & Associates to complete an evaluation of the existing plant to determine the plant’s actual capacity and a timeline for joining into a regional facility. The evaluation concluded that the plant had significant unused capacity and that modifications to the existing plant would increase its existing capacity to 2.5 mgd, which would meet the Village’s treatment needs to the projected year 2024.

As part of this evaluation, a “road map” was developed that phased improvements to match Village growth. This increase in capacity could be achieved without significant addition of tankage, through mostly process reconfiguration and thickening of the waste activated sludge. An anaerobic digester would be necessary in the future to achieve the full capacity increase.

The plan has been mostly implemented with the following improvements:

- Conversion of the plant to a single-stage activated sludge process and addition of a selector zone;
- Fine bubble diffusers in the aeration basins;
- New submersible return activated sludge (RAS) pumps;
- New RAS piping, metering, and valving inside of the compact plant;
- Improvements to the waste activated sludge (WAS) thickening process with a belt thickener;
- New liquid sludge loadout facility;
- New anaerobic digester mechanical mixing systems; and
- Gas piping and ventilation upgrades.

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The upgrades improved treatment plant performance and reduced operating cost. Prior to the improvements, the treatment plant had filamentous outbreaks causing poor performance. The new anoxic selector has eliminated the filamentous outbreaks, thereby improving performance, increasing sludge quality, and reducing operating cost. The complete conversion to fine bubble aeration has reduced power costs and provides improved dissolved oxygen control.

The addition of a belt thickener has increased the total sludge concentration to the anaerobic digester. Prior to the belt thickener addition, the primary and waste activated sludges were co-settled in the primary clarifier. The combined sludge concentration was 3.5 - 4%. This low concentration increased the heating requirement in the anaerobic digester, decreased sludge retention time, and reduced the volatile destruction with less gas production, which resulted in poor digester performance and high operating costs. At times, the digester poor quality supernatant was returned, which increased the oxygen demand on the aeration system and recycled the ammonia, increasing the cost of operation.

The belt thickener eliminated these problems by increasing the waste activated sludge concentration to 6% with the primary sludge at 5.5%. The thickening operation deferred the need to add an anaerobic digester tank and increased overall performance of the digestion system. The hauling cost was also significantly reduced because the digested sludge volume was reduced with the thickening operation. Today, new wastewater treatment facilities cost roughly $10 per gallon of capacity. The capital improvement program the Village has implemented added capacity at a mere $1.40 per gallon, saving the Village more than $20 million. With these improvements, the Village no longer needs to move to another site for the foreseeable future.

The plant operates at a high level of efficiency with low operational cost. The user charge rate is $3.42/1,000 gallons, which is in the lower one-third of the state for a nitrifying facility. Cost savings have been reduced for the following:

- Chlorine addition for filamentous control - $1,300/year, plus plant labor.
- Sludge hauling cost due to thickening - $30,500/year.
- Power due to fine bubble aeration - $7,500/year.

In the future, the Village of Grafton is considering the elimination of chlorine gas for disinfection and minor improvements to maintain the value of the treatment plant. As the Village grows, the site will support the need to treat wastewater to the existing secondary standards with nutrient removal of phosphorous and ammonia conversion. As water quality standards change, new technologies could be considered to address the standards and stay at this site. This approach is the most cost-effective for the Village of Grafton.
Remember the Small Loan Program?
By Dave Calhoon

Note from the Editor: The following article previously appeared in the October 2007 Loan Interests, a newsletter of Wisconsin’s Environmental Improvement Fund. The article appears here in a slightly different form.

Is your municipality building a wastewater or storm water project with total estimated project costs of $1 million or less? We’d like to remind you that, within the Clean Water Fund Program (CWFP), there is a subprogram called the Small Loan Program (SLP) that provides a streamlined financing alternative for such projects. Under the SLP, a municipality gets a loan from the State Trust Fund (STF) through the Board of Commissioners of Public Lands. A STF loan requires a general obligation pledge (rather than a revenue pledge). The municipality then receives an annual subsidy payment from the SLP to help pay the interest on its STF loan. Since the STF is the lender instead of the CWFP, and since the debt is a general obligation pledge, the application process is shorter and simpler. The financial review, in particular, is greatly streamlined. A municipality generally does not need to submit audit reports or financial statements, municipal or utility budgets, or debt information. In some cases, information on the municipality’s user charge system is required. Also, the SLP reserves the right to require some information on an “if requested” basis.

The SLP may be especially useful for municipalities that need to do a storm water project but don’t have a storm water utility. If a municipality wanted to get a loan from the CWFP for a storm water project and make a revenue pledge, it would need to have a storm water utility in place that could generate revenue through user charges to repay the debt. Since a GO pledge is required for the STF loan, the lack of a storm water utility that can generate such revenue isn’t a problem. (Note: there may be good reasons for creating a storm water utility, though.)

The initial steps in the SLP application process are the same as for a CWFP loan: a municipality must submit a Notice of Intent to Apply (ITA) form and a Priority Evaluation and Ranking Form (PERF) and get DNR approval of its facility plan or engineering report and the plans and specifications for the project. Detailed information on the SLP is available on our web site at:

http://dnr.wi.gov/org/caer/cfa/EL/Section/small.html

If you have questions about the SLP, you may contact Dave Calhoon at 608-264-8844 or David.Calhoon@Wisconsin.gov.

Information about the STF’s loan program is available on its web site at:

http://bcpl.state.wi.us/asx/index.asp

If you have questions about the STF, please contact Coletta DeMuth at 608-266-0034 or Coletta.Demuth@Wisconsin.gov.
Process control systems have been rapidly evolving over the past fifty years. The term SCADA evolved in the 1970’s. By the late 1980’s SCADA systems were becoming very common in the water and wastewater industry.

**SCADA** is the acronym for **Supervisory Control And Data Acquisition**. In Europe, SCADA refers to a large-scale, distributed measurement and control system, while in the rest of the world SCADA may describe systems of any size or geographical distribution. SCADA systems are typically used to perform data collection and control at the supervisory level. Some systems are called SCADA despite only performing data acquisition and not control.

Almost every water and wastewater facility being built today has some form of SCADA, however few of these systems take full advantage of the untapped potential. In order to leverage a SCADA system for performance and efficiency, the utility manager must understand the system’s capabilities and what improvement can be achieved.

SCADA has been described as having five levels characterized as follows:

**Level 1** - Most basic, at this level, the system captures real time data, provides alarm and trend management. Data can also be summarized and stored in a historian for reporting and analysis. This level is all that is required for monitoring remote lift stations.

**Level 2** – Provides lower level functionality plus manual control from the SCADA terminal, allowing operators to control remote equipment.

**Level 3** – Provided all the functionality of the lower level systems plus automating many control decisions, eliminating the need for human intervention in some control decisions. Typically more advanced control functions are provided for the human control such as enable and disable functions for alarming, and ratio control for chemical feed systems.

**Level 4** – Provides all the functionality of lower level systems plus integration with management and business systems. This level of integration is designed to increase productivity and reduce operation costs. Items that may be included in well integrated facility management systems include: automated regulatory reporting, predictive maintenance reporting, peak and off-peak power demand management, laboratory information management integration, automated billing statement for industrial customers and satellite communities, automatic billing for waste haulers, process and production efficiency reporting. Integration with asset management, maintenance work order management, and GIS applications also offer opportunities at this level.

**Level 5** – Refers to future capabilities with intelligent systems used for process optimization, modeling, and enterprise wide integration.
With increasing regulatory requirements and process complexity, SCADA systems are no longer considered a luxury. The systems have become a necessity to enable process performance improvements. Some of the reasons that SCADA is mandated today include:

A. **Energy conservation** is important. Energy costs are a major operational cost and monitoring the cost while managing use can be a powerful cost control.

B. **Data management** for data available from SCADA has value beyond process control and can be used for predictive maintenance, capital planning, forecasting, modeling, and regulatory compliance.

C. **Knowledge retention** is crucial as staff members reach retirement age. Current demographics indicate a large number of industry staff will be retiring in the next 5 to 15 years. Operational history and knowledge must be stored and easily accessible to future staff.

D. **Regulatory compliance** challenges continue to increase. Documenting operation is a crucial component of any regulated utility.

E. **Aging infrastructure** is demanding better asset management to extend the service life of structures and equipment.

F. **Security** card access and video surveillance have become an important component of the SCADA integration.

For more information on leveraging your SCADA investment, contact Ray Grosch at IntelliSys.
The 21st Annual “Classic”
Collection System Seminar

WHEN: Thursday, June 5, 2008
WHERE: Turner Hall, Watertown, WI

MORNING SESSION:
Speakers on Collection System Issues

AFTERNOON SESSION:
Vendor and Equipment Displays,
Door Prizes
Product Demonstrations

FEATURED TOPICS:
Private Property Virtual Library
Pump Rehabilitation
Pump Station Design Considerations
Instrumentation and Control for Pump Stations
Safety - Confined Space
WisWARN
Diggers Hotline
Emerging Technologies
  Lateral Replacement Programs
  Grease Control
  Sanipor Case Study

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On November 8, 2007, the Lake Michigan District held its final meeting for 2007 at Crystal Falls Banquet Facility in New London, WI. There were a total of 90 attendees.

Jeff Mayou, LMD chairperson, called the business meeting to order. Jeff informed the attendees that the WWOA website is pretty much complete and to try it out. He also reminded members to renew their membership or join if not a member already. One of two LMD teams “Meet the Flockers” with teammates of Jeff Smudde from Green Bay MSD, Joe Lane from Manitowoc, and Warren Howard of Marinette placed at the WWOA Operators’ Competition taking second behind the North Central Region’s “Certifiable Operators”, while South District “The Duece is Loose” took third. Jeff also announced the upcoming 2008 LMD meetings: February in Marinette; May will be a joint meeting with South District in Berlin; August in Appleton is a proposed Timber Rattlers outing; and November in Green Bay.

Jeff announced that Don Linter of New Holstein was the recipient of the LMD Regional Operator of the Year – 2007. He also mentioned that there was positive response from the new meeting follow-up newsletter, as a refresher for those that attended the meeting and for members that weren’t able to attend.

Then Dale Doerr of Sheboygan WWTP, Board of Directors member, was introduced and he informed the attendees of what is new and upcoming events.

After review of the minutes and treasurers report read by LMD Secretary/Treasurer George Kemmeter, there was a motion to accept both items as presented.

Jeff then introduced the new Chair for 2008, Brian Helminger, and Vice Chair John Schoen. The business meeting was adjourned and seconded.

Louis Dresen, Superintendent of New London’s WWTP, came up and received a special recognition.
The first presentation was given by Vern Frahm of Crane Engineering on Analyzing Mechanical Seal Failures.

Over 50% of rotating equipment failures are caused by sealing devices. As a result, knowing the cause of equipment downtime is vital to all business entities. Seal Failure Analysis is a powerful tool for the diagnosis, correction, and prevention of major downtime problems.

Many individuals fail to recognize that there are important differences between “Seal Failure Analysis” and troubleshooting. In troubleshooting the focus is on immediate problems. In “Seal Failure Analysis” the focus is on specific symptoms within a failed seal. The purpose is not only to correct a specific failure but to correct the destructive conditions which caused the failure.

“All Seal Failure Analysis” is not always straightforward and exact, but it does provide a systematic approach to the solution of seal maintenance problems. There are several basic steps that summarize the procedure in “Seal Failure Analysis”.

Step 1: Carefully observe the characteristics of the problem.
Step 2: Carefully examine possible solutions to the problem based on past experience, feedback from equipment manufacturers, and consultation of a knowledgeable seal expert.
Step 3: Choose an appropriate remedy and take corrective action based on cost analysis, availability of hardware, and future economic benefits.
Step 4: Follow-up on the problem solving efforts.

Next up was Don Voigt, P.E. and Todd Schultz, Senior Service Tech, of Energenecis.

Don started out with introductions and then proceeded to discuss various styles of lift station designs.
Finally, the screenings or debris are compressed in a mechanical compactor. The compactor squeezes excess water from the screening and reduces the volume of material, producing a dry, dense material appropriate for land filling.

The meeting participants were able to see the screen during the plant tour that afternoon.

Chair Jeff Mayou adjourned the meeting for his final time, and instructions to the plant were given along with thanks to Applied Technologies, Inc. for sponsoring the break. Credit slips were distributed as the attendees headed out the door.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Submittal Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2008</td>
<td>May 9</td>
</tr>
<tr>
<td>September 2008</td>
<td>August 8</td>
</tr>
<tr>
<td>December 2008</td>
<td>November 7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LemTec™ Covered Lagoon Treatment Process</th>
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<tbody>
<tr>
<td>• Guaranteed NH$_3$-N removal even in cold climates through use of the LemTec™ Modular Cover</td>
</tr>
<tr>
<td>• Meets highly stringent effluent limits not achievable with other aerated lagoon systems</td>
</tr>
<tr>
<td>• Reduces capital and operating costs significantly when compared to mechanical treatment systems</td>
</tr>
<tr>
<td>• Requires less land than most comparable technologies</td>
</tr>
<tr>
<td>• Reduces sludge and solids handling</td>
</tr>
<tr>
<td>• Allows for hydraulic loading variations, temperature fluctuations, and organic surges effectively</td>
</tr>
<tr>
<td>• Expands for growth without major capital outlays</td>
</tr>
</tbody>
</table>

Wastewater screening functions to remove coarse solids from the raw wastewater flow. Removal of the solids protects downstream processes and equipment from damage. In addition, sludge quality can be enhanced by preventing sludge contamination with large solids. This is particularly important for sludge land application programs as is common around the state.

The New London WWTP employs a fine screen with 1/4 inch nominal screen opening. This is a step screen with the ability to remove very fine solids. This is accomplished by regulating the screen to develop a “mat” of debris on the screen surface to catch very fine material. Automatic controls to develop and maintain the mat are based on simple liquid level measurements.

Fine screens catch some organic material that is more appropriately processed in the downstream plant. Wash water sprays are employed to clean the debris and return the organic matter to the wastewater flow.
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One way of getting phosphorus out of wastewater is by using a metal salt to precipitate it out as a metal phosphate. Iron salts commonly used are ferric chloride, ferrous chloride and ferrous sulfate. Aluminum sulfate (alum) is also a common metal salt used. When chemical removal is used as the primary method to remove phosphorus, you must remove phosphorus to less than 1 mg/l.

So to iron it out, how much solution of metal salt do you add without over applying it, wasting chemical, wasting dollars and perhaps creating other problems (formation of vivianite that plugs lines and valves) within your plant? The phosphorus removal operator certification exam workgroup has developed an easy-to-understand six step method for theoretically calculating how much metal salt to add. You will likely need to add slightly more because of competing reactions but it gives you a good starting point. By knowing your influent phosphorus load and by using this calculation, you can adjust your chemical dosage to the proper amount.

See next page for an example of the calculations where ferric chloride (FeCl3) is being used. Don’t let the six steps scare you. It’s really quite simple and can be used for whatever metal salt you are using to remove phosphorus. If you are interested in the actual Excel spreadsheet, contact me (jack.saltes@wisconsin.gov) and I will gladly send it to you for your use. It will really help you iron out your phosphorus at the proper dose that may save you chemical and O&M costs. Know what you are doing and why you are doing it….make chemical feed adjustments as needed…and you will be successful in the process control of your chemical phosphorus removal system. Iron it out and you won’t be over (your limit) and out (of compliance).
Step 1. Determine the amount of influent phosphorus to remove.

<table>
<thead>
<tr>
<th>Influent flow (MGD)</th>
<th>Influent P (mg/l)</th>
<th>Lbs of P to remove</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>8</td>
<td>133</td>
</tr>
</tbody>
</table>

Step 2. Determine the pounds of metal salt in a gallon of solution knowing the specific gravity.

<table>
<thead>
<tr>
<th>Specific gravity</th>
<th>lbs/gal</th>
<th>lbs metal salt/gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4</td>
<td>8.34</td>
<td>11.7</td>
</tr>
</tbody>
</table>

### Chemical Specific Gravity

- Alum: 1.33
- Ferric Chloride: 1.441
- Ferrous Chloride: 1.23
- Ferrous Sulfate: 1.185

Step 3. Determine the pounds of actual metal in a gallon of metal salt solution with certain percentage metal content (provided by chemical supplier).

<table>
<thead>
<tr>
<th>lbs metal salt/gal</th>
<th>% metal</th>
<th>lbs metal/gal metal salt solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.7</td>
<td>12.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

(Use 0.125 if you’re doing this by hand)

Step 4. Look up removal ratio for the metal salt being used.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Removal Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alum</td>
<td>0.87 to 1</td>
</tr>
<tr>
<td>Ferric Chloride</td>
<td>1.8 to 1</td>
</tr>
<tr>
<td>Ferrous Chloride</td>
<td>2.7 to 1</td>
</tr>
<tr>
<td>Ferrous Sulfate</td>
<td>2.7 to 1</td>
</tr>
</tbody>
</table>

Step 5. Determine the pounds of metal needed to remove the incoming pounds of phosphorus.

<table>
<thead>
<tr>
<th>Removal ratio</th>
<th>Influent lbs of P</th>
<th>lbs of metal to add</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>133</td>
<td>240</td>
</tr>
</tbody>
</table>

Step 6. Determine the gallons of metal salt solution with a certain percentage metal content to thus add.

<table>
<thead>
<tr>
<th>lbs of metal to add</th>
<th>lbs of metal/gal</th>
<th>gal/day of metal salt solution to add</th>
</tr>
</thead>
<tbody>
<tr>
<td>240</td>
<td>1.5</td>
<td>165</td>
</tr>
</tbody>
</table>

This estimate may be different than the value obtained from a hand calculator due to rounding differences.
Wisconsin is forming a statewide mutual aid response and assistance network. The Wisconsin Water/Wastewater/Public Works Agency Response Network, known as WisWARN, is being created to provide a statewide network to allow public agencies from one community to help public agencies in another community with personnel and resources following natural and manmade disasters. This network will extend across the entire state allowing any participating Wisconsin community to receive aid or respond to a disaster in any other Wisconsin community.

Do you want to become a part of this network? We aren’t quite ready to start signing up members because we are still finishing the mutual aid agreement, but we want to find out who is interested in joining. You can join in a number of different ways; all you need to be is a public sector service-providing entity. You can join as part of a single community or each department in your community can join separately. Just fill out the following form. This is not a commitment to join. Your governing board or city council will need to adopt a resolution to officially join. For now, we are just trying to develop a preliminary list of those interested. Talk to your public works people and invite them to join as well.

The establishment of a mutual assistance agreement network of Wisconsin agencies will help ensure the continuity of all local community service operations and the wellbeing of their communities. Using WisWARN, a community is able to directly contact other communities to get the needed assistance on its way immediately. There are no administrative delays, no bureaucratic obstacles, and no red tape. The process is simple. A community requesting assistance will simply go to the WisWARN website, choose from a pre-existing inventory of available resources and then call or email the communities having those resources. The contacted community will then determine if it can respond. Not only is there a quick response, but the local community stays in charge and gets what it has asked for. Visit WisWARN at www.WisWARN.org. The website is still being developed, but we want you to look at it because it will help explain how this program will work.

Some of the benefits of joining WisWARN:

- WisWarn will use a single statewide mutual aid agreement which will help reduce administrative conflict over such things as: insurance, workers compensation, equipment rental rates, and other cost related issues.
- The statewide agreement does not conflict or supersede existing mutual aid agreements; rather it complements them by providing a community with a variety of response options.
- There is no cost to join or annual cost to belong to WisWARN.
- There is no commitment or obligation to respond if your community receives a request.
- It allows the local community to remain in control of all response activities.

**WisWARN Wants You**  
By Dan Lynch, Janesville Utility Director and WisWARN Committee Chair
Specialized operations, such as water and wastewater utilities, are assisted by other specialized operations until the disaster is over or other aid is provided by the state or federal governments.

You can use WisWARN simply for finding parts or equipment to make repairs; there doesn’t have to be a full-scale emergency.

WisWARN has been endorsed by: Wisconsin Water Association, Wisconsin Wastewater Operators’ Association, Wisconsin Rural Water Association, Municipal Environmental Group—Water and Wastewater Divisions, Wisconsin Section of the Central States Water Environment Association, Wisconsin Alliance of Cities, Wisconsin Department of Natural Resources, and Wisconsin Department of Emergency Management.

WisWARN will be a good thing for all of Wisconsin, so complete the following interest form and be ready to get on board.

### WisWARN Interest Form

Community____________________________________

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Water Utility____ Wastewater Utility____ Public Works Department____

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Please email or fax this information to:
Daniel L. Lynch, P.E.
WisWARN Committee Chair
City of Janesville Water & Wastewater Utilities
Ph (608) 755-3115
Fax (608) 755-3125
lynchd@ci.janesville.wi.us
Dan Manier opened the meeting with 62 people in attendance by introducing Jerry Ewert, the Black River Falls Utility Administrator. Jerry welcomed everyone to the Black River Falls area. He talked about the recreational activities like snowmobiling and the great fishing in the area. Jerry touched on the upgraded wastewater treatment plant, the new water filtration plant that started in 2005, and the area dam that is 100 years old and will need repairs starting in 2009.

The business meeting was next. Dan mentioned that Greg Engeset from Ellsworth was last year’s district operator of the year. Meetings for the rest of the year are Menomonee in May and Boyd is slated for August. Dan asked for volunteers to host future meetings for 2009. Dan mentioned that the City of La Crosse would be putting on some safety classes. Director Randy Thater talked about the upcoming state events, WWOA membership, and the operator competition. Director Wade Peterson talked about the competition, regional rookie of the year award, and reminded everyone that might be interested to check out the WWOA web site for scholarship information.

Dan introduced John Selvog from Infratech. John described his company and talked about gas monitoring for the regulatory requirements. John covered confined space issues including the definition of confined space and the atmospheric requirements.

He talked about yearly fatalities associated with confined spaces; methane and lack of oxygen being the biggest causes of fatalities. The Bio System gas detector is the meter they use in their business. John
described the sensors and advised to replace sensors every two years. John talked about gas verification frequency and about doing bump tests; never go longer than 30 days between calibrations. The IQ Express Unit does the calibrations and records information into a database that can be downloaded into a computer and be printed out at a later time for record keeping.

Energenecs had the next session and Harlan Mueller and Gary Wesselschmidt were the presenters. Headworks technology over the last two decades showed the most progress than ever before. They discussed the reasons why this has happened; better equipment materials, state of the art production and better methods, and advanced technological solutions. Twenty (20) years ago, there were few fine screens and 1/8 to 1/4 inch is used for the screening. They talked about the Huber benefits which are advanced concepts, self cleaning, automatic, and the screening washing and compaction. The Huber system would replace the classified grit removal system from years ago. In the vortex system grit is washed, cleaned, and dried with hardly any odors. European technologies won’t have any wasted energy, have efficient/reliable controls, and reliable system integrator.

John Selvog was again a speaker and he talked about Manhole Liner Forming System. John explained about the repair of manholes. It is a self-contained rehab system which requires minimal road repair. The old casting is cut out of street and the chimney is taken out, a liner is inserted into the manhole and high strength concrete is poured outside of the liner. With this process you have minimal road repair and do not disrupt flow during construction. While repairing manholes do not overlook the repairs needed to the bench and inverts.

Dan introduced Jack Saltes from the DNR and his topic was “WHY CMOM”. CMOM stands for capacity, management, operation and maintenance. Jack talked about the importance of the sewer systems. The need to maintain collection systems is important, as the cost to replace the systems is very expensive. He gave examples on ways to investigate the systems and they are: sewer line televising, smoke testing, flow monitoring, manhole inspections, lift station inspections, and sewer lateral inspections. A CMOM program will 1) prolong life of sewer system 2) details proper O&M practices 3) remove problem trees and shrubs 4) clean and remove blockages 5) controls fats and oils discharged to system 6) repair breaks 7) deal with manhole issues 8) fixing I&I 8) preventing wastewater overflows. Sanitary System Overflows (SSO) has environmental issues such as beach closings, wildlife loss, and recreational loss.

Jerry Doriott from S.E.H. talked about the Black River Falls WWTP upgrades. They had two phases; a headworks and a UV disinfection phase. The headworks phase consisted of a new lab and office area, headworks building, grit removal, new wet well, wet well mixer, wet well pumps, and a Huber fine screen.

Steve Skinner
Vice President

[Image of the Clarifier logo]

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2007 Operators’ Ride

Pete & Lois Conine hosted the 2007 Operators’ Ride with the able assistance of Jeff & Beth Harenda and Steve Burr. The kick-off for the weekend was the annual cookout at their home in Waukesha on the 26th of July. Everyone in attendance agreed that they really outdid themselves with the meal they had laid out. There had to be at least 13 kinds of meat dishes, 42 different desserts, not to mention chips, dips, various side dishes and vegetables of all manner. In no way could one person take a sample from each dish without eating more than twice as much as they needed. But we all did our best!

Friday’s ride toured the hills and valleys of southeastern Wisconsin, eventually ending up in East Troy, where we toured the Buell Motorcycle factory, where those sharp looking, Harley-powered, Buell Motorcycles are built. During the tour we were shown the new 150 Hp, 1125cc bike they planned to introduce this fall. (Ooh! That’s more horsepower than this old guy needs! I think I’ll stick with my 60 some, horsepower bagger!!) One of the highlights of the tour was the opportunity for this writer to meet and speak with Erik Buell, the man who built the first Buell in his own shop. They now make about 14,000 each year.

Leaving Buell, the group wound around the countryside going through one town after another with the name “Troy” in it till we ended up in Troy Center, at a place called “Barley’s” for lunch. Two things made this place attractive! It was air-conditioned and the food was good.

Next stop was our motel, where everyone followed their own inclinations, naturally some of the group ended up at the pool for swimming, conversation, a few drinks and telling lies.

Saturday’s ride angled to the north and east making a gas stop in Kewaskum, and ending up in Elkhart Lake, where we were all free to play tourist for a while.

Leaving Elkhart Lake the group stopped in Adell to shock Keith & Brenda Mueller, who couldn’t make the ride this year. When the picture taking was completed, we headed back to the motel for the closing banquet, presentation of the annual “Reidy” awards, and story telling, the final order of business was the induction of Mary Voss into the HABs. Following this most attendees retired to the pool area for more swimming, socializing, and telling lies, thus concluding another enjoyable operators’ ride. Till next year!

2008 will be the 30th Annual Professional Operators’ Ride. The dates are: Operators’ Cook-out – July 17, Operators’ Ride – July 18-19. The host hotel is the Comfort Suites, 1951 Bond Street, Green Bay. Our host is Michael “Mork” Capion. If you have questions, contact Reid Snedaker at William/Reid, Ltd. at 888-272-1722.

Oops...

There was a mix up on the CEU credit slips issued at the 2008 Biosolids Symposium. The DNR has agreed to grant 6.0 CEU’s. Please make note of this on your credit slip and submit normally.

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Government Affairs Seminar 2008

By Randy Thater

The 2008 Government Affairs Seminar was held February 28 at the Marriott Madison West in Middleton, WI. Wisconsin Section of Central States Water Environment Association and the Wisconsin Wastewater Operators’ Association co-sponsored this annual seminar. The Wisconsin Department of Natural Resources, League of Wisconsin Municipalities, and the Municipal Environmental Group are contributing organizations.

The seminar kicked off with the keynote address by Wisconsin Department of Natural Resources Secretary Matthew Frank. He spoke on the importance of the Stewardship Fund renewal, and pitched the need for state approval of the Great Lakes Compact to protect the integrity of Wisconsin’s water resources. He touched on control of invasive species, and if the states could and should take action if the federal government fails to do so.

Following his address, the Secretary signed the Mercury Green Tier Charter for Environmental Performance with Wally Thom for the Municipal Environmental Group and individual municipal signatories Brian Kober, Director of Public Works for the Village of Jackson; Ron Dickrell, Wastewater Superintendent for the City of Marshfield; Rich Boden, Wastewater System Manager for the Village of Plover; Wally Thom, Water/Wastewater Manager for the City of Rice Lake; Mark Flock, Wastewater Treatment Plant Manager for the City of Sparta; and Dave Ross, Mayor of the City of Superior. Under this compact, signatory communities will reduce mercury discharges into their wastewater treatment plants prior to any regulatory requirement. In exchange, the municipalities’ mercury reduction activities will satisfy mercury reduction obligations that might apply in the future.

David Webb and Richard Mealy of the DNR Science Services Bureau spoke about the major update to the Laboratory Certification program. The new code emphasizes compromise, consistency, flexibility, and clarity. They acknowledged the need for guidance and training on the update. One day sessions are expected to be offered, probably in April through July. Conversion will include a mandatory status update form filled out by all certified and registered laboratories.

Kevin Shafer of Milwaukee Metropolitan Sewerage District talked about Legacy Pollutants. The District experienced an unexpected surge in PCBs in their Milorganite sewage sludge product following cleaning projects in the District and client collection systems. The resulting contamination caused disruption of product distribution and need for alternate disposal.

Chuck Ledin of WDNR expanded on Secretary Frank’s comments on the Great Lake Compact. Mr. Ledin addressed misconceptions about the compact including that it would violate the state’s public trust doctrine, and the restrictions on basin withdrawals and the exemptions for northern Illinois. He also discussed the one governor veto issue. Ledin also pointed out that while it prohibits diversions, there is an avenue for exemptions.

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Following the morning break, Bob Masnado of WDNR and Paul Kent of MEG spoke about Total Maximum Daily Loads (TMDLs). Mr. Masnado provided a primer on the issue. He emphasized that TMDLs mostly affect the exceptional and outstanding water bodies on one end, and the impaired water bodies on the other. The process consists of evaluating the water body, doing public outreach to all stakeholders, modeling, allocating to establish the TMDL, and implementation.

Mr. Kent then expanded on the TMDL topic focusing on permittee issues. Using the Rock River phosphorus TMDL as an example, Kent reviewed the proposed state water quality standards. He then discussed the problem with allocation between nonpoint sources with no permits and a statute-mandated cost sharing requirement, and point sources (including municipal POTWs) with permits that are fortunate if they obtain SRF loans to pay for improvements. Another issue is whether agricultural sources will be required to achieve best management practices first to catch up to current municipal practices, before municipals will be required to invest even more. Also what happens if point source control does not meet the objectives?

Ron Dickrell of Marshfield WWTP and Kendra Jacobsen of Madison Area Patient Safety talked about the Drug Take-Back programs in their communities. Both groups had to contend with multiple federal and state jurisdictions and no set policy for these programs. Both related the success with the programs to date, and continuation with future events already set in both communities. They also mentioned alternate programs in other communities with Waukesha County planning a pilot for a mail-in program, and La Crosse and Marshfield implementing permanent site programs.

After an excellent lunch, Marti of Next Generation Consulting discussed Transition Planning. With a large portion of our workforce nearing retirement, many municipalities wonder where their replacements will come from. Marti introduced the Maslow self-actualization pyramid. The Silent Generation born between 1925 and 1942 are affected by their experiences with the Great Depression and World War II. The Boomers born 1943-1960 have a secure sense of belonging, owing to growing up in the post-war prosperity. They represent the largest portion of our workforce and are on the cusp of retirement. The
GenXers born 1961 to 1981 are marked by a fierce independence. The Millennials born 1982 – 2001 are ‘me’ oriented, but also believe that public service is important. This will help our replacement efforts since the Millennials will be the main target for recruitment. This generation is more results-oriented than bound by schedules. They choose to live first and work second and have a good life/work balance. They will likely choose a city first, then their work second.

Tom Sigmund of Green Bay Metropolitan Sewerage District (GBMSD) continued Transition Planning by recounting the GBMSD efforts with succession action planning. Similar to many others in our field, over half of the District employees belong to the class of ’76, starting soon after a major plant upgrade. Knowledge management, being an ‘Employer of Choice’, recruiting and the selection process, and retention are all aspects of the plan. Elements to bolster the employer of choice process include market-based compensation, opportunities for growth and leadership, cross-function staffing, flexible scheduling, part-time permanent opportunities, and employee recognition.

Allan Ispass of CH2M-Hill spoke about Asset Management and Sustainable Infrastructure. He told of the four pillars of sustainability; full cost pricing, water efficiency, watershed approach, and better management. As part of better management, asset management involves minimizing life cycle costs, and continual delivery of services at an acceptable level of risk. Performing a cost benefit analysis, then addressing the highest risk projects first is key to the process.

Tom Mugen of WDNR and Kathy White from the City of Eau Claire talked about Mercury and PMPs. Mr. Mugen stated about 80% of the major plants (greater than 1 MGD) have mercury monitoring in their permits. Others will be added as the permits cycle through. Of these only about 10% meet the 1.3 ng/L water quality standard. In addition, about eight to ten Great Lakes discharges will use mixing zone rules. The remainder will need to address mercury using pollution minimization plans.

Ms. White then recounted the Eau Claire experience with the PMP requirement included in the permit effective in 2005. Their plan became effective in 2007. The plan is a partnership between city and county. Elements include mercury collection through clean sweep and local recycling efforts, and identifying four crucial sectors: medical facilities, industrial facilities, schools, and dental facilities. All sectors were required to implement best management practices by January 1, 2008. Dental facilities using mercury amalgam were required to install amalgam separators. The other sectors were targeted to start phasing out mercury containing materials and devices such as thermometers, switches, and lamps.

Finally, Roger Larson delivered the annual DNR update. Topics covered included pretreatment streamlining, stormwater permits, NR151 revisions, SSO rule revisions, water quality criteria, thermal water quality standards, nutrient water quality standards, and the VHS virus in fish.
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On a sunny but very cold February 21, 2008, the South East District held their first meeting of the year at Bruno’s in Waterford. Chairman Tim Zimmerman called the meeting to order at 8:15. Tim welcomed over 100 attendees to the meeting and gave special thanks to the Western Racine County Sewerage District for hosting the meeting and afternoon plant tour.

Opening remarks were given by WRCSD Commission President Gilbert Bakke, who welcomed everyone and talked briefly about the district’s history and projects and improvements that have been ongoing.

The first speaker of the day was Paul Treager from Applied Technologies. Paul gave a presentation on the replacement of a collapsed sewer main with a pilling supported sewer main for the Eagle Lake Sanitary. Paul talked about the location of the main replacement with there being wet and unstable soils running alongside Eagle Lake. A very successful result was accomplished while dealing with some very poor conditions.

The second speaker of the day was Bruce Grindeland from Starnet Technologies. The topic of his presentation was “Practical Solutions to Lift Station Safety Hazards”. Bruce spoke about the many lift station hazards that plant operators, collection system personnel, and tech support personnel face on a daily basis including working with high voltage, working in and around lift station electrical control panels, and he put a huge emphasis on the dangers with electrical arc flashes. Bruce also talked about trying to minimize confined space entries by station upgrades, such as moving pump controls above ground, and putting lift station pumps on rail systems to minimize confined space entries.

A morning break was called for by Chairman Zimmerman for coffee and refreshments, and for attendees to visit the vendor displays. There were 10 vendors who displayed at the meeting. A very special “Thank You” to all the vendors for their meeting support and their donations for the numerous raffles held throughout the day.

Chairman Zimmerman called the business meeting to order following the break. Judy Gottlieb from the WDNR gave the DNR update. Judy spoke briefly on eDMRs and the advantages to them, and that the department strongly encourages everyone to use them. Judy also spoke about an issue paper (a “white paper”) that the department completed in October of 2007 which evaluated land application of industrial wastes and presented short and long term recommendations for improvements to the Department’s oversight and regulation of this activity. Special emphasis was placed on land application contractors that land apply large volumes of primarily a mixture of industrial wastes. Next up was WWOA State Director Randy Thater with a brief summary of State news and an update on upcoming WWOA events. At this time Chairman Zimmerman introduced the 2008 SER Officers. Also special recognitions went out to Jim Bergles-outgoing chairman, Jessica Swan- outgoing secretary, and Jeff Bratz and his staff from the Western Racine Sewerage District.

The third speaker of the day was Andy Santi from HD waterworks. Andy talked about water meters and what people and the water industry are doing. He spoke about new technology and the Omni meter, and about what Omni means to you the customer, and its many advantages.

Village of Waterford Public Works Director Randy Niolny gave a brief overview on Waterford’s radium
reduction project and the new pumping facility. A tour of the water facility immediately followed. Attendees returned from the water plant tour with big appetites and were treated to a very enjoyable lunch buffet.

After lunch Chairman Zimmerman introduced our final speaker of the day. Troy Larsen from Strand and Associates gave a presentation on Activated Sludge foam prevention and control. Troy discussed problems associated with sludge foam, and the microorganisms that generally cause them. He went over ways to help identify problems and potential causes. He also discussed potential corrective actions.

The WRCSD plant introduction was presented at this time by Troy Larsen and District Superintendent Jeff Bratz. They gave a brief overview of the treatment plant and discussed the upgrades that took place. Chairman Zimmerman thanked everyone for coming and adjourned the meeting for the plant tour.

Our spring 2008 meeting is scheduled for May, with the Delafield/Hartland Plant as our host. Please check the WWOA Website for a confirmation date at www.wwoa.org

Respectfully Submitted,

David R. Piquett
Vice Chairman-South East District
Have you ever experienced problems with sewer sags due to peat and lake marl? This is the predicament in which Eagle Lake Sewer Utility District in Racine County found itself.

High levels discovered in upstream sewer manholes led the District’s utility superintendent, Jim Bergles, to clean and televise the sewers in the area. This task uncovered problems in a 370 foot long section of 15-inch gravity collector sewer that carries flow from 75% of the District’s collection area. This section of sewer was found to have three sags of up to 24-inches each. These sags filled with grit and trash, thereby reducing sewer capacity and requiring frequent cleaning. The District was also concerned that surcharging might lead to an uncontrolled discharge to nearby Eagle Lake and determined that timely action was needed to correct the problem.

A soil investigation determined that the sewer was constructed over 27 feet of peat and lake marl. Knowing the poor soil conditions, it was determined that this section of sewer should be replaced and supported on piles to restore and maintain its alignment. Both conventional driven piles and helical piles were investigated. Due to concerns with the locations of nearby utilities, helical piles were selected. Helical piles are installed by a rotary installing machine. Extensions are added until the helices are at the proper depth and the predetermined torque is achieved.

The 15-inch gravity sewer was replaced with 16-inch cement lined ductile iron pipe supported on helical piles that were capped with a precast concrete pipe saddle. The contractor, Advance Construction, Inc., utilized a laser alignment system to determine the location and height of the piles and to check and maintain alignment of the sewer. This project was bid in November 2007, work began in December 2007, and the project was substantially completed in January 2008.

The costs for the project were as follows:

- Total project cost: $220,000
- Cost for sewer removal and replacement: $455/foot or $168,000
- Cost for connection 4-inch sewer laterals: $1,200 each or $8,000
- Cost for bypass pumping: $8,000
- Cost for site work: $7,000
- Cost for water main removal and replacement: $18,000

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The winter 2008 meeting of the WWOA Southern Region hosted by the Johnson Creek Water and Wastewater Utility and was held at the community center. There were 88 people in attendance. All were welcomed by Paul Moderacki, Village Administrator.

Paul expressed his appreciation for all that wastewater operators do and the vital service that we provide in protecting public health and safety.

The first presentation was on “Wastewater as a Source of Green Energy” by Jonathan Butt from Symbiont. The major source of green energy in wastewater treatment is the biogas produced from anaerobic digestion. The utilization of that biogas as energy provides a very good way to reduce the cost of plant operations. As the costs of purchased energy goes up and demand for energy increases, production of green energy from wastewater becomes more economical. The biogas produced can be burned in boilers as a source of heat, used in engines for processes or generation of electricity, and in newer technologies like micro-turbines and fuel cells. Jonathan used a 2003 Focus on Energy study to show that as the cost of
purchased energy goes up the payback for producing and utilizing biogas are much more desirable.

Doug Nelson from Ruekert - Mielke then presented “Drugs in the Water, What Does It Mean to You?” The presentation dealt with pharmaceuticals and endocrine disruptors in the waste streams and ultimately in the effluent from wastewater treatment plants (WWTPs). Doug discussed the problem and what impact it has on the environment. A researcher from the USGS did a study on what was in the effluent at various WWTPs throughout the country. Doug focused on a study that was done in upstate New York at four plants where the effluent from the plants contributes to the potable water supply for New York City. The research shows that when sampling if caffeine is present in the water that it is a sign that a WWTP has contributed to that water. They studied other compounds in the water. They wanted to see what effect the effluent ultimately would have on the potable water quality. The study showed that New York City’s potable water had non-detectable levels of the compounds studied. Other contaminants are also a problem in water like herbicides and antibiotics from hand soaps. What to do about the compounds? Presently there are no regulations on them and there are no real economical ways to remove the compounds. The Wisconsin DNR and others are trying to keep pharmaceuticals and other compounds out of the waste streams at the source as much as possible. Used medicine roundups, public education on not flushing used meds and trying to return unused medications to the pharmacies are some of the initiatives. Much study needs to be done on this topic to find economical solutions to remove the compounds at the wastewater treatment plants.

Jay Kemp from Earth Tech spoke next on phosphorus and nitrogen control. Jay focused on the latest processes for removal of these nutrients. Nitrogen in the form of ammonia is a problem because of its toxicity but may be regulated in the future as a nutrient. In 2004 the Wisconsin DNR reevaluated ammonia standards. In some cases the requirements were relaxed. Ammonia is particularly more problematic in the summer because of the higher temperatures. Jay explained that the main way of reducing ammonia is
by nitrification, how that works and the issues of the nitrification process. Next Jay talked on phosphorus standards and removal. Presently the permit levels are based on what is achievable in phosphorus removal. In the future it may be on the water quality of the receiving streams. Phosphorus needs to be removed because it is a fertilizer for algae in the environment. The over-fertilization of algae ultimately affects the health of the receiving streams or lakes. Current focus areas are on impacted streams like the Rock River. Total Maximum Daily Load (TMDL) work is being done at this time on the Rock River basin. A looming issue with nitrogen is the effect on the Gulf of Mexico. There are large areas of the Gulf of Mexico devoid of aquatic life due to lack of oxygen linked to large amounts of nitrogen. Jay then spoke about the chemical and biological processes for phosphorus and nitrogen removal and how they affect the effluent and sludge qualities.

Next we heard from Dan Lynch from the City of Janesville. Dan also is the chair of WisWarn. WisWarn is a mutual aid program for water, wastewater, and public works agencies in Wisconsin. It is similar to what electric utilities have been doing in the past to help each other out during and after disasters like hurricanes, tornadoes, earthquakes, and terrorism, etc. The WisWarn should be operational within a few months. It is a community helping community program in a time of need modeled after what other states have done. Dan handed out a brochure describing the program and the website: www.WisWarn.org. After the final details are worked out the WisWarn mutual aid program will allow communities to share resources in a time of need.

After lunch Kevin Freber from Watertown and the new chair for the WWOA Southern Region conducted the business meeting. Kevin presented Peter Hartz, Superintendent of the Johnson Creek Utility, with a plaque thanking him and his staff for hosting the winter 2008 meeting. Kevin thanked members for signing up for the e-mailing of meeting notices. This has saved our group money on postage. Kevin asked that members notify one of the regional officers of e-mail address changes. The next meeting will be a joint meeting with the Lake Michigan Region in Berlin, Wisconsin on Thursday, May 22, 2008. The August meeting will be in Wisconsin Dells. Kevin encouraged members to nominate people for the various awards that are given out annually and to go to the WWOA website: www.WWOA.org for nomination materials. Dennis Egge from the state WWOA Board updated the group on upcoming events. Check out the WWOA website for details. Door prizes were drawn. Thanks to the many vendors who donated the prizes and for their continued support.

Doris Thiele and Ken Denow from the Wisconsin DNR gave an update. Ken is involved in permitting land for sludge application. He described how the process works for the permitting.

Mark Baldock, a DNR Fisheries Technician for the Upper Rock River, described how biomonitoring is done. He showed various technologies for capturing and tracking fish. He also showed initiatives like the construction of a passage for fish around the dam at Jefferson. Fish now can get around the dam to further enhance the quality of the aquatic life in the Rock River.

Don Neitzel from Kunkle Engineering showed the phase 1 and 2 projects at Johnson Creek’s WWTP.
Phase 1 is done now and they are planning for the phase 2 construction in the future.

Finally a tour was given at the 0.7 MGD plant. Peter Hartz had an interesting way to reduce algae; a barley straw wrap, a natural way to reduce algae in the plant. For details contact Peter at (920) 699-3341.

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North Central Regional WWOA Meeting  
February 14, 2008  
Antigo, WI

Meeting Summary

The winter meeting of the North Central region of the Wisconsin Wastewater Operators’ Association was held on February 14, 2008 in Antigo, Wisconsin. The meeting, which was hosted by the City of Antigo and contract operations firm Infrastructure Alternatives, was held at the Knights of Columbus meeting hall. There were 44 participants in attendance and five vendor displays. It was a bit touch and go in the beginning due to some bad weather that morning and the night before, however, a significant number of walk-ins helped to cover some of the absences. Antigo City Mayor Mike Matousek opened the meeting with a warm welcome and a brief description of recent infrastructure improvements made in Antigo. He also expressed a deep sense of pride and appreciation for the people in our industry.

The first presentation of the day, SCADA Design & Operations, was given by Larry Henderson and Brian Akason of Energencs. Larry and Brian gave a more detailed presentation on the recent upgrades to the Antigo water and wastewater treatment facilities. The original water treatment facility, built in the 1940’s, included lime softening, clarification and sand filtration. Although maintained in excellent condition over the years, which was obvious during the tour later in the day, the plant was in need of some major repairs. These included increased lime storage, filter rehabilitation, installation of SCADA controls, alarm callout system and two new wells to supply raw water. A USDA grant allowed the city to complete all of this work in one stage.

The wastewater treatment plant upgrades were even more extensive, including new filter under drains (a major undertaking), new Motor Control Centers, blowers, vacuum pumps, filter backwash system, SCADA controls and alarm callout system. Funding for the wastewater treatment plant came from Antigo’s segregated equipment replacement fund. The work was completed in several stages to accommodate the
local funding source. One of the primary focuses of the SCADA work at the wastewater facility was directed towards keeping the system as open as possible for the addition of individual components over time. Many energy saving technologies were also used including soft starts and variable frequency drives.

Larry and Brian stressed the importance of reusing existing structures where possible. Many of the MCC panels in both facilities were reused with new components. While it can be more expensive to retrofit existing systems, the city saved a lot of money by not having to reroute existing electrical conduits. They also stressed the importance of getting everyone’s involvement, owners, operators and engineers, in the proposal, review and comment procedure.

The second presentation of the day, How to Evaluate Telemetry Alternatives, was given by Jeff Collings of Mission Communications. Jeff focused his efforts on creating a workshop like atmosphere, encouraging as much interaction with the audience as possible, with some success. He spent a lot of effort defining the terms encountered when discussing telemetry options, as well as getting the audience members to share what their current systems are like, what they used them for, and what kinds of improvements they were interested in considering.

Jeff broke down the five major parts of a telemetry system. The Remote Telemetry Unit, or RTU, is the “black box” located at the remote site that contains the radio or phone. Using a Communications Link, these units can take advantage of land lines, cellular, radio and even satellite service. The Master Terminal Unit is the computer used to coordinate the system. An Alarm System can be used to notify operators of trouble in the field. And Remote Access by computer through products like PC Anywhere and the internet can provide a level of control that doesn’t require leaving home or the office.

Jeff also talked about the difference between traditional telemetry options like custom SCADA systems and off the shelf auto-dialers and relatively new alternatives like internet based systems, data side cellular services and off site managed and/or hosted options. Jeff encouraged the audience to consider, where appropriate, a “Buy the Box, Rent the Rest” option that allows for a much smaller up front cost for equipment and less of the work associated with a full scale custom SCADA upgrade.

Our third presentation of the day was a DNR update given by Dan Peerenboom out of the Rhinelander office. Dan had a number of reminders and interesting points to share. He reminded everyone that the DNR is really pushing hard for everyone to use the web based eDMR system. There are a bunch of die hard paper only facilities that the DNR would like to see make the switch. In line with this goal the DNR is also developing an electronic Discharge Permit Application process that it hopes to implement soon. eCMAR’s are also being readied for this spring and should be available by the end of April. Also, as spring approaches, Dan wanted to remind everyone how important it is to report any bypasses as soon as possible. There are forms available on-line or from your basin engineer.

Some of the new things the DNR is working on include the development of a new Thermal Standard Administrative Rule, a new Mercury Rule, and new revisions to toxic limit calculations. Most existing municipal treatment plants will have no difficulty with the new thermal standard, although new facility plans will have to address the issue. Industrial treatment plants will have more of a challenge to satisfy the rule. The new Mercury rule will focus on the sampling difficulties associated with low level testing, especially the concern with background levels and aerosol deposition. Revisions to toxic limits will focus on parameters like ammonia, chlorides, copper and other heavy metals.

Dan also talked about the EPA’s push to develop nutrient based effluent limits, focusing on nitrogen and phosphorus. New limits could be as low as 3 ppm total nitrogen and 0.3 ppm total phosphorus. Although Wisconsin is ahead of the curve on this issue compared to its neighbors, the EPA is able to address this issue here, specifically because the state already has strong regulatory guidelines in place. The
affect our climate has on nitrogen treatment processes will be a significant issue.

The last presentation before we broke for lunch was the business meeting, see below.

After a great lunch Ray Grosch of Intellisys gave a presentation on Advance Data Management. He focused on how Integrated Plant Management and Control (IPMC) can be used to move us along the “knowledge staircase” from the lowest level of Data Collection up to Information, Knowledge and Wisdom. The benefits he focused on dealt mainly with increasing efficiency of operations and reducing overall costs. One of the most obvious benefits of an IPMC program is replacing site visits with virtual visits. Know what is going on at a remote site, and the ability to control the process remotely is a huge time and money saver. Another simple benefit is data capture and manipulation. This has applications in laboratory testing and Quality Control, as well as for reporting purposes and record keeping.

Ray talked about IPMC’s ability to help with maintenance scheduling, evaluation and trouble shooting, and predictive maintenance. This is where IPMC’s ability to change data and information to knowledge and wisdom really shines. Knowing that you may occasionally have an issue with a particular piece of equipment is fine, but being able to correlate that information with other maintenance and process control issues can really add value to your system. Many maintenance issues that we take for granted might make a whole lot more sense when we can see how they fit into the bigger picture.

Ray also talked a bit about how IPMC can be useful in controlling costs, whether they are energy, chemical, equipment or process control related. Many facilities are becoming more concerned about the demand charge associated with their energy usage. IPMC can be used to manipulate what kinds of process control activities are done at specific times of the day. It can also be used to control chemical dosing and verify feed pump calibrations. And all of the various pieces
of information can be stored for the future, potentially saving lots of money on engineering studies.

Our last presentation, A Review of the New NR149 Changes, was given by Camille Johnson, Laboratory Auditor with the DNR. Although many people are nervous about the changes that have been made, Camille reassured us that most of the changes will actually have only a small impact on most municipal laboratories. The changes focus on the development of a “Quality System”. Just another name for a QA/QC program, the Quality System requirements flesh out the QA/QC program that the DNR always had, but could never really enforce.

Laboratories will still be registered or certified like always, but now each lab will have to develop steps to ensure that each analyst working in the lab is qualified and following proper procedures. It is up to each lab to develop the procedures that it will follow. They can be as simple or as complicated as each lab feels necessary. There will also be a change made in the way each lab is certified. No longer will a lab be certified for just a specific analyte, such as BOD or TSS. Now labs will be certified for a specific analyte (BOD) using a specific method (SM 5210B) for a specific matrix type (Aqueous, wastewater).

The biggest changes to NR149 revolve around calibration requirements. Some of the terminology has changed and there are a few new requirements for the use and tracking of standards used in the lab. Most of the requirements only apply to wet chemistry testing like phosphorus and ammonia, so most small labs will have little to worry about. And there is an upside, replicate and spike analyses are only required if stated in the method. This could mean a significant reduction in both testing time and time spent doing paperwork associated with control limit charts. Camille encouraged all laboratory personnel to make an effort to attend one of the many workshops the DNR will be having throughout the summer to familiarize themselves with the changes as they will be going into affect on September 1st of this year.

The meeting ended with the opportunity to tour either the Antigo Water or Wastewater Treatment Facilities. The meeting and tour was worth a total of six continuing education credits, applicable towards either a water or wastewater license.

Business Meeting

Steering Committee Chairperson Chris Helgestad called the business meeting to order at 11:30 AM.

Chris thanked everyone for attending, especially considering the weather conditions. Chris thanked Jim Krueger and the City of Antigo for hosting today’s meeting. Chris also thanked Infrastructure Alternatives for providing the morning refreshments.

Chris called for any questions, comments and/or changes to the meeting minutes from our last regional meeting in Eagle River on September 27, 2007 as printed in the December issue of the Clarifier. There being no questions, comments or changes, the minutes were accepted as printed.

Chris presented a copy of Ken Bloom’s Treasurer Report. As of 2/13/08 our escrow account balance was $910.24 and our checking account balance was $2,484.58.

Chris reported on the Steering Committee meeting that was held in Mosinee on December 13. The minutes are available on the WWOA website.

Chris recognized John Grall, recently retired from Rib Mountain MSD, who won the 2007 North Central Region’s Operator of the Year Award. Chris
Chris reminded everyone of the upcoming events planned for this year including the Biosolids Symposium on March 18 at the Holiday Inn in Stevens Point, the Central States Education Seminar in April at the Monona Terrace Conference Center in Madison, the Spring NC Regional Meeting on April 22 in Rosholt, and the Fall NC Regional Meeting in August at Northern Lakes Service in Crandon.

Chris encouraged all non-members to consider joining the WWOA. At a cost of only $40 for a two-year membership the benefits are well worth the money and include: discounted rates for the annual conference and other training opportunities, student scholarships and tuition aids, the Clarifier magazine, the Membership Directory, and eligibility for WWOA awards.

Chris introduced visiting state level board member Dave Carlson. Dave spoke to the group about additional upcoming events.

Chris opened up the floor for any new business. There being none, the meeting was adjourned at 11:45 AM.

Chris also recognized the North Central Region for winning 1st place in last year’s Operators’ Competition. Team members included Ken Bloom from Marathon, Lyle Lutz from Amherst, and Chris Helgestad from Spencer. The team was coached by Rich Boden from Plover.

Chris reminded everyone of the upcoming 42nd Annual WWOA Conference which will be held September 30 – October 3 in Stevens Point. Housing forms can be found in the Clarifier and on the WWOA Website.

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*Leonardo da Vinci*

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Municipalities are the newest group to sign a Green Tier charter with the Department of Natural Resources (DNR). Green Tier is Wisconsin’s innovative program for organizations that voluntarily pledge to go beyond regulatory environmental compliance.

DNR Secretary Matt Frank and Municipal Environmental Group (MEG) - Wastewater President Wally Thom, along with representatives from the first six participating municipalities, signed the Mercury Green Tier Charter for Environmental Performance at the annual Government Affairs Seminar in Madison on February 28, 2008.

“We’re excited these communities will be leading the way to a safer environment. They’ve pledged to work to take mercury out of the environment by focusing on mercury reduction earlier than regulations would require”, said DNR Secretary Matt Frank. “What better way to serve your residents than to help ensure the health of our lakes and streams.”

The Cities of Marshfield, Rice Lake, Sparta, and Superior and the Villages of Jackson and Plover are the first municipalities to sign the Mercury Green Tier Charter for Environmental Performance. Additional communities may join within the next four months by contacting MEG or DNR.

The Green Tier Charter is a partnership effort between DNR and MEG – Wastewater, an association of over 90 communities throughout the State of Wisconsin who own and operate wastewater facilities. The charter will assist mid-sized Wisconsin municipalities in reducing the amount of mercury discharged to their wastewater treatment plants. Typical reduction activities focus on decreasing usage and increasing recycling of mercury-containing products by regular consumers such as schools, hospitals, dentists, and certain industries. Mercury reduction work done now by the municipalities will be recognized by DNR as meeting future mercury reduction obligations, if applicable.

“We are excited to be involved in one of the first Green Tier charters for municipalities. This charter should help us achieve increased reductions of mercury in a more cost effective manner through cooperative efforts with the DNR”, said Paul Kent of Anderson & Kent S.C., on behalf of MEG. “We hope that additional communities will sign on to this initiative and that this might serve as a model for additional Green Tier opportunities for municipalities in the future”.

In addition to this Charter, DNR is addressing mercury through air emission rules for coal burning utilities, mercury product legislation, and work with specific mercury sources.

Anyone interested in learning more about the Charter and the opportunities available to Green Tier participants should contact MEG or visit DNR’s Green Tier web page at http://greentier.wi.gov.
Signed for and on behalf of:

**Mercury Green Tier Charter for Environmental Performance**

**between**

**Municipal Environmental Group – Wastewater Division**

**Wisconsin Municipalities**

and

**Wisconsin Department of Natural Resources**

**Warranty of Authority.** Each of the persons signing below represents and warrants that they have the authority to execute this Charter on behalf of the party for which they sign.

Signed for and on behalf of:  
State of Wisconsin  
Department of Natural Resources  
By: /s/ Matthew Frank  
Date: 2/28/2008  
Matthew Frank  
Secretary  

Signed for and on behalf of:  
Municipal Environmental Group – Wastewater Division  
By: /s/ Wally Thom  
Date: 2/28/2008  
Wally Thom  
President  

Signed for and on behalf of:  
Individual Municipal Signatories  
**Village of Jackson**  
By: /s/ Brian Kober  
Date: 2/28/2008  
Brian Kober, Director of Public Works  

**City of Marshfield**  
By: /s/ Ron Dickrell  
Date: 2/28/2008  
Ron Dickrell, Wastewater Superintendent  

**Village of Plover**  
By: /s/ Rich Boden  
Date: 2/28/2008  
Rich Boden, Wastewater System Manager  

**City of Rice Lake**  
By: /s/ Wally Thom  
Date: 2/28/2008  
Wally Thom, Water/Wastewater Manager  

**City of Sparta**  
By: /s/ Mark Flock  
Date: 2/28/2008  
Mark Flock, Wastewater Treatment Plant Manager  

**City of Superior**  
By: /s/ Dave Ross  
Date: 2/28/2008  
Dave Ross, Mayor
I got in a discussion the other day over a spreadsheet. Many operators still prefer the old familiar spreadsheet format for data management.

I admit I can get “passionate” when it comes to the Spreadsheet vs. Database debate. It’s not that I totally hate spreadsheets. I really like them. I just think many people use them all too often and too much as a crutch to avoid learning the more elegant technology of the databases.

I didn’t always feel this way. Twenty years ago, when I was just getting into personal computers and Lotus 1-2-3 for DOS was the Killer App igniting the PC revolution, I had a bad case of Spreadsheet Syndrome. You couldn’t have convinced me I needed another program, even a word processor.

Then about 1988 or so, I discovered a database manager. It was like walking into shop class with an old hand saw and seeing someone using a motorized radial-arm saw for the first time. Now this was a tool. It was fast. It could handle huge amounts of material. It could make complex, precise cuts in seconds. You could make just about anything you wanted with one of these. Since then, spreadsheets have become much more sophisticated tools. But they still fall far short of databases. Here’s why a database is still a better tool for business:

• **Easier to share.** You can have two or more people editing a database at the same time. But spreadsheet users have to wait until nobody is using a file before it’s free for them to use.

• **Better security.** Along with the ability to better share information is the ability to better secure it. You can protect private information from wandering mice better with a database. You can also protect users from their own mistakes, like adding up the wrong column or forgetting to include sales tax in the price quote.

• **More efficient.** Databases are relational, allowing you to link related tables to minimize duplication. Here’s an example. Say you have a mailing list that includes 20 real estate agents at the same office.

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phone number and fax. In a spreadsheet, you would have to duplicate that information 20 times for each agent. In a relational database manager, you enter that information once, then link or “relate” it to each of the 20 agents.

- **Better reporting.** With a database, you can format the same data many ways in reports. Here’s an example. For monthly sales reports, you want to look at sales by person, by region, and by product. In a spreadsheet, you basically have to enter or copy that information three times in three spreadsheets to get the desired reports. In a database, you enter it once and then use the reporting features to compile the data in the three formats with a click of the button.

- **Greater capacity.** Databases also have capacity to hold much greater numbers of records (into the billions).

- **Easier to maintain.** What makes spreadsheets so simple to use -- the fact that the programming and the formatting are together on one page with the data -- also makes them hard to maintain. Every place I go where people use spreadsheets for database activities, such as list management and process tracking, I spend time fixing spreadsheets because someone messed up the formatting while changing the data. You don’t have that problem with databases.

- **Less duplication.** There are two kinds of duplication with spreadsheets. First, there is file duplication. Because you can’t share the spreadsheet concurrently, everyone makes a personal copy. Second is duplication of source data. Nine of ten spreadsheets duplicate information already housed in a database.

**In short, databases require a little greater investment in training. But the benefits are much greater than any spreadsheet.**

So when should you use spreadsheets? I like them for two circumstances:

1. When compiling information from diverse sources. For example, you want to compare your plant’s removal efficiency ratios with those of industry standards.
2. When you are doing a one-time analysis. There isn’t a faster tool for building a simple snapshot that you might not use again.

**Today we promote the best of both worlds by using the spreadsheet with dynamic links to a data base.**

Of course, you’re free to use spreadsheets however you want. But if you want to debate the merits of spreadsheets vs. databases, you should do a little research on the advantages of each first.
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Sign up forms for foursomes can be found at the WWOA Website.

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2008 Management Seminar Announcement

The 2008 Management Seminar will again be sponsored by the Wisconsin Section of Central States Water Environment Association, the Wisconsin Water Association, and the Department of Natural Resources.

This year’s seminar will be held at Cabela’s in Richfield, site of last year’s successful seminar. The seminar will be held on Wednesday, August 6.

Potential topics include:

- Interviewing and hiring techniques
- Generational diversity and management styles
- Succession planning case studies
- How to end past practices
- Dealing with employees who can no longer perform their job duties.

More information will be available in June.

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