Buckeye Bulletin

Ohio Water Environment Association | Volume 87:4 | Issue 4 2014

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Ohio Water Environment Association

Preserving & Enhancing Ohio's Water Environment

www.ohiowea.org

City of Logan WWTP *page 62*

2014 Biosolids Workshop
Thursday, December 11th *page 27*

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Contact Hour Information: OWEA training is submitted for contact hour approval. Free Webinars are not submitted for contact hour approval at this time.

Check out OWEA's website, *ohiowea.org,* for a complete listing of OWEA approved training.

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Get Involved - Join a Committee Today

The Ohio Water Environment Association has 25 committees which focus on various aspects of the water quality field and association operations.

Contact OWEA at ***info@ohiowea.org*** or the chair of a committee that interests you for more information.

OWEA NEWS

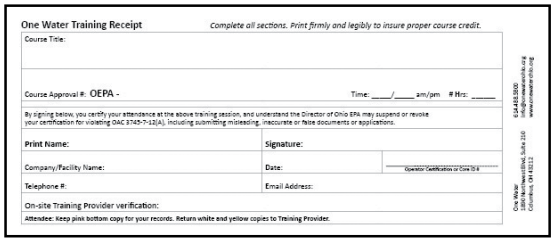
2015 Spring Term Internship Opportunity at OWEA

If you know of a college student in the Columbus area who would like to learn more about the water quality environment, not-for-profit association management, and possible careers in the water field, encourage them to apply for the OWEA Spring Intern position. Many colleges and universities also offer course credit for serving internships.

Visit *http://www.ohiowea.org/owea_job_board.php* for more info.

One Water Coursework Reports Now Available

If you attended the August One Water Conference and turned in training receipts, your conference coursework report is now available. Request a copy of your One Water coursework report by visiting *www.onewaterohio.org*.



One Water Training Receipt

Complete all sections. Print firmly and legibly to insure proper course credit.

Course Title:

Course Approval #: OEPA -

Time: ____/____ am/pm # Hrs: _____

By signing below, you certify your attendance at the above training session, and understand the Director of Ohio EPA may suspend or revoke your certification for violating OAC 3745-7-10(A), including submitting misleading, inaccurate or false documents or applications.

Print Name: | Signature:

Company/Facility Name: | Date: | Operator Certification or Core ID #

Telephone #: | Email Address:

On-site Training Provider verification:

Attendee: Keep pink bottom copy for your records. Return white and yellow copies to Training Provider.

OWEA/WEF Membership Worth One Contact Hour

OEPA-B398593-X may be used once in each renewal cycle to fulfill one contact hour. In order for operators to receive credit, however, they are required to provide proof of current membership (a copy of their membership card) with the renewal application. You may only use one contact hour, regardless of how many of the approved organizations memberships you hold. Visit *http://epa.ohio.gov/ddagw/opcert.aspx* to view Ohio EPA's current approved Contact Hour list.

Membership Services

If you need assistance with membership details, event registration, or coursework reports, contact us at 614.488.5800 or:

Judi Henrich, *judihenrich@ohiowea.org*
Amy Davis, *amydavis@ohiowea.org*

Career Opportunities

The **"Careers"** page is the most visited page on OWEA's website.

- **No charge for job seekers.**
- **No charge to post a position** if you or a fellow employee are an OWEA/WEF member.
- **$128 for a 30 day posting** if not a member.
- **$128 for a Professional Membership**
  We encourage you to join OWEA and reap all the benefits of membership. Same price as a posting!

Click on the Careers tab at www.ohiowea.org or contact OWEA *(614.488.5800 or info@ohiowea.org)*.

OWEA CALENDAR

November 2014

4	SW YP – Getting to Know MSDGC
5	OWEA Executive Committee Meeting
13	NE Section Meeting/Training Opportunity
19	OWEA Executive Committee Meeting
19-20	SW Plant Ops Seminar

December 2014

11	Biosolids Workshop

January 2015

5	Articles and Ads for February Buckeye Bulletin
7	OWEA Executive Committee Meeting

March 2015

5	Government and Regulatory Affairs Workshop
11	OWEA Executive Committee Meeting

April 2015

5	Articles and Ads for May Buckeye Bulletin
19-22	WEF Collections Conference - Cincinnati

May 2015

6	OWEA Executive Committee Meeting
14	Collection Systems Workshop

June 2015

22	OWEA Golf Outing
22	OWEA Executive Committee Meeting
23-25	OWEA Annual Techical Conference & Exposition

July 2015

1	Articles and Ads for August Buckeye Bulletin
26-30	WEFTEC - Chicago

2014 and 2015 Membership Rates

Rates include membership in the Ohio Water Environment Association and the Water Environment Federation.

- Professional & Academic.....$128.....*$143 in 2015**
- Operations.....$73.....*$81 in 2015**
- Young Professional.....$61
- Student.....$25
- Executive.....$322
- Corporate.....$400

Membership information may be found at:
http://www.ohiowea.org/memberships.php

**Membership rate changes in 2014 and 2015 are due to increases in the WEF portion of your dues. Ohio did not raise the state member association portion of the dues.*

President's Message

I hope this issue of the Buckeye Bulletin finds you and your family well and enjoying the fall activities that Ohio has to offer. I am eagerly reviewing the 10-day weather forecast in hopes of identifying potential stretches of Indian summer. To be honest, last winter made me a little skittish about what could lie ahead, so much that I have started looking to see if the woolly worms have wider brown bands than normal. My grandfather, who was a farmer, would be so proud that I finally started using them as a weather forecasting tool.

Michael Frommer, P.E.
OWEA President

The Power of Collaboration and Teamwork . . .

My first order of business in this President's Message (my second ever…two down, two to go!) is to comment on the success of the One Water Conference that was held in Columbus, Ohio, August 26th-29th. I really hope that you were able to break away from work to attend this historic event. This conference set all kinds of new records, with 1188 attendees, 216 exhibitors, 153 training sessions, over 600 people at the networking event, and 7 Operations Challenge teams at the invitational. I would like to take my hat off and give a big round of applause to OWEA's Conference Co-Chairs John Newsome and Rob Herr and the AWWA Co-Chairs, Jill Taptich and Mike Spriggs. The Co-Chairs, along with the 2014 Conference Committee and the amazing OWEA staff of Judi Henrich and Amy Davis, did a truly outstanding job.

The conference was special in many ways, but the part that stood out to me most was the unique collaboration between OWEA, OAWWA, and the City of Columbus, and amazing teamwork of the conference committee. Their teamwork reminded me of that which was masterfully illustrated in the (straight to video) movie *The Replacements*, starring Keanu Reeves, in 2000, where individuals that worked collaboratively as a team achieved far greater things than they achieved as individuals. That description typifies the performance of the conference committee in preparation for this event. The conference committee was able to draw on the vast experience of previous OAWWA, OWEA, and Five Cities Conferences and develop a strong, balanced program.

Most of our conference planners, like conference attendees, can draw parallels to protection of the water environment and affordable compliance with companion regulations and consent decrees, which is becoming a much taller order for many communities. Nutrient reduction strategies, CSO/SSO compliance, and land application are good examples, to name a few. Individual communities are rarely able to achieve these tasks singularly, but through collaboration and teamwork (with other utilities, regulators, etc) can achieve far greater things together. Many utilities have viewed peer communities as competitors in the past when weighing economic development opportunities and land acreage through annexation, when in the end they may make stronger partners than competitors (any parallels with OWEA and OAWWA?). Plans developed by an experienced and diverse team are always far superior to those developed singularly. The teams can draw on their collective past experiences and emerge with a much stronger, combined voice.

Hopefully you are starting to see that the true benefit of the One Water Conference is not record-breaking attendance, but the demonstration of how powerful peer entities can be through teamwork and collaboration. As I left the conference (albeit exhausted from the week) after a wrap-up lunch with the conference co-chairs, OWEA Executive Committee, and OAWWA Governing Board, my feeling was best personified by the final scene in the movie *The Breakfast Club*. As Emilio Estevez brilliantly articulated, the group realized (after spending the day together) that down deep they are the same people that want the same thing, despite their outward appearances. Certainly, the week-long conference and two years of planning yielded far more than a day of Saturday school detention!

Membership is the Lifeline of the Organization . . .

Beyond the conference, a couple quick words about membership. Our membership is the lifeline of the organization and is paramount to the success of our member association and its ability to achieve its mission and goals. The OWEA Executive Committee wants to attract and sustain a vibrant membership through providing optimal membership value and satisfaction to its members. We feel that the best way to accomplish this is through development of a Strategic Plan. The plan is very unique in that, "OWEA is a service organization for service providers". (Read that over a couple times and you will realize that we may need a thesaurus to find alternate words for "service"). Our plan is simple, and involves the use of membership feedback to identify strategic initiatives to increase membership value and strength over the next five (5) years, 2014-2019.

As mentioned in my previous President's Message (Volume 1 of Frommer Forum), a summer retreat was held at Mohican Lodge and Conference Center with the Executive Committee and staff. Elizabeth Wick and I conducted a day-long, facilitated discussion from 9 am to 5 pm. Let me tell you, that was no small task with 12 type A personalities present in the room! So, we came armed with easels, pin-up note pads, a talking stick, anonymous question ballots, and a kitchen timer . . . and the ultimate goal of ending the meeting with consensus on membership size and demographics, membership value and satisfaction, association resources, and image/brand. Sounds like an impossible mission, but somehow we were able to pull it off and are extremely pleased with the results.

To benchmark the success of the event, Dale Kocarek exclaimed at 5:15 p.m. on June 26, Twenty Fourteen . . "The Retreat held today by senior leaders of the Ohio WEA was in fact a true Strategic Planning Work Session and it was the best and most effective work session that I had attended in this organization or others." With Dale's weigh-in, our job was complete. Elizabeth and I took this as very high accolades indeed. For more information on the strategic planning process, please see the following page.

continued on page 7

President's Message continued from page 6

Future Leader Recruitment and Mentoring is Key to OWEA's Future . . .

Lastly, a note about another very important topic: recruitment. But alas, the available space is running short and I don't want to minimize the importance of the first two items with information overload. Therefore, I will make like aspiring political candidates and end this message by introducing an idea without articulating a plan on how to accomplish it (seems like a pretty seasoned political move for a newbie president! Wow . . . I am sounding more like a politician with each word . . . which is either scary, or means job security). An extremely important initiative to the sustainability of this organization is the recruitment of future leaders that are either inside the organization or haven't joined yet. Once those leaders are identified, they must be inspired and mentored by our current state, section, and committee leaders. See Kocarek Corner on pages 10-11 for more insight on mentoring. What a tremendous privilege and opportunity it will be for those in the association to participate in a "Pay it Forward" campaign! No monetary donations needed.

Recently, I spent some time trying to recall who and what prompted my initial involvement with OWEA. Surprisingly, that person was and is not an active member of the association. Somehow that person knew of the benefits that could be realized from being involved with such a prestigious volunteer organization. Mary Lou Fairall is her name, a retired school teacher who was the Chairman of the Southwest Licking Community Water and Sewer District. I'd guess that very few of you know her, which is good because it won't be easy for you to voice complaints to her about my presidency. In 2001, at the age of 29, I had recently accepted the position of General Manager of the District. Mary Lou felt that the District could improve its perception in the industry and that I could really use some leadership training (always great to hear that from your boss) through involvement in OWEA. With her urging, I became actively involved in the Southeast Section and the rest is history, as they say. Much more to come on this topic, in Volume 3 of the Frommer Forum. On a serious note, she has no idea today how much that suggestion has impacted the District and me as a professional in this amazing industry.

I would ask all of you to spend a little time thinking back to your start in the organization and identify who you should thank (or blame) for that. Until next time, be safe and try to do what you can to improve the water quality around you!

Michael Frommer, OWEA President
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OWEA's Strategic Plan 2014-2019

The overall goal for development of the strategic plan effort to increase membership value and strength over the next five (5) years, 2014-2019. The strategic planning process selected by the Executive Committee includes reviewing membership feedback, discussion and consensus building on development of strategic initiatives, section and committee leadership feedback and buy-in, development of action items, and adoption of an implementation plan. The flow diagram to the right illustrates the planning process adopted by the OWEA executive committee.

The first step in the strategic planning process was for the Executive Committee to evaluate the member survey data (gathered in October 2013) and build consensus on the results of the survey and identify strategic initiatives that would increase membership strength and value. The topics (or "benchmarks for success") that were selected for the strategic plan were 1) Membership Size and Demographic, 2) Membership Value and Satisfaction, 3) Resources, and 4) Image/Brand. A retreat was held on June 26, 2014 at Mohican State Park Lodge and Conference Center with the executive committee and staff. The day long facilitated discussions were conducted in the following format:

- Introduction of (Benchmark for Success) Topic
- Reflection of member survey results
- Topic question introduced to executive committee and staff
- Anonymous response by executive committee and staff
- Presentation of responses
- Consensus building on responses and identification of strategic initiatives

continued on page 8

The following is a table that contains each benchmark topic followed by the strategic initiatives in which consensus was reached during the retreat.

Benchmark Topic	Strategic Initiative based on Executive Committee Consensus
Membership Size	It was determined that a numerical benchmark should not be established because the ultimate goal is not a number but instead satisfaction and strength.
Membership Demographic	The active membership demographic that is missing includes young operators, "future" retired members, and regulators. The demographic in which dialogue needs to occur in order to sustain the organization is trade schools and academic professionals
Membership Satisfaction and Value	It was determined that the following items should be incorporated into our annual programming schedule in order to enhance membership value: ♦ Lower cost training opportunities for members who cannot travel given budget constraints. ♦ New operator training and technical assistance for professional development and certification. ♦ Assist Sections in promoting member appreciation events and networking. ♦ Enhancement of our legislative outreach program ♦ Process to evaluate our technical response capabilities to new legislature
Association Resources - Financial Resources	The following items should be addressed regarding resources: ♦ Appropriate reserve amount should be 1 year of operation expenses based on the last two (2) years average.
- Sponsorship	♦ It was determined that no changes to our sponsorship program were needed at this time and it was also agreed that acknowledgement of our sponsors was an important part to the long range success of our program.
- Event Attendance	♦ It was determined that event attendance at our workshops was satisfactory but the annual conference might be a little low given the number of members in the organization. Additional annual conference activities should be considered by upcoming annual conference committees to increase attendance.
- Volunteerism	♦ It was determined that the current level of volunteerism was adequate given our current programing. Retirement of the baby boomer generation could leave a void and require the percentage of volunteerism to increase in the next 5 to 10 years in order for the organization to be sustainable. Future leaders need to be identified to replace this potential void. Additional staffing will be needed to sustain customer service to the membership and implement key initiatives of this plan.
- Misc. Capital Items	♦ It was determined that an upgrade to the phone system is needed and that an upgrade in technology to support simulcast of our workshops for those with travel constraints should also be considered.
Image/Brand	It was determined that our strength is customer service and appeal to managers of public utilities and engineering consultants. It was determined that areas of improvement to our brand/image include appeal to younger, frontline professionals and the perception of relevancy by state legislators.

A critical phase to the success of any strategic plan is to obtain feedback and acceptance by the membership and organization leadership at the committee and section levels. Feedback will be sought at different points during development of the plan. The following activities are planned to solicit feedback on the strategic initiatives as part of the process.

The President and Executive Manager shall attend one (1) section meeting in each section during the calendar year of 2014/2015 and update each section on the strategic planning process. Feedback and input will be sought from the membership in attendance and added to this plan accordingly.

After feedback is received and the strategic initiatives are finalized, workgroups will be formed to develop the action items necessary to support the initiatives. We will continue to share information as it becomes available. Please do not hesitate to ask further questions or provide feedback to your thoughts regarding the plan.

Forward any comments to *mike.frommer@urs.com* and *judihenrich@ohiowea.org*.

The Executive Committee, Committee Chairs, and Section Leadership gather to plan for the upcoming year and how to best serve OWEA's members.

OWEA 5S Update

Ohio 5S Meeting Minutes
August 29, 2014

The meeting was called to order by Mark Livengood at 7:00 AM at the Hilton Downtown Columbus. Members were asked to check their personal contact information on roster sheets. Those attending appear at the end of these minutes. Mark thanked Jones & Henry for their generous support in sponsoring today's breakfast. George Martin, hailing from Greenwood, SC, and representing WEF, was thanked for attending the One Water Conference.

A motion and second to approve the minutes of 2013 breakfast occurred. Motion carried.

A total of $1,176.22 was collected from the new inductees (counted post-meeting and deposited in bank on 9/3/14).

The 2014 inductees approached the front of the room. Welcome to the following 5S members: Jeff Lamson (NW); Lance Willard (could not attend the breakfast (NE); Barb Wagner (SW); Mike Heniken (SE); and Jamie Gellner (At-Large). Plaques were presented to each. A pin was presented to George Martin at the Thursday membership meeting since he blew off 5S inductions on Wednesday evening. Also inducted as an honorary member was Judi Henrich.

The 2015 inductors were announced: Jeff Lamson (NW); Lance Willard (NE); Barb Wagner (SW); and Mike Heniken (SE).

Ted Baker motioned and a second was placed to authorize OWEA 5S to donate $500 to Water for People. Motion carried. Livengood will coordinate with OWEA for donation to be sent.

Discussion was had on looking into adding an Ohio-unique emblem to the 5S pin. Ted Baker and other members to investigate options and costs.

Mark Livengood announced he is turning over the Grand Integrator and Effluent recorder duties to Laura Tegethoff.

Attendees at the August 29, 2014 breakfast were: Bell, B. Hill, Fishbaugh, Tegethoff, Smith, L., Godsey, Winkler, Greener, Livengood, Gellner, T., Borer, Morgan, Kocarek, Wick, Gossett-Johnson, Angelo, Baker, Borton, Sprague, Hickman, Frommer, Hollopeter, Wiser, D'Ambrosia, Schafer, Taylor, Riddell, Frank, Matrka, Borkosky, Welke, Miklos, Nutter, Lamson, Wagner, B., Heniken, Gellner, J., Henrich, Martin.

Meeting adjourned at 7:45 AM.

Mark J. Livengood, Grand Integrator and Effluent Recorder
livengoodm@mcohio.org

2014 OWEA Inductees: Jamie Gellner, Barb Wagner, Lance Willard, Mike Heniken, and Jeff Lamson

MAKING A DIFFERENCE IN SOMEONE'S LIFE

by Dale E. Kocarek, P.E., BCEE, OWEA Past President 2010-2011

Preamble

During the past seven years since I have started my column, a few have inquired what inspires me to choose topics and how much time it takes to write articles. In response, I maintain a tickler file with newspaper clippings and other materials on articles that I think are relevant to our industry or the problems we are facing at the moment. Lately, I have been collecting articles on problems that the City of Toledo and others on Lake Erie been having with blue green algae and the microcystin toxin, which resulted in the drinking water emergency a few months ago. I try to think a year ahead, which can sometimes be challenging as stories can become old news very quickly. At the present time, I have several articles in initial stages of development. When I get into active writing, it usually takes me about two days to develop a reasonable initial draft. I then take a couple of weeks to gradually refine it. At times, I ask my peers to review it in advance for acceptability and accuracy. There are other times, however, when I become immediately inspired. This is one of those times!

I attended the recent One Water Conference, which was held in Columbus on August 26-29, 2014. It was a marvelous conference and exceeded my expectations. For those who have never attended a well-run, highly professional event, the One Water Conference was very well done and similar to a WEF Specialty Conference. More is said about the conference in other articles in this Buckeye Bulletin, so that is all I will say here.

In My Life

There was a combination of factors that led me to write this article. One was seeing many people at the One Water Conference that I have known for over 30 years. As I get older, the annual conference becomes remembrance for those no longer here and celebration for those that remain. Two leaders in OWEA commented on the importance of mentorship and acknowledged my influence for shaping their careers. My interview with one emerging leader is at the end of this article.

Growing up in the 1960s, the musical group The Beatles was popular. I was drawn to John Lennon for his wit and melancholic edge. To me, Lennon was the true artist and philosopher. During the One Water conference, I was reminded of the lyrics from *In My Life*, which was written by Lennon.

The Beatles in 1966
(Paul, Ringo, George, and John)

There are places I'll remember
All my life though some have changed
Some forever not for better
Some have gone and some remain
All these places had their moments
With lovers and friends I still can recall
Some are dead and some are living
In my life I've loved them all

"In My Life," The Beatles, 1965, Rubber Soul
John Lennon and Paul McCartney, United Artists

What is Mentorship?

According to Meriam-Webster, Mentor is a character from Greek mythology. Mentor was an older and wise advisor to Telemachus, and also helped Athena by imparting wisdom to her. The word *mentor* has been adopted in English as someone who teaches or gives help and advice to a less experienced individual. The first recorded use was in the book entitled *Les Adventures de Telemaque*, written by the French writer, Francois Fenelon, in 1600.

Telemachus and Mentor in the Odyssey

"A mentor affects eternity; he can never tell, where his influence stops." -Henry B. Adams

Since that time, the term has been used in the context of a relationship of a supporter, advocate, advisor, and motivator. It is important to note that a mentor is not supposed to be a supervisor, parent, social worker, company spy, or enabler. A true mentor is a non-judgmental teacher who imparts wisdom and experiences from a lifetime of lessons learned. To be effective, both parties must understand certain boundaries and ground rules of what a mentor is and is not.

The business world recognizes the value that mentors can bring to developing young employees. Many companies, including my own company Stantec, have formal mentorship programs. Organizations such as OWEA and WEF provide informal mentorship through volunteer opportunities in committees and sections. When I was President of OWEA, I took a special interest in the YP Committee. I jokingly named myself – through executive privilege – as the world's oldest YP at age 53 (at that time). The interest that I showed to our Ohio YPs was noticed at the WEF level. To this day, four years later, I try to participate in YP night each year at WEFTEC.

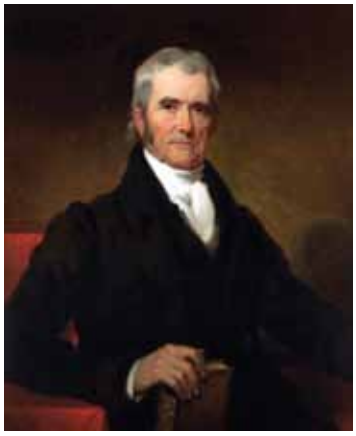
Mentorship in American History

American history is replete with many good examples of mentors. Perhaps one of the most famous is George Wythe (1726 –1806).

George Wythe lived in Williamsburg, Virginia and is considered to be the first American law professor at William and Mary College. In addition, he was a noted classics scholar, a Virginia judge, and an early and prominent opponent of slavery. He was one of

George Wythe, 1726-1806
Teacher, Statesman and Leader and Mentor

Thomas Jefferson, 1743-1826
3rd President and Author Declaration of Independence



John Marshall, 1755-1835
4th Chief Justice Supreme Court

One Water Conference Co-Chair, John G. Newsome, PE

the signers of the United States Declaration of Independence in 1776. Wythe also served as one of Virginia's representatives to the Continental Congress and the Constitutional Convention.

In today's world, few recall who Wythe was, nor the world changing influence he imparted. (As a side note, those who have visited WEF may recall a small tribute to Wythe as the WEF Headquarters in Alexandria Virginia is 601 Wythe Street.)

Perhaps the role that Wythe is most famous for is not listed on his epitaph. Wythe was a teacher and mentor to some of the most influential leaders in the early years of the United States. Wythe taught and was a mentor to Thomas Jefferson, John Marshall, Henry Clay, and other men who became American leaders.

It's Not Too Early to Begin

Early impressions can be the most lasting impressions. It is never too early to begin the process of education, mentoring, and empowering the next generation, for they will be leaders of our future. To continue the good work we have started, it is important that we reach out to all generations beginning with our own and working backwards. In my case this is the Baby Boomers, and reaching back to those from Generation X and the Millenials (Generation Y).

One of the best examples of early outreach in the form of impression building and informal "mentorship," has been through the City of Columbus Children's Water Festival, which is held in early May of each year. The Festival involves elementary school children being exposed to the water field and stressing the importance of water through presentations, demonstrations, and games.

Hands-on presentation at the Central Ohio Children's Water Festival in Columbus, Ohio

Our Message is Important

The ultimate impact of being a mentor or teacher can be powerful and transcend time. The examples stated above are but a small example of how the current leaders can build the next. History will little remember many of us, but the good examples that we set and the time we spend imparting wisdom for a life well lived is our hope for the future.

The message on mentorship became something of a theme of the conference. One Water Conference Co-Chair John Newsome challenged the OWEA Board to initiate a vigorous mentorship program to build the next generation of leaders. Based on that message to the OWEA Board, I wanted to talk to John further on these thoughts. During our conversation, he stated that any effort must start with a genuine interest in the other person while recognizing that their interest and background may be different than our own. Through his own experiences, John has found that conversations to inspire others need not be long. Conversations lasting only five minutes can be effective in telling others "what we are about" and what our profession may hold for them. As I have found in my frequent travels in Ohio and Pennsylvania, many of our younger members followed an indirect path into the field and our organization. Virtually everyone has a compelling story to tell of a person that influenced them.

John also stressed to me that our efforts in reaching out, educating and mentoring those who may follow in our footsteps are important to all members of society. Therefore, it is important for our efforts to include people of all ages, backgrounds, and ethnicities. Our message may be old, but it is exciting and transcends time. We all share this planet and have a vested interest in the need for clean water. For without clean water, life is not possible.

As I mentioned at the start of this article, John's comments during the One Water Conference inspired me to write on this topic and stress its importance. I second the criticality of John's comments. As the late Robert F. Kennedy stated after the 1956 Democratic Convention in contemplating the future and 1960: *If is not us, who, and if not now when?* As individuals and as a collective body of professionals, we must act. The time is now!

Dale E. Kocarek, PE, BCEE
Chair, Government Affairs Committee: WEF Delegate
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WEF Delegates' Report

Dale Kocarek

Doug Clark

Tom Angelo

WEFTEC marks the beginning of Water Environment Federation's (WEF's) calendar year. This is when WEF changes its president: this year from Sandra Ralston to Ed McCormick. This transition is made during WEF's Awards Ceremony, which occurred on October 1, 2014. I realize this is confusing as our OWEA "year" transitionally is different and runs typically from late June of one year to the same time the following year. In addition to changing our president, the composition of our board changes as the Past President or one of the WEF Delegates drop off and new members join. It is akin to the passage of life.

This is the beginning of my second year as a WEF Delegate along with Past President Doug Clark. This year we welcome Tom Angelo as our Junior WEF Delegate, and say goodbye to Mark Livengood, our Senior Delegate.

Mark leaves the OWEA Board and WEF House of Delegates with a legacy of excellent service and dedication. His contributions, since joining the OWEA Board in 2003 as the Southwest Section Delegate, have touched every part of the organization. He had an uncanny sixth sense if things seemed right or wrong, and his council proved valuable again and again. I shared much of my last decade with Mark, so I experienced how his mind worked: good ideas, interwoven with keen sights and a dry sense of humor. In late 2011, several months after losing the election to be the WEF Delegate in 2011, I realized that Mark's work in OWEA and WEF was not yet complete. We needed him involved for as long as possible. After all, I could take a short break, recharge my batteries, and join the House of Delegates two years later. Since joining the WEF House of Delegates, Mark has been an important voice for Ohio and demonstrated leadership at the national level. During the last year, Mark led the MA Financial Sustainability Workgroup, spreading Ohio's lessons at the national level. Thank you for your service, Mark!

WEF 101

As one of the Senior Delegates, I am going to use this column as an opportunity to make you more aware of WEF, how it functions, relates to us, and why it is so important to OWEA. This will be a practice that I will carry out for the next two years. The following is Lesson One:

- State organizations such as OWEA are referred by WEF to be Member Associations (MAs). In the future, I will frequently refer to our organization as an "MA."
- WEF includes 75 Member Associations (MAs) from around the world. The majority are in the United States and Canada. Several are overseas.
- Some MAs, such as Ohio, are composed of one state. Others including New England WEA, Central States WEA, Kentucky-Tennessee, or Pacific Northwest MA's are composed of multiple states.
- Most MAs include only WEF, but some include AWWA or other water organizations.
- WEF, like OWEA, is organized as an educational nonprofit organization under 501(c)(3) of the IRS code. Our primary focus is education. We do not retain paid lobbyists to lobby for us.
- WEF is managed officially by the Board of Trustees (BOT). The WEF Executive Director reports to the BOT. The current WEF Executive Director is Dr. Eileen O'Neill. She has been the Executive Director for approximately one year. She succeeds Jeff Eger.
- There are approximately 100 members in the House of Delegates (HOD) from the 75 MAs. MAs typically have 1, 2, or 3 delegates. Most MAs have 2 delegates. Given that we have exceeded 2,000 members, we currently have 3 delegates.
- The WEF House of Delegates (HOD) is the policy formulation driver for WEF. Its work is through committees and various work groups. The primary means of interface between the HOD and BOT is through the Speaker of the House. The WEF Speaker of the House is Ms. Duyen Tran of the Arkansas WEA. Her term is for one year.
- The WEF HOD has 4 committees, which are considered to be part of WEF Leadership:
    1. Budget Committee
    2. Steering Committee
    3. WEFMAX Committee
    4. Nominating Committee

  I am on the Steering Committee and have been named the official "scribe" of that committee. It is my job to work closely with the Speaker of the House to ensure that all reports are completed and submitted on time prior to her meetings with the Board of Trustees.

- The WEF HOD has 4 Work Groups:
  1. MA Financial Sustainability;
  2. MA Leadership Development;
  3. Water Advocates;
  4. Operator of the Future.

  I am on the MA Leadership Development Committee and the Water Advocates. Doug Clark will continue to serve on the MA Leadership Development Work Group as he did last year. Doug presented critical findings of the MA Leadership Work Group at WEFTEC this year.

As We Move Forward Together

I have seen a shift in the attitudes that WEF has taken toward its MAs. WEF views MAs as the lifeblood of the organization and is looking to hear from the members. As one of OWEA's three delegates, I speak for Doug Clark, Tom Angelo, and myself that we want to hear from you. What excites you about our profession and your work? As a member of the Steering Committee, I have a direct voice to the Speaker of the House and Board of Trustees. So let us know what you think.

During the all-day meeting on Saturday, September 27, 2014, we heard from many representatives of WEF's HOD, BOT, and Staff. Much of the discussion was spent on WEF's strategic plan, business plan, and how its budget and business plan are being aligned. There was also a discussion on WEF dues and its proposed increases. WEF believes that these increases, along with streamlining other functions, are needed for sustainability and building a stronger, better organization with increased member focus. Despite these increases, which are nominal, a WEF membership provides good value compared to memberships in other organizations. Just one of these good values is the collaboration of WEF and WERF (Water Environment Research Foundation) on how to help Water Resource Recovery Facilities learn to become energy neutral, which in the end is not only better for the environment but also better for our budgets!

There is also a focus on Water Advocacy and public awareness. WEF and the other members of the Value of Water Coalition have unveiled a new messaging campaign "Water Works! It's all over if we don't fix what's under." This new messaging campaign, while in its infancy with tweaks still needed, will eventually replace the "Waters Worth It" message. To learn more about the new message and the Value of Water Coalition please visit their websites at *www.waterworkscampaign.org* and *www.thevalueofwater.org*.

Finally, while three of the HOD work groups are continuations from the year before, there is a new work group this year – Operator of the Future. WEF is keenly interested in helping shape the future and build excitement about the operator profession.

Delegate Update provided by Dale Kocarek

Dale Kocarek, Senior WEF Delegate, *dale.kocarek@stantec.com*
Doug Clark, Junior WEF Delegate, *douglas.clark@bgohio.org*
Tom Angelo, Junior WEF Delegate, *tangelo@warren.org*

TEST YOUR KNOWLEDGE – TAKE THE OPERATIONS QUIZ

1. Which of the following terms describes an activated sludge process mode in which aeration and clarification occur in the same tank?
   a. Plug flow system
   b. Complete mix reactor
   c. Sequencing batch reactor
   d. Step-feed system

2. Which type of polymer has the most active product per unit weight?
   a. Solution polymer
   b. Emulsion polymer
   c. Dry polymer
   d. Mannich polymer

3. Healthy mixed liquor in an activated sludge system should have what appearance?
   a. Black with a gray foam
   b. Dark brown, covered with a greasy tan foam
   c. Light brown and frothy
   d. Gray with no foam of any kind

4. The mixed liquor suspended solids (MLSS) concentration range for a conventional activated sludge system process is?
   a. 500 – 1000 mg/l
   b. 1500 – 3000 mg/l
   c. 5000 - 7500 mg/l
   d. 8000 – 10,000 mg/l

5. Which of the following is a typical piece of flow measuring equipment?
   a. Nephelometer
   b. Downward looking acoustic sensor
   c. Counterweighted float-level indicator
   d. Parshall flume

Answers noted below.

Questions, comments, or submit a suggested question? Email OWEA at info@ohiowea.org

Answers: 1–c; 2–c; 3–c; 4–b; 5–d

NWOWEA

Joe Tillison, President

The Northwest Section has had a busy year providing training sessions, section meetings, and fundraisers. I am pleased to announce that we have completed the first ever joint SE/NW Section meeting on October 9th in Marysville OH. Tours of the City of Columbus Upground Reservoir and Pump Station were offered in the morning. After the tours a brunch was served at the Union County Commissioners Building. A big thanks goes out to Doug Borkosky and his team of cooks for preparing a great meal. A portion of all registrations will go to Water for People. I was very pleased to present Josh Wehring the past president's plaque for his outstanding service and leadership in 2013-2014. In the afternoon, several training sessions were provided, which covered a variety of topics. The presentations can be found on the OWEA web site.

We held our semiannual operator education day. It was held October 31 at the Northwest District Ohio EPA office. These review sessions are led by grizzled veterans of wastewater treatment who teach the sessions and assist those taking certification exams.

We are looking forward to a busy 2015. Plans are being made for upcoming Section Meetings. More information can be found by visiting *www.ohiowea.org*. Please feel free to contact me or a section officer with your thoughts or ideas. We look forward to seeing you in the upcoming year.

Joe Tillison, *jtillison@bgohio.org*

Team of Cooks at the Annual NWOWEA Pancake Breakfast

NWOWEA President Joe Tillison presents the Past President's plaque to 2013-2014 NWOWEA President, Josh Wehring

NEOWEA

Denise Seman, President

The Northeast Section had a very busy summer and early fall. In July, the NE Section held the successful annual BioMass-ter's golf outing. This event has been a huge success for fundraising for both the NE Section's scholarship fund and for Water For People. We hope more members and nonmembers can join in the fun next summer!

On September 14th, the NE Section held the annual Clam Bake at Grantwood Country Club in Solon. It was a perfect evening for food, fun, and fellowship. Congratulations to the winners of the annual corn hole tournament – Kevin and Mary Slaven – Team "Who Dey". They were crowned the winners for the 2014 tournament, and received a bottle of wine as their trophy.

The Supervisory Seminar was held on October 23nd. Over 60 people attended this free event offered by the NE Section, which provided managers and supervisors with resources to develop management skills. Attendees learned about *Innovative Leadership* and *Managing Change* from the NE Section's own Past President, Ed Haller. Attorney Gina Kuhlman talked to the attendees about *Labor and Employment Aspects of Managing the Workplace*. Many thanks to both Ed and Gina for sharing their experience and knowledge with our attendees.

We have a plant tour and technical sessions at NEORSD's Southerly Plant in November, a day-long Operations Seminar in January, a day-long Industrial Pretreatment Seminar in February, as well as a Watershed Seminar and 2 more plant tours in the spring.

Watch for NESOWEA events on the OWEA calendar.

Denise Seman, *dseman@cityofyoungstownoh.com*

2014 NESOWEA Clambake

Annual Corn Hole Tournament Winners – Kevin and Mary Slaven

SWOWEA

Tom Brankamp, President

First, I would like to thank the City of Troy for hosting our very successful September Section Meeting. The Section Meeting was a great way to kickoff the 2014 - 2105 SWOWEA season! From an educational tour of the WWTP, to very informative technical presentations, to some tasty "local" lunch favorites, our members were treated to an enjoyable day away from our everyday activities. As we mentioned during the Section Meeting, we are still looking for a host for the March Section Meeting. Please consider this opportunity to show off your plant and your community.

Each year, the SWOWEA Executive Committee searches for qualified candidates to be nominated from our Section for both OWEA and WEF awards. These awards will be announced at our Annual OWEA State Conference in June. With over 500 members in the Southwest Section, there are many highly qualified candidates, which should result in multiple award winners from our Section. Let's show the rest of the State what we have accomplished! We need your help in finding these candidates!! Please log on to our website Awards Page and review the various OWEA and WEF Awards. Then, submit a candidate for consideration. Due to the length of time needed for the selection process, proposed candidates need to be submitted by November 20th so please take a few minutes to think about deserving individuals within your organization.

The last three months of each year are generally very busy in our lives due to school and Fall sports now being in full swing, and of course Halloween, Thanksgiving, and Christmas. This is no different for SWOWEA. The following is a snapshot of some of our upcoming events. These events are great opportunities for you to get involved, and to learn more about your profession.

- The annual Plant Operations Seminar and Section Meeting is scheduled for November 20th. Interesting technical presentations are planned and plenty of equipment vendors will be on hand to make this a day you can't miss!
- Planning is also well underway for the annual SWOWEA Industrial Waste Seminar and Section Meeting scheduled for January 22nd. Mark your calendars for another great event!
- In December, we are honored to share lunch with our Past Presidents. It is our opportunity to thank them for their service to our Section!
- Lab Analyst Committee meetings, Young Professionals Committee activities, Student Chapters, Science Fairs, and more and more . . .

For all the latest you can find us at *www.swowea.org*.

Tom Brankamp, *tom.brankamp@strand.com*

Interested in having your plant profile featured in OWEA's Buckeye Bulletin?

Contact the leadership in your section or send an email to *info@ohiowea.org*.

SEOWEA

Fred Smtih, President

Hello fellow Southeast Section members. I hope that everyone had a great summer, and that you are enjoying the beginning of your fall. It is hard to believe that 2014 is coming to a close as we enter that last quarter of the year.

The Section held our Friends and Family Night at the Columbus Clippers game on August 1. (See photos below) We had over 80 members, friends, and family at the game. The Clippers played the Louisville Bats. We spotted them 4 runs in the second inning, and tied it up in the fourth inning. Unfortunately, we gave up a run in the eighth inning and we lost 4-5. Even with the loss, everyone had a great time, and the kids enjoyed the cotton candy and Dipping Dots. I hope everyone can attend next year. We only charge the ticket price for the game, and provide food and drinks for everyone. We are considering a Columbus Crew game next year for the event, so talk with one of the officers about your preference.

We want to thank all of the sponsors who helped make the Friends and Family Night possible. Our sponsors this year are listed below. Be sure to thank them when you have a chance to.

Gold Sponsors: Pelton Environmental Products

Silver Sponsors: Arcadis, BL Anderson, Dreier & Maller, and URS

Bronze Sponsors: Alloway, Belmont Labs, Delaney and Associates, Great Lakes Environmental Center, ms consultants, Smith Environmental, and Strand Associates

continued on page 16

SE Section Update continued from page 15

At the One Water Conference, fellow colleagues from the Southeast Section were recognized for their contributions to the water environment with OWEA or WEF Awards. The recipients of these awards are listed below with the award name followed by the recipient. Please offer them a word of congratulations.

OWEA Professional Wastewater Operations – Lyndon Johnson
WEF Laboratory Analyst Excellence Award – Tanna Rhoads
WEF Collection System Award – Mike Foster

This year, the Section created an Awesome Operator Award. This award was created to encourage front line operators who would benefit from OWEA involvement and demonstrate OWEA's mission of preserving and enhancing the global water environment. To accomplish this, the Section accepted nominations for front line operators who exhibit professional qualities that help promote the wastewater treatment industry through dedicated plant operation, maintenance, training and/or record keeping. We awarded free single day registrations to attend the One Water Conference. The award winners were recognized at our May Section meeting, and are Keith Brown, Josh Holton, Chris Huebner, Chris Jamiel, Billy Miller, David Morris, and Rich Obar. Please offer them a word of congratulations.

Each year, the Ohio Academy of Science has District Science Days for high school and middle school students. District Science Days are held on college and university campuses and are administered by the University Councilperson, School Councilperson, and the District Council. Currently sixteen colleges and universities host District Science Days. District Science Days accept superior-rated students from Local Science Days. The Southeast Section has judges who attend six of the District Science Days to judge water related projects. The best project at each District is awarded a $100 scholarship. Congratulations to our scholarship winners listed below. Thank you to our Judges too!

District 7 at Columbus State, the judges were Tom Bulcher and Laura Tegethoff. Our scholarship winner was Abbie Meyers, a ninth grader, and her project was titled *"Topic - Aquatic Oil Spill Clean Up in Non-Quiescent Conditions."* District 8 at Ohio University in Lancaster, the judge was Dale Kocarek. Our scholarship winner was Erin Sanderson, an eleventh grader, and her project was titled *"Presence of Polycyclic Aromatic Hydrocarbons in Urban Water Run Off."* District 9 at Zane State College, the judge was Anne Kennedy. Our scholarship winner was Kailyn Shalosky, a sixth grader, and her project was titled *"Sewage System – Down the Drain."* District 16 at Belmont Technical College, the judge was Cheryl Green. Our scholarship winner was Dominic Argentine, a seventh grader, and his project was titled *"Which Water Has Less Contaminants – Tap, Bottle, or Brita."*

Hopefully everyone was able to enjoy our October events. Our Watershed Section meeting was a joint meeting with the Northwest Section. This year's meeting was held at the Union County Services Center, and included a tour of the new City of Columbus John R. Doutt Upground Reservoir and Pump Station. The Lab Analyst Quarterly meeting was held at the City of Columbus Surveillance Lab. Finally, I hope everyone had a chance to attend our Young Professionals' event at the Varsity Club for the Annual Wisdom vs. Enthusiasm Cornhole Competition. Checkout all the details for future events on the OWEA website at *www.ohiowea.org*.

Fred Smith, *fsmith@msconsultants.com*

2014 FARM SCIENCE REVIEW

OWEA Booth Hosted by the Residuals Committee

Farm Science Review – The OWEA Residuals Committee organized and displayed a booth at the Ohio Farm Science Review September 16-18, 2014. According to the Farm Science Review website, over 131,153 people attended the event this year. Committee members volunteered to staff the booth and we had a great turnout from the agricultural community. This year the booth giveaways to promote Biosolids during the event were a Seeded Button and a Whistle Key Light.

Each person who was given a "giveaway" was required to spin the "wheel of trivia" and attempt to answer informational questions on biosolids. Some pictures of this event and some of our participants are included below. A special thanks and acknowledgement goes out to Tom Dempsey, City of Dayton for volunteering to coordinate this event for us. Tom donated a large amount of time to preparing booth materials and organizing the group that manned the booth. Thanks also to the others that participated and volunteered time in the update efforts.

Next year's Farm Science Review will be September 22-24, 2015. If you are interested in volunteering, contact:

Residuals Chair: Jamie Gellner, *jgellner@hazenandsawyer.com*
FSR Coordinator: Tom Dempsey, *tom.dempsey@daytonohio.gov*

LABORATORY ANALYSIS COMMITTEE

by Denise Seman, Chair

Hi Everyone!

If you were able to attend Ohio One Water Conference, I'm sure you'll agree it was a great experience. Many thanks to the volunteers who helped judge/ run the lab portion of Ops Challenge: Melodi Clark, Karen Tenore, Terri Brenner, Mark Citriglia, Christen Wood, Patrick Wersell, Laura St. Pierre, Jessica Clemmons, Lyndsey McDermand, Chad Robey, and Edee Seman.

It's been a great year. A special thanks to all who made it possible. I appreciate your help in providing venues to hold our meetings and also sharing your expertise in the area of wastewater analysis.

SW LAC – Jim Davis and Karen Tenore

The Southwest Laboratory Analysis Committee held its fall meeting on October 16, 2014 at YSI in Yellow Springs. We had talks about using and trouble-shooting ammonium and nitrate online sensors. Another topic was ISE sensors. Also included were tours of Yellow Springs Wastewater Facility to see their online sensors and the YSI facility tour.

If you have a location for a meeting or would like to give a talk this upcoming year, please contact the co-chairs.

Karen Tenore, City of Dayton WRF
Karen.Tenore@daytonohio.gov, (937) 333-1845

Jim Davis, Montgomery County Water Services
DavisJi@mcohio.org, (937) 496-7051

NW LAC – Bridget Shiets

NWOWEA held a meeting September 30 and attendees heard presentations on *"Creating a Total Phosphorus Curve Using Excel"* presented by Bridget Shiets; *"pH Analysis"* presented by Tim Meirose, Thermo Scientific; and *"MSDS to SDS Changes"* presented by Christine Minor. We wrapped up the meeting with lunch from Chipotle.

A HUGE THANK YOU to Tim and Christine for presenting.

As always, should you or someone you know be interested in presenting a topic, please email Bridget at the email below.

Bridget Shiets, *wwtplab@cityofbellevue.com.*

NE LAC – Bev Hoffman

The Northeast Laboratory Analysis Committee held a meeting on September 15, 2014 at the Akron WPCS training facility. We had 28 people attend the meeting to learn about simple microscope applications for wastewater operators. We will be holding our last meeting for the year on November 21, 2014. It will be hosted by Alloway, with presentations on Free Cyanide, Low Level Mercury, and a tour of the laboratory.

Please let me know if you have a topic you would like to hear about or know someone who would like to present a topic. If you would like to be added to the NESLAC membership directory and receive automatic email updates for training events and other news, please send your contact information to Beverly Hoffman at *NESOWEALAC@gmail.com*.

Committee Members:
Beverly Hoffman *nesowealac@gmail.com*
Marie Simon *marie@northcoastlabs.com*
Lisa Feigle *lisaf@gcdwr.org*
Amy Starkey *ajstarkey@co.stark.oh.us*

SE LAC – Melodi Clark

I can't believe summer is over. The first time ever combined state conference, One Water, was held in August and it was a huge success for the lab side of things. I had the pleasure of judging the Lab portion of OWEA's Operator Challenge and it was great!

On the LAC front, we held a meeting on October 28th here at the City of Columbus Surveillance lab with some wonderful speakers and topics. My goal is to have one more meeting by the end of the year and I am looking for ideas or volunteers to host. Hope to see a lot of people at the last SEOWEA LAC meeting of the year!

Melodi Clark, *MLClark@columbus.gov*

Lab Analysis Committee Contact Information

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Northeast Chair
Beverly Hoffman, 440.446.4228, *nesowealac@gmail.com*

Southeast Chair
Melodi Clark, 614.645.1239, *mlclark@columbus.gov*

Northwest Chair
Bridget Shiets, 419.483,7514, *wwtplab@cityofbellevue.com*

Southwest Chairs
Karen Tenore, 937.333.1501, *karen.tenore@cityofdayton.org*
Jim Davis, 937.496.7051, *davisji@mcohio.org*

The OWEA Lab Analysis Committee working the Lab Event at the 2014 OWEA Operations Challenge Invitational at the One Water Conference

GOVERNMENT AFFAIRS COMMITTEE UPDATE

by Dale Kocarek, P.E., BCEE, Chair

Update on the Ohio EPA Nutrient TAG

During the last few months, most of the key focus of the Ohio EPA Nutrient Technical Assistance Group (TAG for short) has been in transition from the development of a "multi-metric stream evaluation procedure," to be used in conjunction with Water Quality Standards and TMDL reports to practical steps associated with development and implementation of Nutrient Rules.

As you may recall, the TAG was formed a year ago to sort through different issues associated with nutrient related pollution and, at a minimum, be a steering committee to guide the Ohio EPA toward Rule Making. The key members of the TAG are Guy Jamesson of the City of Columbus and Elizabeth Toot-Levy of the Northeast Ohio Regional Sewer District. Both Guy and Beth are members of both the Association of Ohio Metropolitan Wastewater Agencies (AOMWA) and OWEA.

I have served as an alternate member of the Ohio EPA, Nutrient Technical Advisory Group (TAG) as a Point Source Technology representative and have been a voice to our membership. During this time, we have held monthly meetings, engaged in brainstorming discussions to identify key issues and priorities, held lengthy discussions, formed subgroups, and much more. The objective was to put the Ohio EPA on a path to adopt nutrient rules in mid-2015. The Chair of the TAG is Dan Dudley of Ohio EPA, and the Vice Chair is Elizabeth Toot-Levy of NEORSD (also AOMWA and OWEA).

Early this year, the TAG formed a subcommittee to evaluate the proposed methodology developed by the Ohio EPA to evaluate nutrient impaired waters of the state called the TIC (Tropic Index Criteria). The TIC is a numerical rating system, which had a number of positive features. Overall, the TIC was well conceived and reflected an enlightened method of problem solving by the Ohio EPA.

The mission of the TIC subcommittee, which was led by Guy Jamesson of the City of Columbus, was to review the TIC procedure and determine if this is the best way for Ohio EPA to proceed. I have been a member of the subcommittee. During the six or so months that the group met there was much discussion about providing a tool that was clear, understandable, flexible, and effective. Ultimately, the subgroup determined that it wished for a procedure with the virtues of the numerical TIC but with more potential flexibility in use and application.

I am pleased to say that the subcommittee developed a procedure called the SNAP (Stream Nutrient Assessment Procedures), which incorporates all of the virtues of the TIC into a system that has achieved our objectives. The SNAP is a compendium of flow charts and narrative statements preceded by a preamble to introduce the concept.

Please know that the TIC subcommittee developed a process which was as simple, straightforward, and flexible as we felt it could be. It differs from other states, which opted for a less flexible (one size fits all) specific numeric standards based on stream classifications to set numeric nutrient limits, regardless if the use potential in the receiving stream could be reasonably attained, if at all. In conclusion, we believe that the SNAP will be (1) protective of the waters of the state in terms of nutrient impairment, (2) oriented to restoring impaired waters to its designated use potential under WQS, and (3) reasonable and fair to POTWs and others. Ultimately, we believe that this approach could be considered as a model for the nation. Please note that the SNAP is an assessment tool and a foundation for sound analysis. The TAG is now moving into implementation issues at this time. The SNAP will be presented at the Government Affairs Workshop on March 5, 2015.

If there is one "take away" message from this, it is to expect draft nutrient rules for nutrient requirements in late 2015. The Ohio EPA and TAG have worked to avoid having a "one size fits all" approach, but the fact of the matter is that many of our regulated communities will see language in their NPDES permits associated with nutrient control.

Government Affairs Workshop, March 5, 2015

Our committee is still in the process of recruiting a few presenters for March 5, 2015. As before, we will have the Ohio EPA Director, Craig Butler, and new Chief of Surface Water, Karl Gebhardt. We will have a presentation on the SNAP. In addition, I have invited Claudio Terneiden of the WEF Government Affairs Committee to present on hot topics from our Nation's Capital.

To add to topics that are purely associated with new regulation and industry trends, we are looking at case studies from utilities from the OWEA Utilities Enhancement Committee. For further information, please contact me at *dale.kocarek@stantec.com* or John Owen at *John.Owen@epa.ohio.gov*.

Dale Kocarek, P.E., BCEE
dale.kocarek@stantec.com, 614.486.4383

This Week in Washington is a weekly publication of the Water Environment Federation's Government Affairs Department. It provides updates on the latest legislative and regulatory developments that affect water quality.

If you are interested in subscribing, contact Claudio Ternieden, *cternieden@wef.org*.

PLANT OPERATIONS COMMITTEE REPORT

by Kim Riddell and Joe Tillison, Co-Chairs

The Plant Ops Committee is pleased to announce that the 2014 Operations Challenge Invitational held during the One Water Conference in August was a huge success! This was the very first invitational competition that has been held in Ohio and there were 7 teams that competed this year – 3 from Ohio and 4 from other states and Ontario, Canada. We heard great things from all of the attendees and many are already planning on coming back again next year so mark the 2015 competition on your calendars so you make sure your team has a spot!

I wanted to also take a moment and thank all of my event coordinators because without them, we could not possible pull together such a great competition each and every year! So thank you to:

Laboratory – Denise Seman, Youngstown
Safety – Ed Nutter, Newark
Process – Jim Borton, CH2M Hill
Maintenance – Doug Sayre, Allied Technical Services
Collections – Kevin Givins, Wooster

Also a big thank you to all of the other volunteers that assist with set-up, tear down, judging and everything in between! We truly couldn't do this without you!

The results of the 2014 competition were as follows:

Invitational Winners (based on Division Criteria for WEFTEC)
Division 1 – Blue Ridge Brawler, Virginia WEA
Division 2 – BG/OEPA Volatile Solids, Ohio WEA

Ohio Operations Challenge Winners
Division 1 – BG/OEPA Volatile Solids
Division 2 – Columbus Outfalls

Laboratory Event
1st Place – OCWA Jets, Ontario WEA
2nd Place – BG/OEPA Volatile Solids, Ohio WEA
3rd Place – Blue Ridge Brawlers, Virginia WEA
4th Place – GMD Regulators, South Carolina WEA

Safety Event
1st Place - BG/OEPA Volatile Solids, Ohio WEA
2nd Place - Blue Ridge Brawlers, Virginia WEA
3rd Place - GMD Regulators, South Carolina WEA
4th Place – Columbus Outfalls, Ohio WEA

Process Control Event
1st Place - BG/OEPA Volatile Solids, Ohio WEA
2nd Place - Blue Ridge Brawlers, Virginia WEA
3rd Place – Chicago Sewer Rats, Illinois WEA
4th Place - GMD Regulators, South Carolina WEA

Maintenance Event
1st Place – Blue Ridge Brawlers, Virginia WEA
2nd Place – BG/OEPA Volatile Solids, Ohio WEA
3rd Place – NWWSD Dirty Deeds, Ohio WEA
4th Place - OCWA Jets, Ontario WEA

Collections Event
1st Place – Blue Ridge Brawlers, Virginia WEA
2nd Place – Chicago Sewer Rats, Illinois WEA
3rd Place - GMD Regulators, South Carolina WEA
4th Place - BG/OEPA Volatile Solids, Ohio WEA

We would also like to thank the OWEA Executive Committee for voting to send all three Ohio WEA teams to WEFTEC this year in New Orleans to represent Ohio in the national competition! Since Ohio has over 2000 members and has gained a 3rd Delegate to WEF, we are also able to send a 3rd team from Ohio to compete in the Operations Challenge event at WEFTEC. OWEA covers the expenses for the winning teams travel to WEFTEC each year and this year has graciously agreed to cover all three teams! THANK YOU on behalf of the Plant Ops Committee and the Ohio WEA teams!

If you are interested in putting a team together for Operations Challenge, becoming a member of the committee or assisting as a judge / volunteer for Operations Challenge, please contact Kim Riddell, 419-234-4507 or Joe Tillison, 419-354-6274 or at our email addresses below.

Mark your calendars for 2015! The Operations Challenge competition will be held at the OWEA Conference, June 23-25, 2015, at Kalahari in Sandusky, Ohio. And the Plant Operations and Laboratory Workshop will be held in Columbus at North Point Conference Center on October 21-22, 2015.

Kim Riddell, *kim.riddell@alloway.com*
Joe Tillison, *jtillison@bgohio.org*

Volatile Solids - Bowling Green /OEPA-NWDO

Columbus Outfalls - City of Columbus

Dirty Deeds - Northwestern Water & Sewer District

WEFTEC UPDATE: Three Ohio Operations Challenge Teams Competed in New Orleans

The Volatile Solids (City of Bowling Green/NWDO OEPA) placed 6th overall in Division 2, as well as 2nd Place in Process Control and 3rd Place in the Pump Maintenance Event. Two Ohio teams competed for the first time, Columbus Outfalls (City of Columbus) and Dirty Deeds (Northwestern Water and Sewer District). Congratulations to all for representing Ohio well.

See photos on page 41.

SAFETY GUIDELINES FOR TREATMENT PLANT OPERATORS TO "LIVE" BY

by James Graham, Safety Committee Co-Chair

The wastewater treatment industry has three major safety categories: confined-space entry; lockout/tagout; and personal protective equipment (PPE). All three safety concerns cover specific issues, and all are equally important. Methods of defense against some of these life-threatening conditions include air monitoring, proper ventilation, respiratory protection and fall protection.

Confined-Space Entry

Confined-space entry issues are closely monitored to ensure that employees are properly trained and follow the strict, OSHA-regulated wastewater treatment facility guidelines.

In the wastewater treatment industry, confined-space hazard awareness can mean the difference between life and death. Depending on individual sites, the following locations have the potential to be considered confined spaces in a wastewater treatment facility:

- Aeration basins
- Digesters
- Applicator machines
- Primary tanks
- Manholes
- Vaulted sampling pits

Several of these locations are below ground level and have stair entry for access to routine maintenance, inspection, testing, sampling and repairs. The level of fall protection necessary depends on the facility, its required activities, and the job tasks being performed. Full-body harnesses, ladder safety systems, tripods and hoists are among the more important fall protection products. Although some of the above locations might not be deemed a confined space according to regulations, many facilities lean toward the side of safety and do treat them as confined spaces.

OSHA defines a confined space as an area that:

- is large enough and so configured that an employee's body can enter and perform assigned work;
- has limited or restricted means for entry or exit; and
- is not designed for continuous employee occupancy.

Confined space by permit only sign

A permit-required confined space is defined as a confined space that:

- contains or has a potential to contain a hazardous atmosphere;
- contains a material that potentially could engulf an entrant;
- has an internal configuration that could trap or asphyxiate an entrant through inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section; or
- contains any serious safety or health hazard.

Identifying and properly marking a confined space is a major step toward providing safety for wastewater treatment facility employees. Employers in the wastewater treatment industry should also obtain a copy of 29 CFR 1910.146, permit required confined spaces, to ensure that they are in full compliance with this standard.

Lockout/Tagout

Routine maintenance, inspections, repairs, and testing take on another important area of safety known as lockout/tagout. Lockout/tagout plays an important role in system testing, inspections, servicing and repairs, and routine maintenance by ensuring that energized equipment is de-energized or shut down, locked out and tagged. Nearly 90 percent of the activities that require lockout/tagout are applications that require de-energizing an electrical source that provides power to a system or equipment components within the system. These might include pumps, electrical motors, valves, and mixing systems. The remaining activities include lockout/tagout of pipelines and systems, and valves in which the energized source of potential danger could be water entry, high water pressure, air pressure, and/or steam.

Personal Protective Equipment (PPE)

A wastewater treatment facility presents employees with a variety of personal hazards. Employees depend on personal protective equipment to protect themselves from hazards and perform daily duties. PPE includes but is not limited to safety glasses, face shields, hard hats, gloves, foot protection, and durable and disposable chemical-protective clothing. Respirators and fall protection might also be required. However, respirators and fall protection fall under separate OSHA standards.

To properly determine what types of PPE employees need to help follow wastewater treatment facility guidelines, the employer is required under the revised personal protective standard, 29 CFR 1910.132, to perform a hazard assessment or a walk-through survey of each work area and certify that it has been done. The survey should consider impact, penetration, compression (roll-over), chemicals, heat, harmful dust and light (optical) radiation. After the survey, the employer should select the proper PPE to suit the hazard.

PPE is only one aspect of a comprehensive program for ensuring the safety and health of workers. Careful planning, work practices and engineering controls (isolation) and administrative (avoidance) controls should be considered as well. If circumstances prohibit engineering controls or work practices, or these measures do not sufficiently reduce worker exposures, OSHA mandates that personal protective equipment be used.

Once the need for PPE is established, a careful evaluation of the hazards is necessary so that a selection can be made that minimizes user risk. For chemical situations, knowing the hazard includes being aware of the type of chemical; its physical state, whether it be liquid, solid or gas; and physiological effects, whether they be caused by toxins, carcinogens, asphyxiation or corrosives. Knowing the level of exposure is also important. The requirements for each type of personal protective equipment as well as additional selection criteria follow.

Eye and Face Protection

Protective safety glasses, goggles, and face shields are required where machines or operations create flying objects, glare, liquids, injurious radiation or a combination of these hazards. Goggles offer the most complete impact protection because they form a seal around eye areas, keeping out dangerous objects. They also prevent tiny dust particles, chemical splashes and vapors from getting in eyes.

Head Protection

All employees must wear a protective helmet when working where falling objects could cause head injuries. Helmets bought after July 5, 1994, must comply with the performance guidelines in ANSI Z89.1-1986, American National Standards Institute for personal protection-protective headwear for industrial workers' requirements. In 2003, the ANSI Z89 standard was updated.

Foot Protection

According to 1910.136(a), each affected employee should wear protective footwear in areas where falling objects, rolling objects or objects that might pierce a sole might cause foot injuries, and where feet are exposed to electrical hazards.

Hand Protection

Employers must select appropriate hand protection for employees exposed to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns, and temperature extremes. When choosing the proper glove, it is necessary to match material with each application or task. This includes assessing the job for chemical exposures, and then selecting the appropriate glove based on material, thickness, length and other traits.

Clothing

Chemical resistance and suit design need to be considered when selecting appropriate protective clothing. Chemical resistance data is frequently published and available from many manufacturers and distributors. A manufacturer might also have unpublished data available. Suit design addresses how the garment is assembled, designed and fits. Suits also might be selected for durability or their disposable materials depending on the chemical and its permeation and breakthrough data.

Respiratory Protection

The revised personal protective equipment standard does not apply to respirators. Respirators are governed by the respiratory protection standard, 29 CFR 1910.134. A system of local and/or general exhaust is recommended to keep exposure below the airborne exposure limits. If the exposure limit is exceeded, a half-face or full-face air-purifying respirator with a cartridge may be worn up to 10 times the exposure limit, or to the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.

For emergencies or instances where exposure levels are unknown, use a full face piece, pressure demand supplied air respirator with an egress bottle. A self-contained breathing apparatus also is appropriate.

As with any personal protective equipment, employees must be trained in several aspects of PPE. These include when PPE must be worn; what type of PPE is necessary; how to properly don, adjust, wear and remove the PPE; limitations of PPE; PPE care and maintenance; and useful life and disposal of PPE. In addition, hazardous areas must undergo a hazard assessment any time there is a process change, when new equipment is used or when accident statistics point to a problem area.

Chemical Storage and Handling

Chemicals play an important role in many aspects of wastewater treatment. Minimizing the quantity of stored chemicals such as chlorine can reduce the inherent hazards of chemicals. However, when chemicals must be retained, in-house proper storage and handling can reduce or eliminate risks. Chemicals should be properly labeled and stored according to information specified on the MSDS. Emergency equipment should also be considered when storing or handling chemicals. The equipment includes first aid supplies, emergency phone numbers, eye wash and shower facilities, fire extinguishers, spill-cleanup supplies, and personal protective equipment, all of which should be readily available.

Lab/Environmental Sampling

Practicing safety in the laboratory involves more than just keeping your lab area clean and wearing your proper protective equipment. It requires the cooperation and involvement of everyone associated with laboratory work. Occupational exposures to hazardous chemicals in laboratories, 29 CFR 1910.1450, provides strict guidelines for laboratory safety. Key components of the standard include having a chemical hygiene plan and providing employees with training and information.

Wastewater treatment includes testing for pH, turbidity, dissolved chemicals, hardness, color, alkalinity, chlorine, ammonia, and fluoride. This testing involves following EPA-designated test procedures. Maintaining and controlling levels is essential to the wastewater treatment in order to produce safe drinking water. The first step in controlling these levels is measuring it. For example, pH can be measured by various methods including pH paper, digital-readout pocket testers, and portable and benchtop meters. In wastewater treatment facilities, portable meters are a better choice because most portable meters are larger than pocket testers, are more durable, and are better suited for accurate pH readings in the field.

Wastewater treatment operations fall under many specific regulations that apply to all site personnel. Developing written wastewater treatment facility safety guidelines that are specific to the worksite is critical for compliance. Regardless of the many safety issues that pertain to wastewater treatment workplaces, training and enforcing the safety procedures and processes are critical to employee safety.

James Graham, Safety Committee Co-Chair
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Information Source: www.osha.gov

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Make plans now to select your company's 2015 Sponsor Level. Contact Ted Baker or OWEA for more information.

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16	1 Page ad in Spring or Summer BB
1	Ticket to Water for People Fundraiser Wine Tasting

OHIO EPA STAFF ROTATIONS AIM TO IMPROVE UNIFORMITY AND EFFECTIVENESS

by Craig W. Butler, Ohio EPA Director

Craig W. Butler
Ohio EPA Director

Making sure we are doing our job in a fair and responsible way is important to us at Ohio EPA. In fact, being clear and consistent about Agency standards is our highest priority. In our ongoing effort to provide you with the best customer service we can at Ohio EPA, we will start rotating staff throughout our districts and divisions this fall.

We believe staff rotation will enhance the uniformity of our inspections while also providing new perspectives and ideas – greatly improving the effectiveness of our efforts. And while some of our staff will be rotating, management in each division and district should remain the same so you should always have someone familiar with whom to discuss issues if they arise.

As many of you know, creating professional development opportunities in any area of business is essential to maintaining a well-rounded organization. Many of you in the private sector offer your employees these opportunities and we are implementing a similar strategy in an effort to streamline our operations and improve the depth and breadth of our employees' knowledge.

By providing a wider range of experiences to our inspectors, we believe you will benefit from a more well-rounded customer service experience.

In the Division of Surface Water, staff assignments will change in the National Pollutant Discharge Elimination System (NPDES) and permit-to-install (PTI) programs approximately every five years. For NPDES permittees, this means the same staff person will likely complete one permit renewal since renewals are required every five years. For PTI applicants, this means the same staff person will review applications for an assigned county for five years. Other staff, including previous inspectors assigned to a facility, will also be available for consultation if necessary.

In some areas, staff has already rotated to their new assignments; others are being phased in over the next several months. For some facilities, rotations may not occur for several years. An Agency representative will contact regulated facilities to provide additional details on how staff rotation will be occurring for individual facilities.

If you have any questions about our staff rotation initiative, please contact the Division of Surface Water manager in the appropriate district office.

Central District Office	Mike Gallaway	614-728-3843
Southeast District Office	Holly Tucker	740-380-5426
Southwest District Office	Debora Roth	937-285-6100
Northeast District Office	Rich Blasick	330-963-1112
Northwest District Office	Elizabeth Wick	419-373-3002

HAPPY 25TH ANNIVERSARY OHIO WATER POLLUTION CONTROL LOAN FUND

by Mary Mariani, Ohio EPA, Division of Environmental and Financial Assistance

Ohio EPA is celebrating its Water Pollution Control Loan Fund's (WPCLF) milestone silver anniversary by taking a moment to reflect on something even more precious – clean water.

In October, 1989, Ohio created the WPCLF. Ohio EPA immediately awarded $2.9 million – its first WPCLF loan – to the village of Caldwell in Noble County for improvements at its wastewater treatment plant.

Since 1989, Ohio EPA has awarded more than 1,820 WPCLF loans to 621 communities throughout the state totaling more than $6.2 billion, with an estimated savings of more than $1.3 billion when compared to market interest rates. **(Chart 1)**

The concept of financial assistance for public water quality improvement projects actually began in 1972 with the Title II Amendments to the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA). The Clean Water Act created the federal construction grants program. This program created the structure, process, and requirements for awarding assistance to communities for wastewater treatment improvement projects.

Under the CWA allotment formula, the state of Ohio received the third largest share of funds (5.7 percent of the total) behind New York and California. The total of Ohio's allotments during the construction grants years (1972 through 1990) was $3.9 billion.

In 1987, Congress began to phase out the construction grants program and phase in the State Revolving Loan Fund (SRF) with Title VI to the CWA. This was a shift in two concepts, from federal to state-run programs, and from giving money away through grants to loaning money to communities by creating SRFs, which were started with seed money from capitalization grants.

Ohio's State Revolving Funds (SRFs)
WPCLF Bonding Activity (millions)

Year	WQ Bond Amount
1995	$212.2 R
1997	$211.4 R
2002	$200.1 R
2003	$161.4 R
2004	**$509.7 New**
2004	$65.0 R
2005	$219.5 R
2005	**$449.6 New**
2009	$229.1 R
2010	**$366.3 New**
2010	**$459.1 New**
2010	$73.2 R
2011	$101.2 R
2011	$142.4 R
2012	$62.5 R
2013	**$150 New**

Chart 1

The WPCLF program, as an SRF, has been able to increase the size of its fund. No applicant has ever been turned down because the fund could not afford to support it.

Under the allotment formula for SRFs, Ohio still receives the third-largest share (5.7 percent of each year's allotment) behind New York and California. As of 2014, Ohio has received a total of $1.9 billion from all capitalization grants awarded since 1990.

Since Ohio is required to provide a 20 percent state match, that means there have been $370 million in funds added to those capitalization grants. Together, these base funds have allowed Ohio's SRF to grow and continue to be able to provide loans for community projects that improve water quality.

It may have started out small, but the WPCLF has grown steadily and is now considered one of the largest SRFs in the nation. A recent fund model predicted that the WPCLF can sustain loaning out between $400 million and $500 million per program year in perpetuity.

The low interest rate coupled with discounts amount to huge savings to Ohio communities. And because the WPCLF has been state run, the interest rate structure can be modified based on needs or changing conditions. It has been estimated that a WPCLF loan can offer the equivalent of a 29.6 percent grant depending on the market interest rate in effect at the time of the loan. In addition, there are no bond issuance costs to the applicant.

One of the more notable innovations included within the WPCLF has been the Water Resource Restoration Sponsor Program (WRRSP) that has been in effect since 2000. This program offers discounted interest rates to communities that wish to sponsor a project addressing nonpoint sources of pollution such as agricultural runoff or stream habitat degradation.

When a community sponsors a WRRSP project, it receives a discounted interest rate on its WPCLF loan and the organization that implements the project receives funding for environmental projects. These include land purchases that are part of a larger project or the purchase of conservation easements; wetland preservation and maintenance; stream bank restoration; or establishing conservation areas. Since the WRRSP's inception, Ohio EPA has awarded more than $160 million in assistance to preservation or restoration projects. (See **Photo 1** - WRRSP Little Darby)

Even with discounted interest rates, some communities or organizations don't have the ability to repay the loans. When

Photo 1 - WRRSP Little Darby

WPCLF began offering principal forgiveness, it allowed distressed communities the opportunity to improve their wastewater discharges too.

Principal forgiveness is a loan, but acts like a grant in that there is no interest due, and the principal is "forgiven" and does not need to be repaid. This concept began out of necessity when stimulus funds were awarded in 2009 and 2010 because the CWA which authorized WPCLF Loans prohibited awarding grants with capitalization grant funds, but the award of principal forgiveness was permitted under the Continuing Appropriations Acts. In order to make stimulus money reach as many communities as possible and make projects affordable, then, Ohio EPA used principal forgiveness for American Recovery and Reinvestment Act (ARRA) projects.

Ohio EPA carried that idea forward and in 2011 again began offering principal forgiveness to reduce the eligible capital costs of water pollution control projects so a portion of the principal and interest would not have to be repaid by the borrower. Since January 2011, the WPCLF has awarded approximately $62.3 million to 53 projects in Ohio communities in the form of principal forgiveness. For several of these projects, the principal forgiveness award covered the entire project cost.

In addition to the individual community loans, the WPCLF awarded more than $10.2 million to 84 out of Ohio's 88 counties so that low-income homeowners in those counties could repair or replace failing septic systems under the household sewage treatment system (HSTS) program.

The WPCLF is currently administered by Ohio EPA's Division of Environmental and Financial Assistance (DEFA). Each community applying for a WPCLF loan works with three staff members in DEFA – a planner, an engineer, and an administrator. This allows each project to receive tailored technical and financial assistance.

The WPCLF has funded all stages of eligible wastewater improvement projects including planning, design, and construction. The types of projects the WPCLF has funded include typical point source projects such as new wastewater treatment plants, upgrades to or rehabilitation of existing plants, new sewers, replacement of existing sewers, separation of older combined sewer systems, and Phase I and Phase II storm water projects. WPCLF also has funded nonpoint source projects such as stream restoration projects, landfill closures, and the repair or replacement of HSTS through linked deposit loans administered at the local level.

Ohio EPA also has partnered with the Ohio Water Development Authority (OWDA) to make the WPCLF a success story. The OWDA assists with the issuance of bonds and in the reimbursements from the WPCLF to the communities for their projects.

The health and longevity of the WPCLF has allowed funding projects large and small, whether they are simple in scope or multi-phased and complex. The smallest WPCLF loan ever awarded was $9,450 to the village of Ashville in Pickaway County in 2011 to place manhole covers in the sewer system.

The single largest loan was $285,609,697 to the city of Columbus in 2010 for its Phase I Olentangy-Scioto Interceptor Sewer/

continued on page 26

Photo 2 - Panorama Picture of Columbus OARS

Augmentation Relief Sewer project. The Columbus project included installing a 28,600-foot long, 20-foot diameter tunnel sewer to convey combined sewer flows from the Henry Street regulator to the Jackson Pike wastewater treatment plant. This provides for controlled release of these flows to the plant. (See **Photo 2** - Panorama Picture of Columbus OARS above)

Because the WPCLF is state run, it has offered special assistance to the smaller communities when needed. From 2011 through 2013, a total of 120 WPCLF loans totaling nearly $173 million were awarded to villages and other communities with populations less than 5,000. Support includes: technical assistance, such as offering assistance on certain planning elements to help reduce or eliminate environmental impacts; engineering assistance with design standards, flow evaluation or bidding requirements; and financial assistance such as loan application preparation, user charge development or record keeping; and coordinating efforts with other funding programs. **(see Chart 2)**

The WPCLF has offered assistance to smaller communities in the Appalachian counties of Ohio in partnership with the Ohio Appalachian Regional Commission (ARC). Ohio EPA's DEFA administers the ARC grants awarded to communities in conjunction with low-interest WPCLF loans. This combination of funding plus administrative assistance provides small communities with a local match for the grants, makes the application process smoother, and provides a more rapid processing of invoices during construction.

No history of the WPCLF would be complete without mentioning the efforts made in 2009 to award ARRA funding. Ohio led the nation in the number of ARRA agreements (274) with a total of $220,623,100 in ARRA funds out of a total of $355,326,145 in WPCLF loans. Spreading funds over a large number of projects not only allowed more communities to benefit from stimulus funds, it allowed more projects to be under construction at the same time so that stimulus dollars were introduced into the economy sooner.

DEFA Assistance Programs
Water Pollution Control Loan Fund
Loans to Communities < 5,000 in Population
Last Three Years

Year	# Loans	$ Amount
2011	51	$47,371,166
2012	44	$71,034,839
2013	25	$54,270,049

Chart 2 - Small Community Assistance

Even more significant than numbers was the effort it took for Ohio EPA to accomplish the goal of awarding this amount of assistance in a compressed time frame. ARRA funds were released to the state in June 2009 with the provision from U.S. EPA that all projects needed to be under contract by Feb. 17, 2010. The different ARRA requirements that needed to be added to the normal WPCLF programmatic reviews made the compressed time schedule even more significant.

The water pollution control construction projects funded through ARRA impacted an estimated 5.6 million Ohioans in 187 communities and either created or retained more than 400 jobs. Thanks to the combination of stimulus funds which did not need to be repaid, and low-interest loans, Ohio communities saved nearly $85 million in interest costs when compared to market rates.

As one of the five top-funded states in the nation, Ohio awarded more ARRA projects than the other four states combined in U.S. EPA's Region V which also includes Wisconsin, Indiana, Illinois, Michigan and Minnesota. In addition, Ohio was one of only two states to devote a portion of its ARRA funding to help homeowners replace or upgrade 463 failing home septic systems through a pilot project partnership with the Ohio Department of Health.

Even post-ARRA years have been significant ones for the WPCLF. Over the past five years, Ohio has led the other states in Region V in the number of WPCLF loans and the total amount of assistance.

Ohio, as well as many states in the nation, will face increasing challenges in its efforts to improve its water quality and meet the need to repair the damage caused by aging or inadequate infrastructure. Separating combined sewer systems and reducing nutrients from Ohio's lakes and streams will be extremely expensive.

The Water Resources Reform and Development Act of 2014 (WRRDA) presents new opportunities and challenges to all Clean Water SRFs in the nation including the WPCLF. WRRDA calls for changes or refinements in several areas including project eligibilities, reporting requirements, fiscal sustainability planning and energy efficiency.

In program year 2014, the Ohio WPCLF is offering 30-year loans, a nutrient reduction interest discount and a green project discount. The fund is well-positioned to meet the future needs of Ohio communities.

Mary Mariani, Ohio EPA
Division of Environmental and Financial Assistance
Mary.Mariani@epa.ohio.gov

For more information about the WPCLF, visit *www.epa.ohio.gov/defa/environmentalandfinancialassistance.aspx*.

Biosolids Specialty Workshop Schedule

Earn up to 6 Contact Hours

7:45-8:15	**Registration** **Light Continental Breakfast** **Visit with Exhibitors**
8:15-8:30	Welcome and Opening Remarks *- Jamie Gellner, Hazen and Sawyer Residuals Committee Chair*
8:30-9:15	Rotary Fan Press Optimization *- Josh Van Patten, Prime Solution, Inc.*
9:15-10:00	Rotary Screw Press Optimization *- Dan Fronhofer, BDP Industries*
10:00-10:15	**Break in Exhibit Area**
10:15-11:00	Phosphorus Field Studies – Research Updates *- Dr. Elizabeth Dayton, Ohio State University*
11:00-11:45	Ohio Sea Grant and OSU Stone Lab Lake Erie Research – Nutrients and Harmful Algal Blooms *- Dr. Christopher Winslow, Ohio State Univ.*
11:45-12:45	**Lunch Buffet** **NorthPointe Conference Dining Room** **Visit with Exhibitors**
12:45-1:30	The Impact of Phosphorus-Limiting Regulations on Land Application - A Contractor's Perspective *- Shelly Wenger, Burch Hydro*
1:30-2:15	Future of Land Application *- Robert Bastian, USEPA*
2:15-2:30	**Break in Exhibit Area**
2:30-3:15	Biosolids Management Alternatives *- Brandon Fox, City of Columbus DOSD*
3:15-4:00	Anaerobic Digestion - The New Frontier *- Michael Bullard, Hazen and Sawyer*
4:00	**Closing Remarks** *- Jamie Gellner, Hazen and Sawyer Residuals Committee Chair*

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ROLL CALL

Kim Riddell recently joined Alloway as their new Director of Business Development. Kim has 17 plus years experience in the wastewater industry in the areas of laboratory analysis, operations, and equipment sales. She has a Class IV Wastewater Operator License and a Class II Laboratory Analyst License in Ohio.

Kim has a Bachelor of Science in Biology from the University of Toledo and a Master's in Organizational Management from Bluffton University. She is the current NWOWEA Delegate, co-chair of the Plant Operations and Maintenance Committee, and has coordinated the OWEA Operations Challenge event for the past 10 years. She is a member of the Crystal Crucible Society, member of 5S, and is a past recipient of the WEF Laboratory Analyst Award and the W.D. Sheets Award. Kim is also a past chair of the WEF Plant Operations and Maintenance Committee. Kim also serves as the current City of Delphos Council President.

Jerry Ussher, Superintendent of the 24 MGD Springfield WWTP, was awarded his Class IV Wastewater Treatment Operator's Certification in September 2014. Jerry has been with the City of Springfield for 13 years, at the WWTP since 2005, and Superintendent since November 2012. As Superintendent, Jerry is keeping the plant going while a $49 million upgrade is progressing at the plant. Springfield's plant is adding 100 MGD of Compressed Media Filtration for CSO High Rate Treatment (HRT), a new anaerobic digester, one new secondary clarifier, and rehab work to headworks, clarifiers, dewatering, and other plant processes. He looks forward to putting his upgraded plant and new HRT through their paces this winter and through 2015.

Jerry lives in the Urbana area and is proud of his son (19) and daughter (14). He is grateful for the patience of his wife of 20 years. He also appreciates the support of his former boss, Bill Young, as well as his current supervisor, Tim Weaver.

PASSINGS

James R. Myers (February 1941 - July 2014) passed away at St. Rita's Medical Center, Lima, Ohio.

James was born on February 23, 1941, in Decatur, Indiana, to the late Herman Myers and Frances (Colter) Myers. James married Sharon Fleming on February 17, 1963 in Mercer County, Ohio. She survives in Lima. He was a Civil Engineer for Kohli & Kaliher Associates. He was an active member of the New Creation Lutheran Church and chairman of the board of New Creation Child Care. He was a member of the Lima Noon Sertoma and was a member several professional organizations, including OWEA/WEF from 1970 until 2011. He was also a Gideon. He enjoyed Western Style Square Dancing and Cued Round Dancing.

He is survived by: a daughter, Monica (Mike) Tortorice, of Delaware, OH; a son, Stephen (Bobbie) Myers, of Leipsic, OH; two grandchildren, Tyler Myers, and Cole Myers; a brother, John (Janet) Myers; a sister, Patricia Myers; and a sister-in-law, Phyllis Myers.

He was preceded in death by a brother, Gene Myers.

OWEA members may submit brief announcements with photo for publication in the Buckeye Bulletin. Complete the Roll Call form at ***http://www.ohiowea.org/memberships.php***

Information regarding members who have passed away may be emailed to info@ohiowea.org

All requests subject to editorial review.

WELCOME NEW MEMBERS

July 2014 to September 2014

Jeanette Ball	Brad Crowe	Marki Johnson	Scott Mouton	Mike Short
Vincent Bedsole	Shelby Dalton	Gregory Kurtz	LM Narasimman	Bryan Stubbs
James Boyd	Bluye DeMessie	Jacob Marzec	Rick Peterson	Bill Stufflebean
Troy Brehmer	Keenan Fraylick	Scott McCord	Brandon Raybourne	Kyle Stull
Jeffrey Bronowski	David Goodman	Chris Melvin	Dave Rickey	Nancy Talley
Steven Callahan	Ross Horvath	David Morris	Tim Rush	Malcolm Trier
Bryan Canzoneri	Heather Ivory	Richard Morris	Steve Samuels	Juan Carlos Verardo
Thomas Clemensen	Tina Jackson	Todd Morrison	Sami Sarrouh	Randy Volkman

Thank you for joining the Ohio Water Environment Association and the Water Environment Federation.
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Ohio Water Environment Association

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Ohio Section American Water Works Association

Hilton Columbus Downtown **August 26-29, 2014** Greater Columbus Convention Center

One Water Ohio – the First Joint Conference Between OAWWA and OWEA

Summary: As many of you know, this year's conference was historic as the first joint conference between the members of OAWWA and OWEA. We were just shy of 1600 people attending the conference – WOW! We hope those who attended gained a wealth of knowledge and had a little bit of fun while interacting with both our fellow members and those of OAWWA. The responses are in and the vast majority of those attending hope we can do it again! There were some lessons learned along the way that will make a joint conference even more successful in the future.

Tuesday – A record 288 golfers tee'd it up on a sunny Columbus day to enjoy each other's company and support the One Water Conference. Through the generosity of the golfers and participating sponsors, Water for People raised over $4,000 during the round. Additionally pre-conference seminars and tours were well attended with great feedback from the participants! Tours included Columbus' Jackson Pike Waste Water Treatment Plant, Columbus' Dublin Road Water Plant, and the Ohio EPA and Ohio Department of Agriculture Laboratories.

Wednesday – The joint breakfast between OAWWA and OWEA saw many deserving winners acknowledged and presented with awards from both organizations as we were welcomed by Greg Davies, the Director of Public Utilities from Columbus, as well as OWEA 2013-2014 President Dan Sullivan and OAWWA 2013-2014 Chair Kurt Smith. Excitement was in the air at the exhibit hall as competitions and challenges took place on both the water and wastewater sides. Teams from other states and Canada showed up to compete against Ohio's best!

Thursday – Thursday night was the night of the One Water Gala, which continued to feature the well deserving award winners from both organizations as the highlight of the evening. Closing comments were provided by Lela Perkins, Vice President of AWWA and George Martin, Board of Trustees of WEF. Columbus Blue Jackets Head Coach Todd Richards provided a heartfelt introduction to the evening with words of encouragement for those in attendance.

Friday – OEPA Director Craig Butler provided the Director's update to kickoff the last day of the conference. The day concluded with a joint lunch of the OWEA Executive Committee and OAWWA Governing Board as they reviewed the merits, shortcomings, failures, and successes of the joint setting.

Exhibition – 216 exhibitors participated in the joint conference, which filled our allocated space at the convention center! Nearly 100 people took advantage of the exhibitor tours which allowed attendees to gain contact hours while providing interaction with exhibitors. Additionally, lunches, an expo social, an ice cream social, and awards took place in the exhibit hall to maximize interaction between attendees and exhibitors on the latest technologies and equipment in the water and wastewater industries.

Meet & Greet – A large venue was required to host the Meet and Greet for both organizations. Mission accomplished! One Water had the exclusive rights to Brothers in the Columbus Arena District. The night consisted of heavy hors d'oeuvres, live music, dancing, an open patio with games and fire pits, and of course, networking sessions throughout.

Technical Sessions – Training consisted of three days of technical sessions, 128 presentations, and up to seven concurrent tracks! Ranges of topics were vast and included many different venues in both the water and wastewater industries. It was a great experience, and enlightening to hear how we complement each other in so many facets of our work.

Thank you to all of the attendees, volunteers, and leaders in both organizations for making this joint conference such a success. We hope everyone enjoyed the knowledge gained while interacting with not only our OWEA members but with the OAWWA members as well. We encourage you to attend the OWEA 2015 Technical Conference and Exhibition, which will be held June 23-25 at the Kalahari Convention Center in Sandusky.

Sincerely,

2014 One Water Ohio Conference Committee Co-Chairs
Rob Herr, OWEA, *rcherr@columbus.gov*
John Newsome, OWEA, *jgnewsome@columbus.gov*
Mike Spriggs, OAWWA, *maspriggs@columbus.gov*
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Burke Award

OWEA AWARDS

Mike Welke
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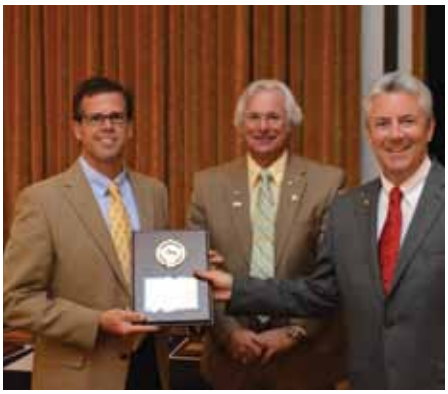
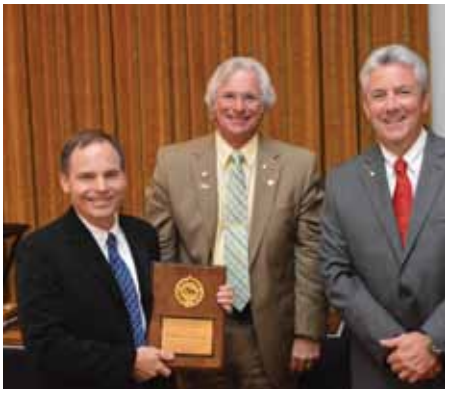


Brian Gresser, P.E.
J. W. Ellms Award

Sharon Vaughn
F. H. Waring Award



Ed Haller
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Tanna Rhoads
Laboratory Analyst Award

Lyndon Johnson
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Bob Armstrong
Public Service Award

Dan Bogoevski
L. T. "Tom" Hagerty Award

Mike Foster
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Russ Bales, Lynette Hodnicki, Kathy Cook (C2), Melodi Clark, and Doug Clark (Awards Chair) *Crystal Crucible Inductees*

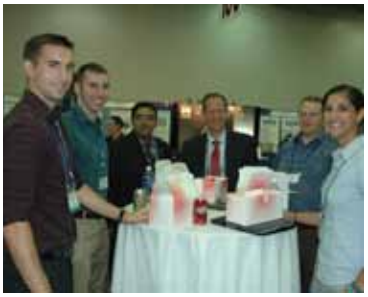
Ronald A. Bell
WEF Life Member

Kim Riddell
Outgoing WEF Delegate

Dianne Sumego
Outgoing WEF Delegate

ONE WATER PHOTOS























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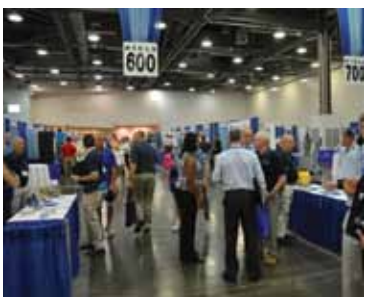




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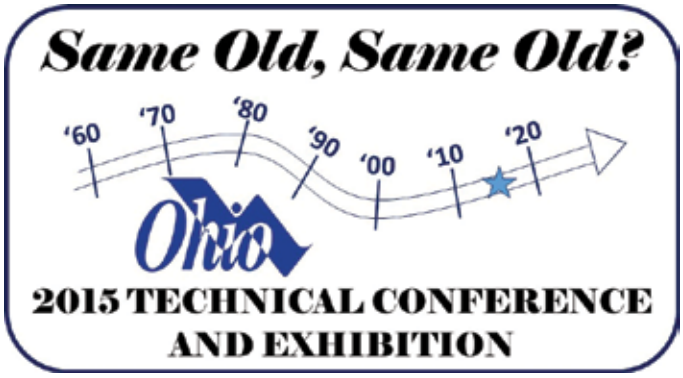

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FEASIBLE AND AFFORDABLE – SSO ELIMINATION AND THE NFA PROCESS

by Henry W. "Mac" McCauley, Jr., P.E., Project Manager, CT Consultants, Inc.

Introduction

The Logan County Water Pollution Control District (LCWPCD) serves approximately 7,000 customers in four Villages and the Indian Lake periphery. The District operates and maintains approximately 82.5 miles of sanitary gravity mains and approximately 40.8 miles of sanitary force main. There are 1,789 sanitary manholes, 32 lift stations, and 268 individual grinder pumps located throughout the District. The Indian Lake Water Pollution Control Facility (WPCF) has a hydraulic capacity of 2.3 million gallons per day (MGD) average day flow, 4.6 MGD maximum day flow, and 16 MGD peak hourly flow.

History

The LCWPCD was issued a compliance schedule by the Ohio Environmental Protection Agency (OEPA) requiring improvements at the WPCF, targeting aging equipment and processes, and improvements in the sewer collection system to reduce Inflow and Infiltration (I/I).

Sanitary sewer flow monitoring and an I/I evaluation were completed in 2004. In February 2006, Logan County authorized the Floyd Browne Group (now CT Consultants) to begin designing Phase I of the recommendations from the General Plan, completed in 2005, for the WPCF and collection system. A "No Feasible Alternative" (NFA) Report was also required and was completed in 2006.

The Phase I improvements were completed in 2009-2010. The improvements at the WPCF included new influent fine screens, new 1.5 million gallon (MG) equalization basins to temporarily capture and retain high flows during rain events, conversion of the primary clarifiers to an additional 0.5 MG of equalization, aeration diffuser replacement, ultraviolet disinfection for the secondary effluent, conversion to aerobic digestion, increased sludge dewatering capacity, and a septage receiving station. The diagram below shows the process flow. Another major improvement was the new Slough Pump Station and 14-inch force main to transport wet weather sanitary flow through an area susceptible to flooding. The cost of the Phase I improvements was approximately $10,000,000.

Figure 1 – Logan County WPCF Flow Schematic

The District has completed a host of additional treatment plant, collection system, and administrative improvements. The additional treatment plant improvements include developing laboratory audit procedures, developing a septage receiving policy, completing SSO and CMOM annual reporting, improvements to the SCADA system, semi-annual tank cleanings, and all new raw sewage pumps and piping. The additional collection system improvements include sewer cleaning and televising, lift station rehabilitation, sewer replacement, manhole rehabilitation, sewer lining, establishing a flushing/cleaning program, and GIS mapping of the entire system. The administrative improvements include updating standards and regulations, increasing enforcement, modifying permit requirements, implementing an access/termination valve program, developing a private property I/I policy, and an annual newsletter to update residents.

The OEPA issued a new National Pollutant Discharge Elimination System (NPDES) permit for the WPCF in 2011 which contained a new schedule of compliance. After subsequent discussions and negotiations with the OEPA, a modified permit was issued in August of 2012 which extended the completion dates contained in the schedule of compliance. This schedule called for an updated NFA report to be submitted in February 2014.

Modeling

Development of the sanitary sewer collection system model started with collecting 12 months of flow and rainfall data. Once analyzed, a SWMM model was built and calibrated to dry weather flows and wet weather flows. The model revealed two critical I/I areas in the system.

BioWin was used to complete the biological modeling at the WPCF. The base model was created and calibrated to existing influent and effluent conditions at the treatment plant. A clarifier performance evaluation was also performed on the two secondary clarifiers, field testing the clarifiers at different flow rates.

Hydraulic modeling was also completed in order to evaluate the impacts of increased secondary treatment capacity and increased equalization capacity. The collection system SWMM model provided predicted flow patterns to the treatment plant during a design event for each alternative considered, such as I/I reduction, pipe upsizing, storage, etc. These flow patterns were analyzed to determine when the influent exceeds the secondary treatment capacity and is thus diverted to equalization and to determine when the equalization capacity is exceeded and flow is blended.

Alternatives

2-year, 5-year, 10-year, and 15-year design storms, all using a 6-hour Huff rainfall distribution, were evaluated using the SWMM model. The 10-year design storm was used for alternative analysis. The calibrated model was used to analyze potential improvement projects to eliminate sanitary sewer overflows (SSO) and blending events at the WPCF. The alternatives evaluated were increased operation and maintenance (O&M), system optimization, conveyance, storage, I/I reduction in the two critical areas, and combinations of conveyance, storage, and I/I reduction. **Table 1** below provides the results of this analysis:

Alternative	No. of SSOs	SSO Vol. (MG)	No. of SSOs Mitigated	SSO Vol. Mitigated (MG)	WPCF Vol. (MG)	WPCF Vol. Change (MG)
Existing	5	0.123	0	0	14.064	0
Increased O&M	2	0.077	3	0.046	14.184	increase of 0.120
System Optimization	4	0.107	1	0.016	14.081	increase of 0.017
Pipe Upsize	0	0	5	0.123	14.191	increase of 0.127
Relief Pipe	0	0	5	0.123	14.164	increase of 0.100
Pipe Upsize and Relief Pipe	0	0	5	0.123	14.174	increase of 0.110
Storage	0	0	5	0.123	13.828	decrease of 0.236
Pipe Upsize and Storage	0	0	5	0.123	13.931	decrease of 0.133
10% Local I/I Reduction	4	0.057	1	0.066	13.570	decrease of 0.494
20% Local I/I Reduction	1	0.019	4	0.104	13.050	decrease of 1.014
30% Local I/I Reduction	0	0	5	0.123	12.503	decrease of 1.561
50% Local I/I Reduction	0	0	5	0.123	11.377	decrease of 2.687
Pipe Upsize and 10% Local I/I Reduction	0	0	5	0.123	13.632	decrease of 0.432
Pipe Upsize and 20% Local I/I Reduction	0	0	5	0.123	13.074	decrease of 0.990

Table 1 – Collection System Alternative Results

Utilizing flow patterns predicted by the SWMM model, the following WPCF alternatives were evaluated:

- Additional equalization
- Additional secondary treatment
- Combinations of process optimization, equalization, and/or additional secondary treatment

Table 2 on page 44 provides the results of this analysis.

Based on a 10-year 6-hour design event, existing conditions would require increasing the equalization capacity from 2.0 MG to 4.5 MG. Depending on the collection system alternative, this required capacity would vary. With alternatives such as pipe upsizing and relief pipes, SSOs would be eliminated but flow to the treatment plant would actually increase. With I/I reduction alternatives, SSOs would be eliminated and flow to the treatment plant would decrease, reducing the additional equalization capacity needs.

Additional aeration tanks and/or clarifiers would enable more of the wet weather flow to go through secondary treatment, reducing the flow to the equalization basin. However, these additional tanks and equipment are a capital investment that would remain often unused since the plant is receiving average flows well below the design flow of 2.3 MGD average daily flow.

Optimization of the existing plant maximizes the treatment capacity using the assets (tanks, equipment, footprint, power) already in place before incurring the high costs of new assets. BioWin was used to compare the existing system with such optimizations as contact stabilization, step feed, and IFAS. None of these modifications showed any significant improvement over the existing system, which is functioning well.

The clarifier performance evaluation results showed that the existing secondary clarifiers, rated for 2.3 MGD maximum each, could process at least 3.0 MGD each with good performance. It was recommended that the District coordinate with the Ohio EPA to complete a pilot study involving operating the secondary treatment at up to 6.0 MGD instead of 4.6 MGD. As shown in the table above, this increase in available secondary capacity to 6.0 MGD, coupled with 30% I/I reduction in the two critical areas, would remove the need to construct any additional equalization.

continued on page 44

Scenario (using 10-year, 6-hour Huff unless otherwise noted)	Peak Influent Flow (MGD)	Total Influent Flow (MG)	Flow to Secondary (MG)	Flow to EQ (MG)	Blended Flow (MG)
2-year, 6-hour Huff Existing System	12.35	11.86	9.63	2.24	0.25
5-year, 6-hour Huff Existing System	14.75	13.16	9.96	3.21	1.23
10-year, 6-hour Huff Existing System	15.79	14.06	10.15	3.93	1.93
15-year, 6-hour Huff Existing System	16.28	14.70	10.29	4.41	2.45
10% local I/I reduction	15.37	13.57	10.03	3.55	1.55
20% local I/I reduction	14.67	13.05	9.91	3.15	1.17
30% local I/I reduction	13.82	12.50	9.76	2.73	0.73
50% local I/I reduction	11.97	11.38	9.43	1.97	0.00
20% global I/I reduction	13.61	12.57	9.82	2.74	0.75
30% global I/I reduction	12.26	11.79	9.61	2.18	0.18
Conveyance – increase pipe size	15.37	13.57	10.03	3.55	1.55
Conveyance and 10% local I/I reduction	14.67	13.05	9.91	3.15	1.17
Conveyance and 20% local I/I reduction	13.82	12.50	9.76	2.73	0.73
Increase to 9.2 MGD secondary treatment	15.79	14.06	12.57	1.51	0.00
Increase to 4.0 MG EQ	15.79	14.06	10.15	3.93	0.00
30% local I/I reduction and increase to 6.0 MGD secondary treatment	13.82	12.50	10.52	1.97	0.00
30% local I/I reduction and increase to 3.0 MG EQ	13.82	12.50	9.76	2.73	0.00

Table 2 – WPCF Alterative Results

Affordability

The District also completed a Financial Affordability Analysis and is proactively increasing sewer rates to provide a revenue stream for improvements to address SSOs and blending. The affordability analysis included an income survey which revealed a median household income (MHI) of $36,418. It should be noted that the District is quite diverse. The Villages of Lakeview and Russells Point make up 85% of the EDU and have a lower MHI. 81% of the responders below the poverty limits were in these two communities. Also, 31.3% of all respondents were 65 or older. The state average is 14.8 %. Overall, the District was determined to be in the "high burden" category. In addition, any I/I removal will have an impact on the storm water drainage around the lake, and addressing these issues will require coordination between multiple stakeholders. Based on the high burden and unknown storm water burdens, the District feels a 25 year time frame is appropriate.

Recommendation

Based on the technical analysis of alternatives and the affordability analysis, it was recommended that the District:

- Clean and televise the two critical areas and create a priority list of improvement areas
- Pursue I/I reduction projects, such as relining and replacement, to achieve 30% I/I reduction in these critical areas over the next 25 years
- Continue to work with the villages and townships to address private property I/I reduction issues and to address the lack of stormwater infrastructure
- Complete some miscellaneous improvements at the treatment plant due to age and condition
- Complete a study at the treatment plant regarding increasing secondary treatment from 4.6 MGD maximum to 6.0 MGD maximum based on the Clarifier Performance Evaluation

Figure 2 on page 45 shows the projected revenue to the District due to the proposed rate increases and due to debt retirement and the projected expenditure of this revenue on I/I reduction projects. Based on the projected costs to achieve I/I reduction, the 30% I/I reduction in the two critical areas is anticipated to be completed by year 18.

This approach is expected to achieve the elimination of SSOs and the elimination of blending during a design storm event without the need for additional equalization at the treatment plant and without the need for pipe upsizing, relief sewers, or collection system storage. This approach is technically feasible and financially affordable, and it accounts for the time required to address the lack of stormwater infrastructure, the complexity of addressing private property I/I, and the need for partnership between governmental entities.

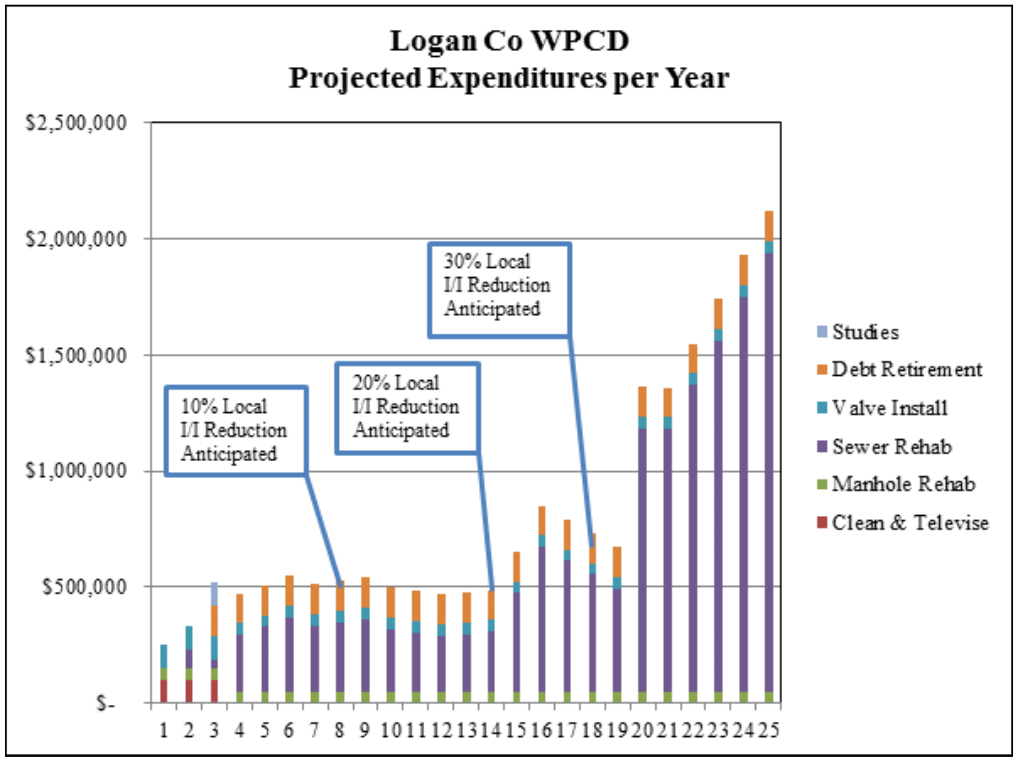

Figure 2 – Projected Expenditures per Year

Conclusion

The NFA report was submitted in February 2014, after multiple meetings with OEPA during the course of the metering, modeling, alternatives analysis, and financial affordability analysis process. On April 30, 2014, OEPA responded that "the submittal fulfills this schedule requirement" and that "the planned approach with the following schedule modification is acceptable", the modification being to provide evidence of meeting the 10%, 20%, and 30% I/I reduction targets. The District is currently obtaining funding and proceeding with the recommended projects and studies.

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Project Manager, CT Consultants, Inc.
MMcCauley@ctconsultants.com

EBOLA UPDATES - Watch for Updated Briefings from WEF and the CDC

WEF held a free Webinar on November 4 – "Wastewater Worker Safety – Addressing Concerns on Ebola in Wastewater." Check *http://www.wef.org/ebolainformation/* for more information on this topic and a recording of the webinar.

The CDC (Centers for Disease Control and Prevention) is preparing an "Interim Guidance for Workers Handling Untreated Sewage from Ebola Cases in the United States." *http://www.cdc.gov/vhf/ebola/index.html*

A Brief History of the Ebola Virus Disease (EVD)

1976 - The first known outbreak of EVD was identified only after the fact, occurring between June and November 1976 in Nzara, South Sudan

1976 - On 26 August 1976, a second outbreak of EVD began in Yambuku, Zaire, a small rural village in Mongala District in northern Democratic Republic of the Congo (then known as Zaire).

1995 - The second major outbreak occurred in 1995 in the Democratic Republic of Congo

2003 - There was an outbreak in the Republic of Congo

2004 - A Russian scientist died from Ebola after sticking herself with an infected needle

2007 - A suspected hemorrhagic fever outbreak occurred in the village of Kampungu, Democratic Republic of the Congo in August 2007

2007 - The Uganda Ministry of Health confirmed an outbreak of Ebola in the Bundibugyo District in Western Uganda in November 2007

2012 – The WHO (World Health Organization) confirmed two small outbreaks in Uganda in 2012

2013-2014 - In March 2014, the World Health Organization (WHO) reported a major Ebola outbreak in Guinea, a western African nation, which rapidly spread to the neighboring countries of Liberia and Sierra Leone. On 8 August 2014, the WHO declared the epidemic to be an international public health emergency.

2014 - On 30 September 2014, the first confirmed case of Ebola in the United States was diagnosed. Two additional cases were contracted by US health care workers and a New York City doctor tested positive after returning to the USA from Guinea after working with Doctors Without Borders. (info as of 10/28/14)

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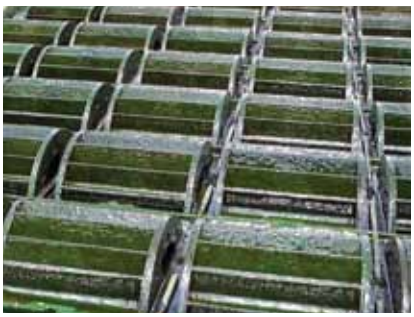

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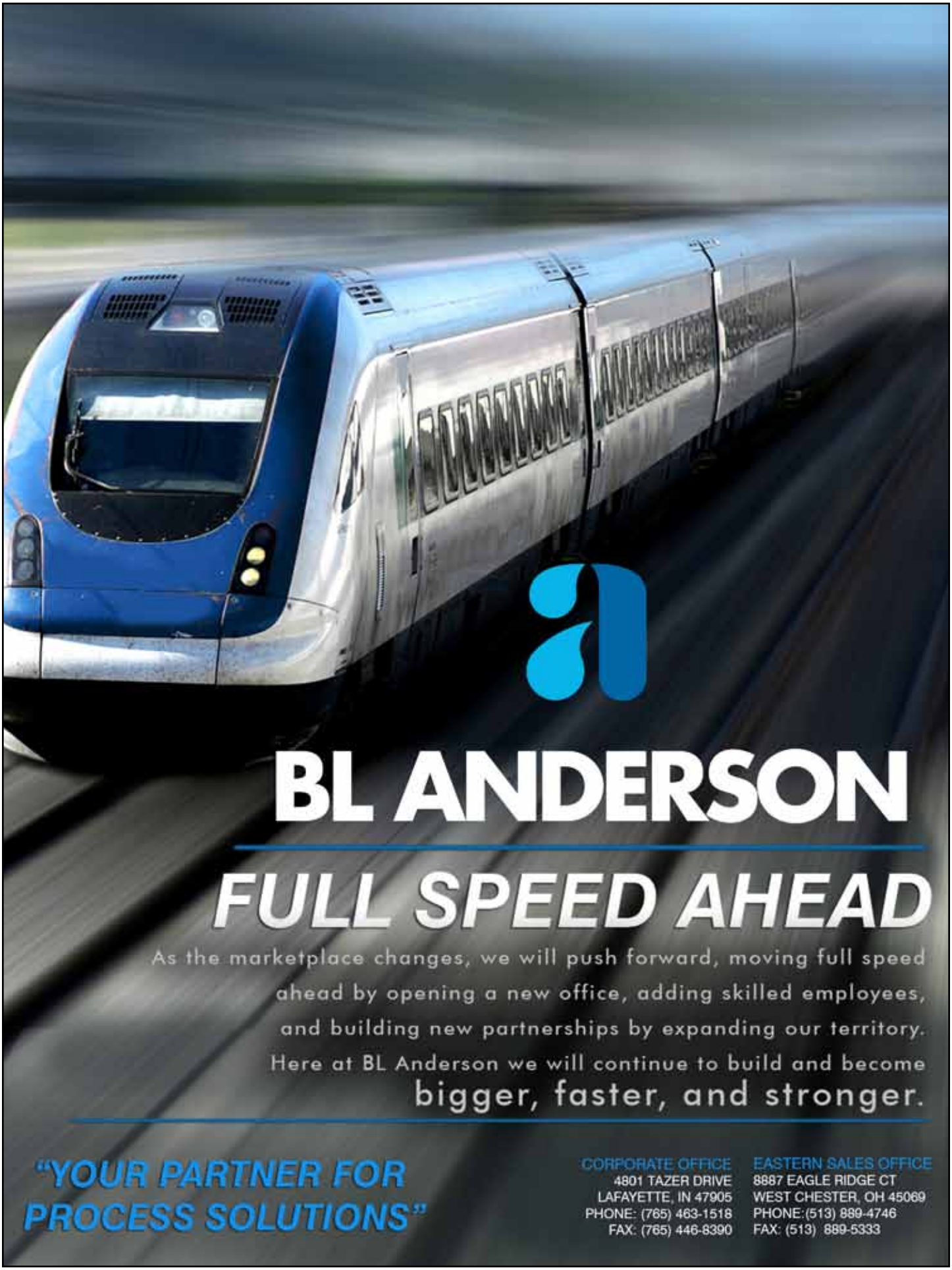
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CLEVELAND METROPARKS IS GREEN INSIDE AND OUT

Low Impact Development for Watershed Protection Is Highlighted at the Watershed Stewardship Center at West Creek

by Marjorie Thomas, Cleveland Metroparks

Project Overview

What started as a dream of the West Creek Preservation Committee, a local grassroots conservation group, is now an environmentally sound, sustainable reality.

Cleveland Metroparks West Creek Reservation was a long time in the making. The West Creek Preservation Committee spent ten years acquiring open land and applying for grants to fund additional acquisitions to piece together the southern portion of the West Creek Preserve. The northern portion, owned by the City of Parma, was leased to communications companies as a site for seven television communications towers. On January 1, 2006 Cleveland Metroparks signed a 99-year renewable lease with the City of Parma and the West Creek Preservation Committee to create West Creek Reservation.

Adding 326.5 acres to Cleveland Metroparks "Emerald Necklace," West Creek Reservation located in Parma and Broadview Heights, is in the center of Cuyahoga County's West Creek Valley – one of the largest remaining undeveloped open spaces in the county. Although a geologically unique and biologically diverse area, the valley has been impacted by two centuries of settlement and industrial development.

Green feature at the West Creek Reservation and Watershed Stewardship Center

The masterplan for West Creek Reservation was developed in 2006 and the initial restoration phase, including site improvements such as roadways, landscaping, trails and a wetland boardwalk along W. Ridgewood Drive, was completed in 2009.

The second phase included the $4.5 million Watershed Stewardship Center that overlooks the wetlands and provides a view of the forty-acre meadow, a rare expanse in Cuyahoga County. Partnering with the North East Ohio Regional Sewer District, Cleveland Metroparks set the goal of the center to promote innovative community participation, scientific discovery, and serve as a regional resource center for environmental education on watershed protection and water resources. It was essential the building reflect these watershed management strategies. So like other new construction in Cleveland Metroparks, the building incorporates sustainable building practices, and contractors were selected on their ability to comply with LEED certification requirements, methods, techniques, and documentation.

In 2008, the Floyd Brown Group was retained to provide engineering/design services. Work included development and contract document preparation for basic utility infrastructure, roadways, trails (paved and non-paved), picnic area development including shelters, play areas, wetland enhancements, boardwalks, landscaping, and related materials. Doty & Miller Architects were retained by Floyd Brown to design the Watershed Stewardship Center.

The site was selected as it was already the most disturbed area, having been used as a landfill and staging area for Parma's landfill trucks, therefore preserving the surrounding high quality natural areas. By selecting a site near public transportation and providing bike racks, the project earned additional LEED Certification points,

By 2011 a contract was awarded through public bids to Fechko Excavating and Seitz Builders to start construction with an anticipated completion date of July 2012. Then came the rain, and more rain. In fact, 2011 was the wettest year on record. Though the Center and surrounding land was designed to eventually manage stormwater runoff, having record amounts of stormwater during construction was problematic, causing a six month construction delay. The Center received an Occupancy Permit in November 2012.

Poor soil conditions that included expansive shale caused another delay. The building footings, foundations and site work were modified to accommodate the expansive shale by over excavating and installing a buffer layer of engineered fill to support the building's footings.

Throughout the building process to comply with Leeds certification, contractors used LED and CFL lighting and low VOC products, and purchased materials and products within a 300 mile radius to reduce transportation costs and support local businesses. Construction waste was recycled when appropriate.

A green roof, or a living roof, though not rare, is still relatively uncommon. "There was a real learning curve, said Dick Kerber, Cleveland Metroparks Chief Planning and Design Officer. "The garden on the roof not only has soil and vegetation, but it retains

water, making it extremely heavy. The green roof had to be compatible with the roofing system so the roof remains water tight." Though once installed, its insulating qualities save energy and lower heating and cooling costs. It also reduces stormwater runoff, improves air quality, and serves as a habitat for wildlife.

Metal roofing was used on most of the remainder of the building. The metal is environmentally sensitive as it doesn't involve fiberglass shingles, a petroleum-based product, and has a much longer life span. But the metal roof didn't come without its own issues. Three different roofing manufacturers were contacted to find the correct panel design that would stay flat and not warp. Sections of each panel design were tested to find the correct size and shape. In the end Willoughby Supply was selected as their panels resisted "oil canning" or dimpling.

The building itself is largely heavy timber frame using recycled steel and plantation grown wood. To increase the R value foam insulation was used, and operable windows were installed to allow opportunities for fresh air. The remaining roof is white to encourage heat reflection. Sustainable practices were also used throughout the infrastructure using recycled, ground up concrete for a base for the roads, trails, and parking lots.

Sustainable features inside the building include carpet squares made from recycled material. As carpet becomes worn individual squares can be replaced at a lower cost and with less waste than replacing the entire carpet. Rooms have switchless lights that automatically turn on and off as people enter and leave the room. And each office has its own thermostat connected to a highly efficient heat exchanger. "The heating is a three pipe heating system allowing for individual control in each space," said Stephen Knowles, Cleveland Metroparks Architect. Though more expensive than traditional heating systems, the cost will be recouped in 5 to 7 years.

In the office area, the solid portion of the cubicle walls are only 42" high allowing every space access to natural light. In the cubicles, rolling file cabinets double as guest seating. And in the men's room – waterless urinals.

Outside the center, there are over 30 watershed management features. For instance, the traffic circle and parking lot do not have a continuous curb, allowing water to drain into bioswales, and portions of the parking lot use a cellular grid pavement that allows water to easily drain through to a natural subsurface drainage system.

The retaining walls are gabion baskets or wire baskets filled with stones allowing water to move through the walls. They will also support biological life as vegetation starts to grow between the stones. Native, drought resistant plantings were used throughout the landscaping requiring minimal to no irrigation or fertilizer. Several samples of permeable pavers and pavement and porous asphalt are used to give scientists, educators, visitors and builders a learning lab with a touch, see, and feel experience.

The good news is that there was a time when LEED certified products and techniques were unique. Now they are readily available. They are finding more and more wide spread applications.

"In our case, it is the sum total that is unique," said Kerber. "We set up a whole system that uses sustainable building techniques and manages stormwater through multiple stages that link technologies together. It's not the pieces themselves that are unique, but how we fit them together."

Watershed Stewardship Center

In fact, all of the stormwater management features used in designing and developing the facilities and infrastructure in West Creek Reservation results in less stormwater runoff after construction than before construction began.

Cleveland Metroparks continues to take a proactive approach to creating and preserving park space. Working with local companies Cleveland Metroparks strives to be in the forefront of green and sustainable building practices. Cleveland Metroparks new Watershed Stewardship Center gives citizens, city planning commissions and builders a living classroom providing proven green and sustainable concepts so they may create their own sustainable and ecologically sound buildings and landscapes.

Marjorie Thomas, Cleveland Metroparks

Green downspout at the Watershed Stewardship Center

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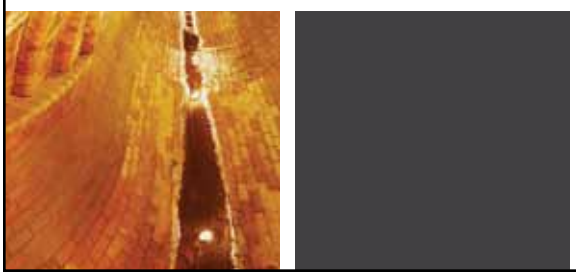

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PERACETIC ACID (PAA) AS AN ALTERNATIVE DISINFECTANT

by Jacquelyn Wilson, Technical Services Engineer, PERAGreen Solutions, LLC.

Introduction

Throughout the world, the most commonly utilized wastewater disinfectant is chlorine, usually added as sodium or calcium hypochlorite, with use of a dechlorination method. Chlorine is a persistent disinfectant, which does not degrade in the environment and so must be quenched, typically with sodium bisulfite, in order to meet effluent permit requirements. The widespread use of this product is primarily due to its low cost and accessibility. However, recent health concerns have emerged regarding the harmful by-products produced by chlorination. In surface waters pre-treated with high doses of chlorine formation of total organic halides are produced, which show long-term toxic risks.

In order to reduce DBPs (disinfection by-products) formation, alternatives to disinfection treatment have gained momentous traction in the water and wastewater industries. Combinations of commonly used disinfectants such as UV and chlorine have been pursued as viable options for reducing total organic halide concentrations. Additional research has been performed to find an alternative disinfectant similar to chlorine that does not produce harmful by-products, peracetic acid (PAA).

Background

Peracetic acid or peroxyacetic acid (PAA) is an aqueous equilibrium solution of acetic acid, hydrogen peroxide, and water. The equilibrium is represented in **Figure 1**. PAA has been used in the food and beverage and paper industries for many years and has been studied in wastewater disinfection since the 1980's. PAA's direct oxidation and destruction of the cell wall of microbial pathogens allows for its prime candidacy as a disinfectant in wastewater treatment.

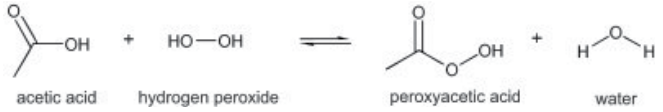

Figure 1 - Aqueous equilibrium solution

Peracetic acid has a diverse repertoire of uses including: disinfection of secondary systems, disinfection of CSO and SSO systems, filter cleaning, algal and snail fouling, and bypass/redirect/blend system disinfection. The product is dependent upon contact time, mixing and starting dose. PAA has been seen to be relatively insensitive towards suspended solids, provided enough contact time, thusly making it a prime candidate for CSO disinfection. However, the best results for disinfection can be seen after filtered tertiary effluents.

Properties

This product is a colorless, clear liquid. PAA has no foaming capabilities. A strong vinegar odor is observed due to the acetic acid concentration and this odor is more pungent with increasing concentration strength. The pH is less than 2 with a specific gravity of 1.10 to 1.11, depending upon temperature. The freezing point of the product is -40.3° C. The product is produced by reacting acetic acid and hydrogen peroxide over a few days in order to achieve high yields. Commercially, this product is available in concentrations from 2 to 15% w/w. Though peroxide is also a commonly recognized disinfectant, the active disinfecting agent within this equilibrium is PAA, as it is highly active at low concentrations across a wide range of microorganisms. The germicidal properties of PAA are found to be bactericidal at 0.001%, fungicidal at 0.003%, and sporicidal at 0.3%. The disinfection efficacy of PAA on microorganisms can be ranked as: bacteria>viruses>bacterial spores>protozoan cysts. Its bactericidal effectiveness is dependent upon the organism. E. coli has been found to show low resistance to the PAA mechanism and similarly fecal coliform. Following in susceptibility to PAA disinfection are enterococcus, giardia, and cryptosporidium.

Disinfection by-product formation during PAA disinfection has been studied and found that no brominated or chlorinated phenols are formed. The peracetic acid decomposition products are acetic acid, hydrogen peroxide, oxygen and water. PAA can be consumed in an aqueous solution in three ways: spontaneous decomposition, hydrolysis and transition-metal-catalyzed decomposition. High levels of solids in the water system can also consume the product and so adequate dosage and contact time is required for disinfection. Within the pH range of 5.5 to 8.2, spontaneous decomposition of PAA to acetic acid and oxygen occurs. PAA produces little to no toxic or mutagenic by-products after reaction with organic material in wastewater effluents or surface waters. By-products produced are mainly carboxylic acids, which are not recognized as mutagenic. No halogen disinfection by-products have been observed.

Mechanism

Similar to chlorine, PAA is an oxidizing agent. PAA disinfects by oxidizing the outer cell membrane of bacterial cells by disrupting the function of the lipoprotein cytoplasmic membrane and transport through cell walls. Oxidations occur by the transfer of electrons, the stronger the oxidizer the faster the electrons are transferred to the microorganism and the faster the microorganism is inactivated or killed. Peracetic acid has the second highest oxidation potential, next to ozone, among common disinfectants as shown in **Figure 2**.

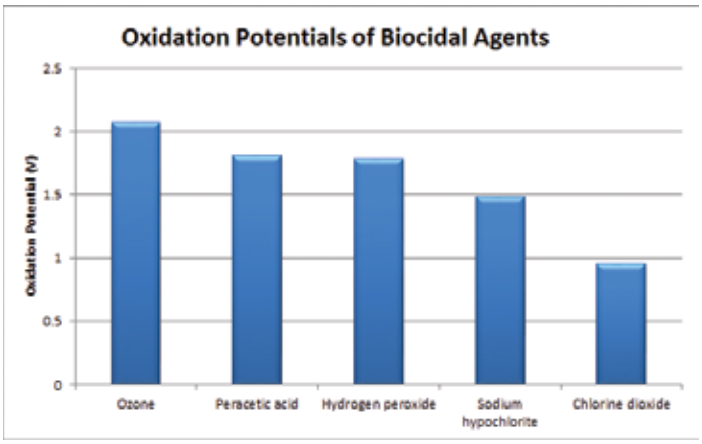

Figure 2 - Oxidation Potential

Peracetic acid reacts with organic matter in sewage water systems. The greater the amount of organics, the longer the reaction time required for disinfection. In systems with little organic matter, holding times of less than 10 minutes are functional for disinfection. Highly organic systems require up to 30 minutes or greater depending on the system.

Figure 3 - Largo, FL

Applications

Peracetic acid is commonly used as a disinfectant in the food and beverage and paper industries and has begun gaining traction in wastewater and water. Studies of PAA have been performed globally and are cropping up in North America at an increasing rate. North America now has several active PAA applications at wastewater facilities. The product is being used as a tertiary disinfectant, CSO disinfectant, blend/bypass/redirect disinfectant, enhancing UV disinfection, and lagoon disinfectant **(Figure 3)**.

In secondary systems, PAA has been seen to outperform chlorine and bisulfite applications in pathogen reduction as well as cost. Research had previously suggested that PAA was too expensive to produce due to limited production globally, however studies show that product feed is so low to achieve kill that a 26% cost reduction is possible when compared with chlorination/dechlorination. Typical feed rates for secondary systems are found to be below 1.0 ppm. In order to achieve maximum pathogen reduction, a residual floor of 0.35-0.40 ppm must be maintained as seen in **Figure 4**. A hand held DPD test using a total chlorine colorimeter can be used to monitor residual and establish control.

Systems feeding PAA have seen tremendous success and versatility in the use of the product. Peracetic acid has been shown to bring plants into compliance within a half-hour of feeding, reduce pathogen levels by 25% within five seconds, and handle pathogen spikes up to 290,000 CFU/100 mL without changing dosage. To increase pathogen kill, a combination of UV and PAA disinfectants can be utilized. This is known as an advanced oxidation process that occurs as the UV light enhances the formation of radicals such as hydroxyl groups, found in PAA, making the environment unfavorable to the survivability of the microbes. Peracetic acid naturally decomposes and at effluent discharges, PAA residuals decrease in concentration by 94% eight feet into the receiving stream from the outfall point from 0.39 ppm in the effluent overflow to 0.02 ppm.

In CSO and lagoon applications the increased organic material and solids levels can increase the starting dosage required as well as the contact time needed for treatment. Solids levels and PAA dosage can be seen to follow a straight line curve as shown in **Figure 5**. As the TSS/VSS levels increase so too does the feeding dose of PAA increase. The product requires increased time to penetrate the solids membrane and fully kill the pathogens inside, thusly a longer holding time after injection is desirable. The increase in dose required for solids can be seen to influence the "initial demand" on the product after which achieved the PAA uptake drops and begins to degrade naturally **(Figure 6)**.

Conclusion

Pilot studies, virus testing, and water treatment studies are being conducted throughout the United States and the use of peracetic acid is becoming increasingly common in municipalities. Peracetic acid is a viable alternative disinfectant that produces no harmful by-products, achieves pathogen reduction, and is cost effective. Further work must be conducted with regulatory agencies involved in permitting in order to ensure full understanding of the product and accurately monitor.

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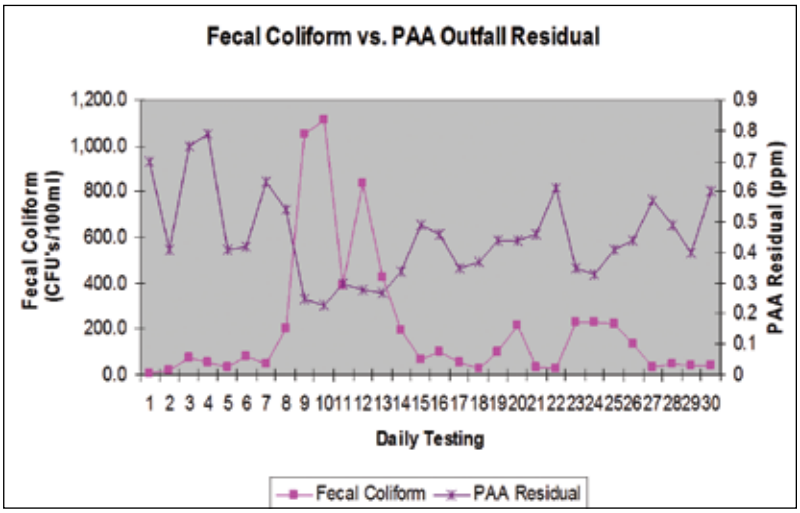

Figure 4 - Residual Floor

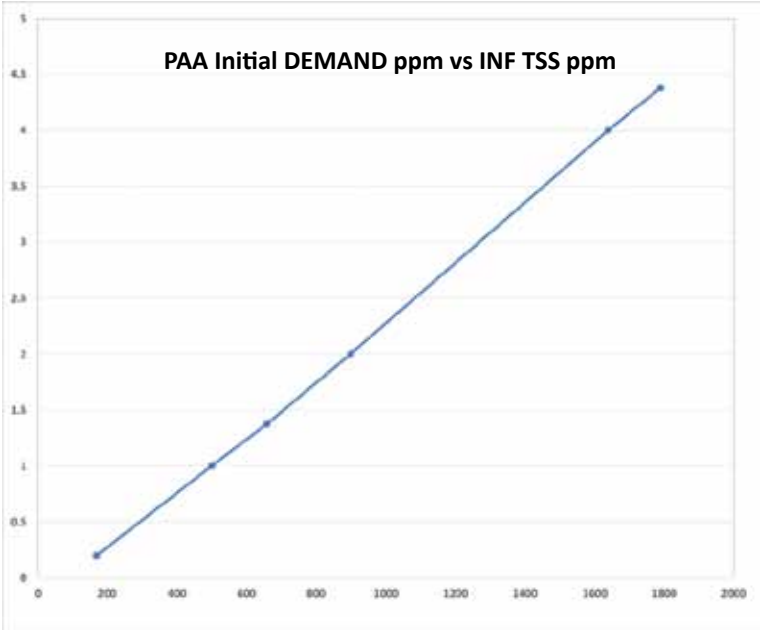

Figure 5 - Solids Levels vs PAA

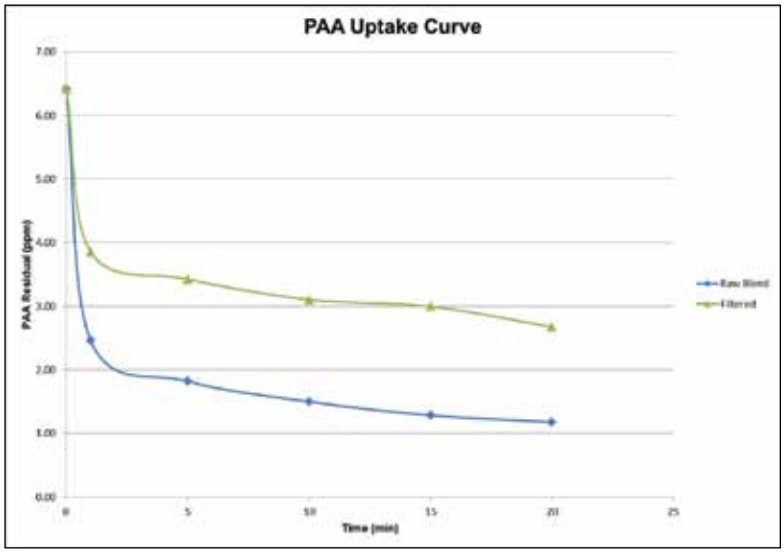

Figure 6 - PAA Uptake Curve

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CITY OF LOGAN WASTEWATER TREATMENT PLANT

by Jeremy Cook, P.E., URS Corporation and Jack McClain, City of Logan WWTP Superintendent

In 2008, the City of Logan, Ohio (population of 7,150) decided to invest in significant upgrades to its WWTP due to mandates from Ohio EPA. Through a schedule of compliance in the NPDES permit, the City was required to eliminate bypasses during wet weather events. The existing plant consisted of screw pumps, primary clarification, secondary screw pumps, trickling filters, final clarifiers, chlorine disinfection, and dechlorination.

The average design capacity was only 1.25 MGD with a peak capacity of 5 MGD but frequently experienced peak wet weather flows up to 8.0 MGD. The plant was not designed to treat these peak flows and had to bypass the trickling filters after primary clarification. The secondary bypass was still disinfected with chlorine prior to blending with the plant effluent and discharging to the Hocking River; however, this was still a violation of the NPDES permit. In addition, because the plant is located in the floodplain, the effluent had to be pumped whenever the river was high.

URS prepared a preliminary design memorandum which evaluated alternative methods to upgrade the WWTP to eliminate the secondary bypass while also expanding to meet projected flow increases for the next 20 years. The new WWTP was sized for a 1.6 MGD average flow (to serve a population of 10,171) with a peak treatment capacity of 8.8 MGD and a hydraulic capacity of 12 MGD.

In addition to meeting the EPA mandates, the City wanted to address the aging equipment, the need to pump the effluent when the river was high, the lack of grit removal facilities, and chlorine hazards. In the administration building, they wanted to address the noise from PD blowers and the corrosion of lab instruments due to the influent screens being located in the building.

URS evaluated several options and recommended that the City abandon the current processes and construct a new plant that could deliver a high quality effluent to meet current and future limits. Adding an activated sludge process after the trickling filters and a 3 MG flow equalization tank was considered to handle peak flows; however, it was found not to be economically viable since much of the existing plant equipment would have also needed replaced. The final proposed improvements included new influent fine screens, influent pump station, vortex grit removal system, 3-channel oxidation ditch, perimeter feed/perimeter outlet (PFPO) clarifiers, UV disinfection, and post aeration.

Preliminary Treatment

The influent and secondary screw pumps were nearing the end of their useful life and would have needed to be replaced soon. The trickling filters were also nearing the end of their life and did not produce a high quality effluent (25 mg/L CBOD, 30 mg/L TSS, monitoring only for NH_3). For the new plant it was desired to treat to best available demonstrated control technology (BADCT) standards of 10 mg/L CBOD, 12 mg/L TSS, and 1.0 mg/L NH_3.

The existing screw pumps were replaced with a new submersible influent pump station, which included four 45 HP Flygt N-style pumps with 78% efficiency. Two of the pumps were designed to operate on VFDs to allow a more controlled and consistent flow to the treatment process. A new Parkson Aquaguard ¼" fine screen was installed ahead of the influent pump station, both of

Aerial Under Construction (Existing Plant on Left, New Plant on Right)

New Influent Screen Building and Submersible Pump Station

Vortex Grit Tank

which are located away from the existing administration building to eliminate the foul odors and corrosive gas issues. Solids and other debris retained on the screen are lifted from the channel and deposited into the screenings compactor. As the screenings travel along the screw press, the soft organics are separated from the undesirable solids by a spray wash system. The undesirable solids are compacted, dewatered, and discharged into a dumpster for disposal at the landfill. The organics and wash water are returned to the screen channel.

Since the existing plant lacked grit removal facilities, a highly efficient vortex grit tank was provided. Screened wastewater is pumped from the influent pump station to the grit tank. Flow is introduced into the 16-ft diameter Hydro-International Grit King through a tangentially positioned inlet causing a rotational flow path. Solids settle out by gravitational and rotational forces as the flow spirals down the wall of the tank. Grit collects in the grit pot and a center cone directs flow up and around the center shaft to the inside of a dip plate. This system allows the grit particles to settle to the bottom of the tank and will prevent grit from building up in the oxidation ditch and aerobic digesters. Grit underflow is pumped to the grit classifier for dewatering. The grit classifier is a Wemco Hydrogritter, which includes a cyclone that concentrates the grit before entering the classifier, increasing its settleability. The dewatered grit discharges through a chute into a dumpster located on the floor below the grit classifier. Overflow from the cyclone and drainage from the grit classifier return to the head of the plant.

Secondary Treatment

Screened, degritted wastewater flows over a weir in the grit tank and drops into a 30-inch pipe that conveys it to the oxidation ditch. The ditch consists of 3 channels with a high water level of 16 feet and an operating volume of 1.32 MG. The ditch is equipped with Siemens Orbal disc aerators. The outer channel has two 20 HP aerators each with 24 discs. The middle channel has two aerators with 28 discs each. The inner channel also has two aerators with 28 discs each. There are two 50 HP motors that drive the aerators in both the inner and middle channels. Each disc is constructed of ½-inch molded plastic and split in half so it can be adjusted, removed, or attached to the shaft in half sections without requiring shaft removal. Each disc has holes and triangular nodes that entrain air as the nodes rotate above the water surface and diffuse air into the liquid when the nodes become submerged in the liquid. The discs may be installed with the triangular nodes in either the "base forward" or the "apex forward" position. In this case, the discs are installed in the base forward position to provide the maximum amount of oxygen transfer. In addition to node position, the amount of oxygen transferred to the mixed liquor is dependent on disc speed and submergence. The discs are controlled by the SCADA system at the required speed to maintain the desired dissolved oxygen (DO) or ORP in each channel.

Influent valves are normally set to direct influent flow and RAS flow into the outer channel. Flow passes from one channel to the next through sluice gates located at the bottom of each channel.

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Oxidation Ditch and Final Clarifiers

Oxidation Ditch Aerators

Aeration Discs for Oxidation Ditch

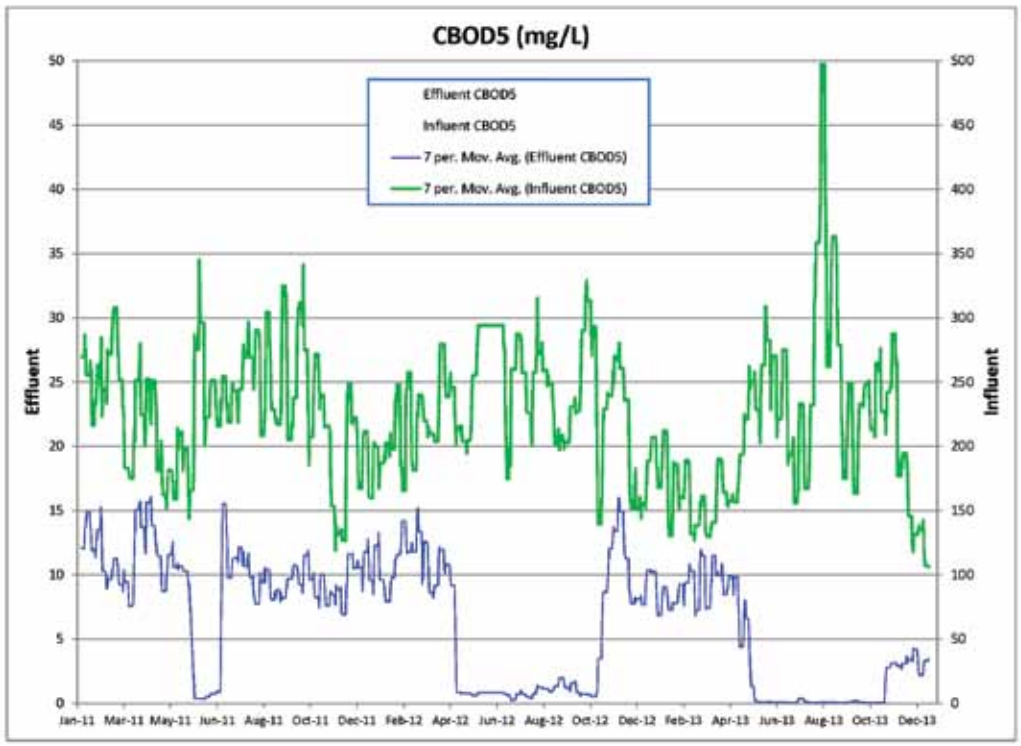
Final Clarifier Showing Suction Header

The effluent weir gate is located on the inner channel where the flow drops into a pipe that goes to the clarifier splitter box. An emergency overflow weir is also located in the inner channel to prevent flooding the aerator bearings. A weir gate is also located on the outer channel to allow the inner two channels to be taken out of service for maintenance. Wall pipes have been installed in the ditch to allow for future internal recycle pumps to be installed which will enhance the process to meet potential future nutrient limits.

The oxidation ditch channels normally operate in series in a mode known as "0-1-2 operation." The outer channel is operated with a DO concentration of approximately 0 mg/L and is known as the "work channel" because most of the BOD and ammonia are oxidized in this channel. The middle channel is operated with a DO concentration of approximately 1.0 mg/L (concentration varies from 0.5 to 1.5 mg/L) and is known as the "swing channel." The inner channel is operated with a DO concentration greater than 2.0 mg/L and is known as the "polishing channel."

The ditch can operate in a storm flow mode to handle peak wet weather flows while still providing treatment without washing out the solids. While it operates much like that, it is not a true contact stabilization process. RAS is directed to the outer channel while influent flow is directed to the middle channel. The net effect is that sludge is moved out of the clarifier and into aeration and the solids loading to the clarifier is reduced, preventing washout of the clarifier sludge blanket. The magnetic flow meter on the influent to the grit tank is used to control the storm flow mode.

Clarification is the second stage of the activated sludge process. In this stage, mixed liquor from the oxidation ditch undergoes gravity sedimentation in the final clarifiers. Perimeter feed/perimeter outlet clarifiers with suction headers for sludge withdrawal were selected



to maximize the underflow concentration of solids so as to minimize the required return sludge volume and maximize the capture of solids. The clarifiers are Siemens Rim-Flo Tow-Bro model with a 70 foot diameter and 14 foot side water depth.

This design allows for rapid sludge removal which provides fresher sludge back to the ditch; it eliminates rising solids produced from denitrification; it limits phosphate release to effluent; and it limits growth of filamentous bacteria. It also minimizes underwater disturbances which allow for a longer compaction time. Finally, it provides positive removal of sludge in proportion to area covered.

Disinfection

The plant was also converted from chlorine disinfection to ultraviolet disinfection to eliminate the hazards dealing with chlorine. Two banks of Trojan UV3000plus were provided in series. This system uses Amalgam style bulbs and is provided with hydraulically-driven wipers to keep the bulbs clean. After the UV, a post aeration system using Sanitaire fine bubble diffusers was installed to provide a minimum of 6.0 mg/L of dissolved oxygen.

Solids Treatment Processes

The old rectangular secondary clarifiers were converted to aerobic digesters using Sanitaire stainless steel wide band coarse bubble diffusers. Two of the old clarifiers were reused as biosolids thickeners (keeping the old chain and flight scrapers and weirs). The thickened biosolids are either sent to an aerated holding tank before an existing belt filter press or it can be recirculated to the first digester for further treatment.

Plant Hydraulics and Other Issues Addressed

In order to eliminate the need for effluent pumping during high river levels, the hydraulic grade of the entire plant was elevated such that even the peak wet weather flows can still flow by gravity through the existing outfall that runs under railroad tracks and State Route 33.

To reduce the PD blower noise in the existing administration building, a new building was constructed to house new Roots tri-lobe PD blowers (with a sound enclosure). The building also included the new grit pump and classifier as well as the new electrical equipment. Smart MCCs were specified to reduce wire runs while providing more motor information to the operators at the HMI computer. The upgrades included a new SCADA system for plant control, as well as monitoring the remote collection system pump stations. The total project cost was $8.62 Million. Construction began in spring 2011 and was completed in fall 2013.

The site was located in the floodplain and the soil consisted of unconsolidated sand and silt that did not have enough bearing capacity for the proposed structures. URS and PSI (geotechnical sub-consultant) decided to use dynamic compaction to increase the bearing capacity. This method uses a crane to repeatedly drop a large flat weight (usually concrete) onto the ground. The ground dropped 10 feet after three drops. Additional fill material was brought onsite before the structures could be built.

Treatment Performance

The 3-channel oxidation ditch design is ideal for biological nutrient removal. An ORP probe is used in the first channel to maintain anoxic conditions by automatically adjusting the aerator disc speed. The removal efficiency of CBOD, TSS, and NH_3 of the new process is far superior to the old plant. The average effluent characteristics are as follows: 2 mg/L CBOD; 5 mg/L TSS; 0.2/3.0 mg/L NH_3 (Summer/Winter); 5 mg/L Nitrite + Nitrate; 0.60 mg/L Total Phosphorous.

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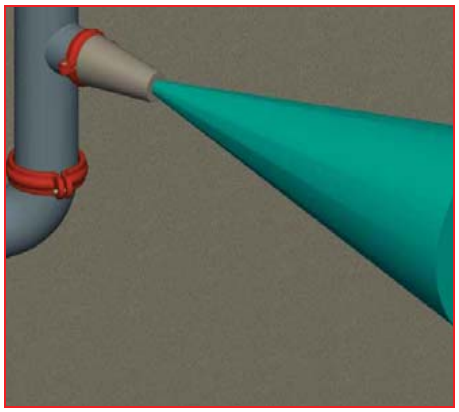

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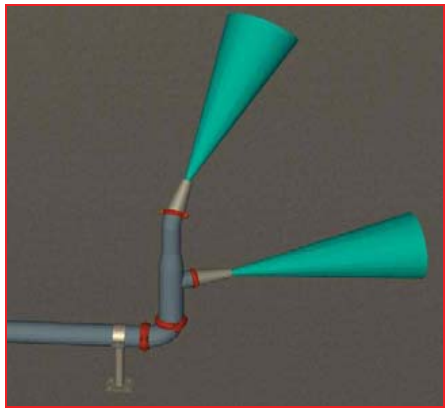

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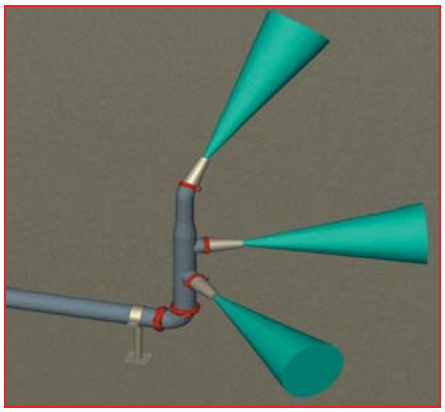

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