50th Fall Meeting in “ManchVegas”

By: Frederick J. McNeill, P.E.
Chief Engineer Environmental Protection Division - City of Manchester

Please join us to celebrate NHWPCA’s 50th anniversary at our 2017 Fall Meeting hosted by the City of Manchester on Friday September 15th. The city affectionately known as “ManchVegas” owns and operates northern New England’s largest wastewater utility that includes a 42 mgd WWTP, a dozen pump stations and a partially combined collection system of 385 miles of sewers. Manchester’s WWTP is located on a 15 acre campus with eight buildings along the beautiful banks of the Merrimack River. In addition to Manchester’s 109,000 residents, the WWTP also services portions of Bedford, Goffstown and Londonderry which makes a total metro population of about 170,000. The city’s Environmental Protection Division (EPD) has a full time staff of 43 water professionals that manage, operate and maintain the city’s wastewater utility. Manchester is NH’s only WWTP that is staffed 24/7/365.

Manchester’s WWTP was constructed as part of EPA’s first generation of facilities in the early 1970s. The 26 mgd WWTP was commissioned in 1975 as a state-of-the-art facility with process features such as centrifuges for dewatering, ozone for odor control, enclosed dewatering and thickening operations, sodium hypochlorite instead of chlorine gas for disinfection and two multiple-hearth incinerators for solids disposal. The WWTP was upgraded in 1994 and with additional clarifier/aeration tankage and a new fluidized bed incinerator, the capacity was increased to 34 mgd. In 2016 EPD completed another major upgrade and capacity was increased to 42 mgd.

As part of the city’s ongoing $300 million 20-year wastewater capital improvements program $75 million is being invested into the WWTP. The city is more than halfway through this $75 million investment and on display during the Fall Meeting will be the following eight recently completed/ongoing WWTP projects:

2007 Dewatering Upgrade (Engineer: Wright-Pierce / Contractor: Keymont) – This $4.5 million project replaced aging and failing belt filter presses with three 75-hp centrifuges. Other improvements included a new operations room, polymer feed system, and screw conveyance system.

2010 Secondary Clarifier Upgrade (Engineer: AECOM / Contractor: Penta Corp.) – This $3.5 million project replaced original draft tube type equipment with spiral blades. Other improvements included wall mounted FRP launders, scum sprays and new chemical feed pumps.

2011 Incinerator Upgrade (Engineer: AECOM / Contractor: Kinsman Corp.) – This $4.5 million project rebuilt the incinerator providing another decade of life. Improvements included replacing 75% of the vessel’s shell, new brick interior lining, new tuyere system, inlet manifold, and heat exchanger.

2013 Grit Upgrade (Engineer: Stantec / Contractor: (Continued on page 1)
I guess it’s no surprise that your newsletter editor reads a lot. I was recently relaxing on my screen porch with a cup of coffee (or maybe it was by the fire with a beer) and read this sentence, “By seven a.m. telephones were ringing all over town, and by eight every conversation from the sewer ditches and oil fields to the paper mill and the hospitals was centered on two men…” I was ridiculously happy to see the reference to “sewer ditches” in the novel that I was reading. It would have been even better if it had been a reference to “wastewater treatment facilities”.

I have been using the term wastewater treatment facility more and more often. I think it sounds more professional than wastewater treatment plant. Of course, I still tend to speak quickly and casually and say “the plant”, assuming that everybody knows where I’m talking about. Recently I needed to provide a Girl Scout item to a leader. Since the Somersworth facility sits right on the street and I assume that everybody knows I work here, I suggested that the leader just stop by the plant, pick up the item and take a tour. Her reply was “what plant?”

She didn’t take me up on the offer of a tour because of the smell. Some people are just too sensitive. I offer tours on a constant basis and have a brief public tour that stays away from the smelliest places and gets rave reviews. I like to point out the big bags in the headworks of what we affectionately call “rags” and launch into an explanation of what NOT to flush. If we have a little nocardia I like to describe it as a nuisance filamentous bacteria that thrives on grease, which is another example of what not to flush. It feels good to get to the back of the plant and point out the clear effluent flowing into the river. It’s been a personal goal of mine during this 50th anniversary year of our Association to be a PROUD WWTF operator and educate the public as much as I can and I think I’m rocking it!
President’s Corner

CH-CH-CHANGES

Hopefully you attended the celebration at Hampton Beach State Park on June 23rd, if not – shame on you, unless you were working at your plant, then of course – we forgive you.

The event was a resounding success, Mike Theriault and all the members of the Activity Committee worked long and hard to bring the day together – my sincerest appreciation goes out to you all. I also wish to acknowledge the sponsors who graciously contributed to the event – we rely on your support greatly and fully acknowledge your continued support. We could not accomplish what we do without your help! Let us not forget our basis for becoming an organization in the first place – ALL THE OPERATORS!

Finally, I want to thank the fine speakers who honored us with their personal inflection of where we’ve been, where we are headed and what we are currently faced with, well done colleagues.

After the celebration and the minor tempest that rolled through, a reference was made by Mary Jane Meier about the demographic representation at the event. I hadn’t really paid attention to it but in hind sight it is changing. A fine group of “younger” operators {I’m 38 by the way} are moving through the ranks and doing some great things, you are the future of this profession, continue putting your best effort forward.

Look around, we are having new facilities built, grappling with proposed regulation of whatever is deemed to be the crisis of the day and of course funding for failing infrastructure. Things are changing, both good and bad.

I must convey that the current Board of Directors are committed to doing our best to serve the members to the extent of our abilities. We will be looking at possibly changing how we conduct association business in the near future and will be looking at proposing minor changes to the association’s constitution. I can hear the heels digging in already, relax.

We NEED your help! We are continuously approached with great ideas for outreach, education and recruitment. But we desperately need an influx of new blood to help carry on – please consider lending a hand.

I hope the place you work is receptive to your plights as they arise and more importantly, your accomplishments.

Have a great summer – Kevin MacLean-NHWPCA President, 2017.

(Continued from Cover)

Keymont – This $4.0 million project replaced antiquated and failing chain and flight equipment with hydraulic screw conveyance, grit pumps and classifiers. Other improvements included new flumes, cover modifications and channel baffles.

2016 Aeration Upgrade (Engineer: Wright-Pierce / Contractor: Penta Corp) – This recently completed $22.5 million project is the heart of the WWTP. The aeration system was modified from two trains of six basins to four trains of three basins. Surface aerators were replaced with fine bubble technology. Selector basins for nutrient removal/process control were constructed along with a new blower building and a full electrical upgrade.

2017 Boiler Upgrade (Engineer: Yeaton Associates / Contractor: Methuen Construction Company) – This $2.5 million project is currently under construction. Three original 300 HP oil fired steam boilers are being replaced with four energy efficient gas fired condensing boilers. Other improvements include new piping and air handing equipment.

2017 Storage Building (Engineer: HTA / Contractor: KRD Builders) – This $400,000 32-ft by 70-ft. four bay storage building is currently under construction.

2018 Clarifier/Thickener Upgrade (Engineer: Underwood Engineer, Inc. / Contractor: Methuen Construction Company) - This $10 million project is currently under construction and consists of the complete removal and replacement of all internal components of three 130-ft diameter primary clarifiers and three 50-ft diameter gravity thickeners. New covers are being installed on the gravity thickeners.

The first WWTP tour will start at 8:00 am and the last tour will begin at 11:00 am. A site map detailing the project locations will be provided to all visitors. Engineers, equipment vendors and contractors will be at various locations to share their project contributions. Breakfast snacks and coffee will be provided by our generous sponsors.

After the tours it’s off to lunch at Manchester’s iconic restaurant the Puritan Backroom. There, EPD will provide a presentation on the city’s $300 million 20-year wastewater capital improvements program. This will be followed by a buffet lunch including the Backroom’s famous chicken tenders. Please consider joining your fellow water professionals on Friday September 15th as we celebrate NHWPCA’s 50th Fall Meeting with our friends from the City of Manchester.
Note from the Treasurer

It’s been awhile since I’ve reported, things have been hectic in the land of the treasurer. There are certainly more demands on my services as we fund such an exciting year as the 50th! At the time that I’m writing this, we are a few weeks past our huge summer celebration. What a great event planned by a great committee! It was definitely not without its expense though. The Activities Committee expenses are up to $23,375. This includes the promo items that were included in giveaways, as well as the location rental, the great games we had, the DJ, fantastic food and so much more! The expenses were offset by the ticket prices, your association dollars, as well as the fantastic sponsors. The association’s overall budget is healthy as we continue to move forward in this exciting year.

Save the Date!

The Trade Fair date is set for Friday April 13, 2018. Our Vendors and Exhibitors and Operators will enjoy a day at the Radisson Hotel Nashua, located at 11 Tara Boulevard, Nashua NH. Be sure to watch for upcoming news on registering and reserving spaces for the show.

Seacoast Sewer Snakes Update

The 2017 Seacoast Sewer Snakes including Mike Carle, Patty Chesebrough, Dustin Price and Mike Tibbetts in action at the NEWEA Spring Meeting Operations Challenge Maintenance Event.

Results from the Wastewater Challenge Photo Contest

The “Guess Which WW Facility” Photo Match contest was held at the Grand 50th Anniversary Celebration Event at Hampton Beach State Park on June 23.

Amidst the revelry – many brave souls stood arrow straight staring at the poster boards. But alas, only 5 would submit their lists and compete for a prize for the most number of correct matches.

Hats off to all those who participated or just enjoyed the challenge. Lots of jeers rose from the onlookers when they realized there were more facility names than photos. What was up with that?

Even though the results were tightly grouped. A perfect score would be 21 correct matches.

First Prize for the most correct matches goes to Molly Riehs from Resource Management Inc. with 20 correct matches. Cliff Lavigne of Hampton WWTF scored 19 correct matches; Stephanie Rochefort of Somersworth WWTF scored 18 correct matches; Jason Randall of Plymouth Village Water & Sewer scored 16 correct matches; and Amy Pollock of HACH scored 9 correct matches.

Congratulations to all! The Winning Prize was a Spinners Fidget to Molly Riehs.

Congratulations to the following 23 certified NH Wastewater Treatment Plant Operators on passing the June 2017 Wastewater exam

Grade 1-OIT:
Daniel Chagnon; John Fisher, Jr; Jamie McDonald; Amanda Rowe; and Stephen Simeone

Grade 1:
Anthony Carland; and Ryan Schafer

Grade 2-OIT:
Krysten Gosztyla; Jamie Jarest; Elizabeth Stanley; George Swedberg; and Jacob Valley

Grade 2:
Richard Bedore; Nathaniel Camille; and Charles Come, Jr

Grade 3-OIT:
Joe Piccolo

Grade 4-OIT:
James Pouliot, Jr; and David Webber

Grade 4:
Jason Gagnon; Todd Gianotti; Sam Heffron; Raymond McNeil; and Richard Slager
SAFETY CORNER

DISASTER PLANNING REVISITED

By: Rick Cantu, NHWPCA Safety Committee

Most of us have done disaster planning, including preparation for hurricanes, tornados, floods, fires, earthquakes and other large-scale events. But, how many of you have heard of a wastewater operator losing their life during one of these events? So, what events are most perilous to wastewater operators? The everyday activities are hundreds of times more likely to take a life than any natural disaster a plant will face. Top on the list is toxic gasses, followed by trenching accidents, then falls, and various other circumstances. Review this link as put together by the National Fire Protection Association:

http://www.nfpa.org/Assets/files/AboutTheCodes/820/1855%20-%20Wastewater_Sewers_or_Sewage_Treatment.pdf

Read through all the deaths/injuries that happened to wastewater workers from 2001 through 2010. Not one incident was caused by a natural disaster, but all incidents were attributable to everyday work activities. Below is a synopsis of the events;

Truck winch hook slipped off object striking the operator, eye injury, broken ribs & staph infection;

Loading sludge truck, slipped in water on floor and fractured hip;

Lifting housing off blower motor with fork lift, nylon straps and clevis pins – strap slipped and the startled employee fell over seven feet and fractured a hip;

Fans in duct work locked out and tagged. Fans on lower level still in operation and created a drafting effect from the air flow in the duct work. When employee removed drive belt, the fan spun freely and amputated a finger (fan was not blocked out);

Employee fell 18 feet into underground pit tank and was caught in recirculation pump – died;

During transfer of Ammonium Hydroxide employee failed to secure one latch on the hose’s cam-lock fitting. Line sprung off the connection spraying employee over torso and legs with chemical. Chemical burns resulted even though employee was wearing safety glasses;

Employee heating sign post with oxyacetylene torch to straighten post. Reached around heated post to get a wrench, shirt caught fire and he had to go 50 feet to the nearest water source resulting in hospitalization for burns on upper torso;

Employee was venting ‘sewer gases’ from a pressurized force main. The gas ignited and employee was hospitalized for burns to his face, hands, lower arms and neck;

Employee on ladder repairing a chain going around a sprocket. The flight moved, chain broke and struck employee in chest. Employee fell back 4 feet off ladder. Employee sustained several injuries including fractures to the L1 and L2 vertebrae;

Employee goes out of plant on a call to a lift station. He exits the gate in an F-250, places truck in park and proceeds to exit vehicle to close the gate behind him. The truck had a problem with the mechanical shift indicator that read “park” when it was actually in “reverse.” Truck backed over employee killing him;

Employees falls into an oxidation ditch and drowned;

Employee falls down steps and sustains injuries to the head, eye, ear, neck and back. He later dies at the hospital;

Five employees working at WWTP to unclog a sludge line. The line vented hydrogen sulfide gas and four of the five employees were treated at the hospital for asphyxia.

Isn’t it surreal how a wastewater operator can relate to any one of these situations? There are several other instances in the white paper of everyday activity accidents. As operators, we see regulatory staff, state and local FEMA Agencies and local police and fire departments placing an emphasis on the Natural Disaster Planning. I’ll bet most plants have a very professionally completed Emergency Response Plan sitting on their bookshelf right now. How many have a Job Safety Analysis for incidents that are outlined above or the others outlined within the White Paper? The answer is few, if any.

If we only give credence to Natural Disasters, we are Planning Big, but Living Small and on the edge of an accident at any time during our working hours. If we give credence to the everyday ‘Common Disasters’ we face as wastewater operators then we are Planning Small, but Living Big as we are not on the edge of an accident during our working hours.

The NHWPCA Safety Committee is pleased to have brought you this article in the absence of any Near Miss incidents on which to report; however, we want to hear about your Near Misses. Please send Near Misses, or requests for other safety topics you want to see, to Patty Chesebrough (chesebroughp@wseinc.com or 617-549-7735). All reports are confidential.

Please be safe everyone!
Anniversary Celebration
by Charlie Tyler
THOUGHTS FROM THE BENCH
By Stephanie Rochefort, City of Somersworth WWTF

Here in Somersworth, I run a NHELAP-accredited laboratory for wastewater analysis. This allows me a high level of assurance that my analytical results are accurate and defensible. If I was ever called into a court of law, I would be confident in testifying about my results. In a previous job that I don’t like to talk about, I feel lucky that I wasn’t called to testify. For a long time after I left that job I feared being called to testify. So, I’m a bit of an expert on how GOOD it feels to produce accurate and defensible results – you think?

NHELAP-accreditation is a lot of work, especially for a one-person lab. Since I wear other hats here in Somersworth, some work-days I don’t even feel like a complete “one-person”!

Luckily for smaller facilities, there is guidance available on the minimum requirements that wastewater laboratories must follow: https://www.des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-10.pdf

That link will bring up an NHDES document titled, “Wastewater Laboratory Quality Assurance Program Guidelines, revised January 27, 2014”. It is 52 pages long. That’s not as bad as it sounds, and I’ll explain why.

There’s a couple of title pages and then a table of contents. Next is a forward that is definitely worth reading. My favorite is the last sentence, “Remember: The more effort you put into your laboratory QA/QC manual, the more reliable and defensible the analytical data will become”, because that really sums it up quite nicely! Then there’s two pages of definitions, so we’re actually on page 7 before we get to numbered page 1.

Pages 1-9 of the manual are lab quality assurance program guidelines. There are eleven items that are listed as MUST be included in a written QA manual and then there’s explanations for each of these items. There’s a large section, including flow chart, on the topic of laboratory water quality. This is not really that crazy when you read it. After all, what do we use our lab water for? Rinsing, making standards and BOD dilution water. If you’re using IDEXX for e-coi analysis then you don’t need to be using dilution water for any microbiological testing. So, all you need to be checking your lab water for is conductivity and chlorine. Easy-peasy. Most lab water systems have an in-line conductivity meter and since we run blanks along with our total chlorine residual tests we’ve got that covered. You just need to make sure that you document what you’re doing!

There’s also a chart called “quality control frequency” that sets minimum required frequencies for QC standards, duplicates, blanks and spikes. For example, if my permit frequency for TSS is > 1/week then I have a minimum frequency of 1/week for QC standards, duplicates and blanks. I recommend that you take a close look at this chart and have a plan for how to make it work in your facility. There is NO WAY that I could remember which day of the week I needed to do the minimum quality control frequency and which days I didn’t. Since I’m a NHELAP-accredited lab I have stricter rules. Even if I didn’t, I hold and batch a lot of my samples which means that I am only running the analytical tests once per week. That’s my plan for making it work at my facility.

After the nine numbered pages, the rest of the guidance consists of several appendices. There’s lots of examples and lots of disclaimers to not just copy and paste, but to make your own site-specific procedures and bench-sheets. My final piece of advice is to make sure you READ and FOLLOW appendix F – that appendix contains extra QA/QC requirements from DES for IDEXX methods. It’s nothing difficult, just easy to miss in the back of the guidance document.
The purpose of the Legislative Committee is to monitor and track bills pending before the state legislature that could potentially impact the operations of wastewater treatment facilities. The Committee also organizes an annual Legislative Breakfast for our elected Representatives and Senators to keep them apprised of water and wastewater infrastructure needs, industry challenge and issues affecting water treatment. Members of the Legislative Committee work closely with the Government Affairs Committee of NEWEA to track issues at the federal level and participate in an annual Congressional Breakfast in Washington DC to meet with our delegation on topics of national import. This committee believes that Water’s Worth It!

All NHWPCA members are always welcome to participate! Contact Shelagh Connelly (shelagh.connelly@rmirecycles.com or 603-536-8900) for meeting dates.

It was a very busy legislative session with topics covering SRF (State Revolving Fund) funding for delayed and deferred projects, PFCs/PFOA (perfluorinated compounds/perfluorooctanic acid) and grandfathered sites for biosolids land application. We worked closely with peer organizations to have successful outcomes. However, the PFC issue is far from over and we will need to continue to be engaged in this issue. Many thanks to NEBRA for pulling together information and spearheading the coalition to keep this legislation from going forward. NHWWA and BIA were also extremely helpful. NHMA and Granite State Rural assisted as well. The land application bill was successful due to NH Farm Bureau, the NH-DES and Department of Agriculture supporting the amendment to eliminate the every 5 year renewal to in-perpetuity. Another bill that was approved establishes a committee to consider the impact of NH-DES taking over delegation of NPDES. And finally, a small group met with the Governor’s office to introduce the organization and to discuss some of our concerns. Ric Cantu, Peter Goodwin and I met with Chris Ellms on 5/9/17 in Governor Sununu’s office and had a wide ranging discussion and began a relationship to be established as a resource.

Yes, I’m a sewer cop!

By Stephanie Rochefort, IP Coordinator for the City of Somersworth

I was volunteering at a local soup kitchen last night and watching lots of greasy pots and pans being washed. I had to speak up, “there’s a grease trap under this sink that you clean out on a regular basis, right?” The rest of the volunteers looked at me like I had three heads. I was pretty sure that these people knew where I worked, so I went on to remind them that part of my job as a sewer cop is to make sure that stuff like grease doesn’t go down the drain. Since I had a captive audience, I gave the long version of the lecture, throwing in information about “flushable” wipes, too. Now they were looking at me like I had FOUR heads.

I totally understand that sewer cop, although a very descriptive sounding title, is not really professional-sounding. We’re supposed to be re-branding ourselves and my rant at the soup kitchen didn’t help that movement any…

A more professional-sounding part of my job involves the New England Regional Industrial Pretreatment Coordinators (plural, not possessive) Association. The New England Regional Pretreatment Coordinators Association (NERPCA) is a group of pretreatment professionals located in EPA Region 1 who are responsible for addressing current pretreatment issues, assisting approved and non-approved pretreatment programs with pretreatment questions and providing education for all pretreatment personnel within the region.

EPA Region 1 and NERPCA have developed an annual Conference to address the various needs of municipal pretreatment personnel to implement federal, state and local pretreatment regulations. Basic to advanced pretreatment training, discussions and presentations will be provided by government representatives, as well as experts outside the government.

NERPCA is excited to announce that this year’s annual conference will be held on October 25-26 AND you can learn all about it on our brand new web-site! Visit NERPCA.org for more information.
Note from the editor – I got question #9 wrong – see if you can do better

1 - What adjustment will the VFD aerator make when ammonia values are higher than target values?
   A. Decrease the VFD speed
   B. Remain the same speed
   C. Shut-off the aerator
   D. Increase the VFD speed

2 - Which adjustment will normally improve denitrification in a 5-stage Bardenpho process?
   A. Decrease the Internal Recycle rate
   B. Increase the D.O.
   C. Decrease the RAS
   D. Increase the Internal Recycle rate

3 - Which adjustment will normally improve denitrification in a conventional aeration tank?
   A. Increase the air supply
   B. Increase the D.O.
   C. Decrease the D.O.
   D. Shut off the RAS

4 - Which group of bacteria are responsible for converting nitrite to nitrate?
   A. Facultative
   B. Nitrosomonas
   C. Nitrobacter
   D. Heterotrophic

5 - What adjustment should be considered if ammonia leaving the aerobic zone is too high?
   A. Decreasing the oxygen input, thereby increasing denitrification, will reduce the ammonia levels
   B. Increasing the oxygen input will improve nitrification
   C. Reduce MLSS levels below 1,000 ppm
   D. Increase the internal recycle rate

6 - Given the following Ortho P data for inlet and outlet of a BNR fermentation tank, does this appear to be a problem?
   * Fermentation Inlet Ortho P is 7.0 mg/L
   * Fermentation Outlet Ortho P is 4.0 mg/L
   Select only one answer
   A. Yes: Ortho P is too low in the fermentation outlet
   B. Yes: fermentation outlet Ortho P should be 2 to 4 times the concentration of the inlet
   C. No, the fermentation tank is designed to remove phosphorus directly
   D. Both "a & b"

7 - Given the following data, calculate the lbs of alkalinity required for nitrification:
   Data:
   Flow = 26.5 mgd
   Inf TKN = 42 mg/L
   Eff NH3 = 0.75 mg/L
   90% TKN converted to NH3
   7.14 lbs Alkalinity consumed for each lb of NH3 Converted
   A. 8,188 lbs
   B. 66,276 lbs
   C. 6,795 lbs
   D. 58,465 lbs

8 - Which best describes the nitrification cycle?
   A. NO3 is converted to NH3
   B. NH3 is converted to NO2 and then to NO3
   C. NH3 is converted to NO3 and then to NO2
   D. NO2 is converted to NH3 and then to NO3

9 - Given the “Fate of Phosphorus” profile, why does TP reduce through the 1st anoxic zone?
   A. Phosphorus is still being released
   B. CBOD5 uptake through denitrification
   C. Low aerobic conditions create Luxury P Uptake
   D. Nitrification causes TP to be absorbed

10 - What problems will be experienced with phosphorus removal if D.O. is present in the fermentation zone?
    A. No problems … P removal will be high
    B. P release will be high but P uptake will be low
    C. P release will be hindered and P uptake will be reduced
    D. The fermentation zone should have high D.O.
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