U.S Environmental Protection Agency- Region 1 Terminates Jointly Issued NPDES Permit Agreement with the Massachusetts Department of Environmental Protection

The U.S. Environmental Protection Agency- Region 1 (USEPA) issued a notice on June 10, 2020 to the Massachusetts Department of Environmental Protection (MassDEP) that USEPA will no longer be issuing joint NPDES permits with MassDEP which has been a long standing practice, first established in the 1970’s. The notice indicated that the change became effective on June 20, 2020.

MassDEP and USEPA have been issuing NPDES permits jointly since March 1973 according to a “Memorandum of Agreement” with the Massachusetts Division of Water Pollution Control (MADWPC) and USEPA- Region 1. NPDES permits issued in Massachusetts are two permits: a federal permit issued by USEPA and a state permit issued by the Commonwealth of Massachusetts. The state permit authority has its roots in the 1966 Massachusetts Clean Waters Act which gave wide ranging permit authority to the state. The state permits were issued 1966-1972 by MADWPC (which eventually was incorporated MADEQE 1975 and into MassDEP in 1979). In 1972, the amendments to the Federal Water Pollution Control Act of 1965, which is more popularly known as the “Clean Water Act” (CWA), established the NPDES permit program. The NPDES program as outlined in the CWA allowed states to seek delegation of the program, resulting in state-only issued permits. As we know, Massachusetts is not delegated and is one of only three states (New Hampshire and New Mexico) plus some of the territories without NPDES authority. Each permit was and will continue to be separately enforceable under federal and state law. In addition, USEPA submits a request for Section 401 certification which is required for any federal license or permit which results in a discharge to a surface water (that 401 process is being “updated” by USEPA currently and faces many legal challenges).

The reasons given by USEPA-Region 1 for stopping the joint issuance process include: 1. The large backlog of expired permits; 2. The 1973 agreement was “short-term” and has outlived its purpose; 3. Massachusetts has chosen not to seek permit delegation; 4. USEPA has a goal to issue each permit within a six month period and over the next three years reissue all expired permits including some which have been expired for well over ten years.

The fact that USEPA will be issuing the NPDES permits without MassDEP as a partner does not remove MassDEP from the permit equation. A state application will still be required (there will still be a permit and compliance fee for non-municipal facilities).

(continued on page 2)
A separate permit will be issued and MassDEP will need to conduct the legal elements of the program such as soliciting public comments and handling appeals that it currently does cooperatively with USEPA. MassDEP distributed a two-page outline of their program on Friday June 19, 2020 to NPDES permit holders. MassDEP will also continue to receive a request for a 401 certification from USEPA and hold public hearings jointly. Both agencies indicate in their correspondence that they will cooperate as much as possible in the future. Permits that were public noticed prior to June 20, 2020 will still be issued as joint permits. Recent draft permits issued by USEPA reflect the change in policy as they are federal permits only and simply reference the state 401 process and that they will include any 401 requirements into the final permit.

The new process presents some “real-time” questions:

- Will USEPA Region 1 really coordinate with MassDEP on the many elements in the permit issuance process (e.g. site visits, public hearings)? MassDEP Commissioner Suuberg announced the changes recently during his Covid-19 water and wastewater operators calls. The Commissioner indicated that MassDEP would try to coordinate with USEPA Region 1 as much as possible.

- Will MassDEP simply wait for USEPA to issue permits and then make a “copy” of that permit for the state permit? MassDEP will adopt the federal permit by reference in its state permit.

- Will MassDEP have the staffing to do the full program including data tracking, enforcement and permit appeals? There are many elements to running the program besides the drafting of a permit.

The NPDES “divorce” could bring a few opportunities such as:

- Will this move help in convincing the Legislature that NPDES delegation is appropriate and get support for such a move?

- Can MassDEP issue permits before USEPA and possibly make some headway on permit elements that have long been debated by the two agencies (such as metals and nutrients which USEPA usually wins)? MassDEP will likely not follow this path and issue permits before USEPA.

- Will MassDEP issue some long overdue permits such as MWRA-Deer Island WRRF and the Boston Water & Sewer Commission’s and the City of Worcester’s Stormwater Phase 1 permits?

- Due to the swift nature of the action (the June 10, 2020 letter was received with a ten day notice of when the change would go into effect), MassDEP has been quick to take action and, in my opinion, will adjust its program as needed. MassDEP has been proactive reacting to this abrupt change and has already issued some draft state permits (see the following link for draft state permits: [https://www.mass.gov/service-details/massdep-public-hearings-comment-opportunities](https://www.mass.gov/service-details/massdep-public-hearings-comment-opportunities)

Questions about the details of this new NPDES permit arrangement should be made to the MassDEP NPDES Permit Program in Boston.

The information above is for informational purposes only. It does not necessarily reflect the official view of either USEPA-Region 1 or the MassDEP. The article was prepared by Paul Hogan, Senior Consultant with Woodard & Curran. Paul spent many years as the supervisor of the MassDEP NPDES program until his retirement in 2009.
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Email mawea1965@yahoo.com to contact

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MAWEA / NEWEA Events

NEW DATE — MAWEA Annual Golf Outing
September 30, 2020 at Heritage Country Club, Charlton MA — Originally Scheduled for Wednesday June 17
Download flyer at mawea.org

MAWEA Fall Meeting — We are working on a virtual online meeting for September. We will notify the membership by email and on mawea.org

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Our New Normal—The work continues but spread out and wear a mask
NEIWPCC Remote Learning opportunities  NEIWPCC will be continuing our remote training for wastewater operators this fall. Watch our training calendar for new opportunities. Efforts will continue to focus on essential training for those new to the field and seeking to take a licensing exam. Mini-class topics will be modules of our traditional multi-session basic municipal, basic industrial, and wastewater laboratory in-person classes. Additionally, continuing education opportunities for advanced operators is also being developed and should be available before the end of 2020.

Operator Certification Exams – PSI (the contract testing agency for Massachusetts) began opening owned and operated third-party test sites on May 1, 2020. Sites will be opened where governmental entities within a state, city, or county allow. If a site is not opened, it will be reflected on the closed list found at https://www.psionline.com/openings. This list is being updated regularly and serves as the best reference for candidates and stakeholders. It is recommended that you call the selected testing location prior to your appointment to confirm access.

Operator Renewal Deadline Extended - The Massachusetts DEP extended the wastewater treatment plant operator license renewal deadline for the 2018-2019 renewal cycle to June 30, 2020 ensuring as many essential Massachusetts’ wastewater treatment plant operators were renewed as possible.

The 2020-2021 renewal cycle is well underway. Please be sure to start earning your Training Contact Hours as early as possible, as training opportunities have decreased due to the COVID-19 crisis. Remote learning has been trending and more online classes are being developed, but online classes are in shorter blocks than in-person training, so you will be required to take more of them to add up to the 20 hours required. A listing of all approved training can be found here: https://www.mass.gov/doc/wastewater-treatment-plant-certification-program-ceu-given-by-and-course-name

If you have any questions or issues pertaining to renewing your license or changing the status of your license please contact John Murphy, MassDEP - Wastewater Operator Certification and Training (john.j.murphy@mass.gov or 617-352-3375).

For more COVID-19 information for drinking water and wastewater operators please visit: https://www.mass.gov/lists/covid-19-
If you have any questions, please contact Michelle Jenkins directly at the Massachusetts Certification Program at 978-349-2516, or by e-mail at mjenkins@neiwpcc.org.

The Technical Seminar on Title 5 Approved Technologies that was to originally take place on May 27, 2020 in Taunton, MA, will not take place in November 2020 as previously reported. Due to the situation with the coronavirus pandemic and its impact on access to in-person meeting limits we are unable to book the new Tech Seminar in 2020. Tentatively, it will be held in the same location in May 2021. As soon as the new Tech Seminar is determined, we will send out a blast with registration information.

For More Details

Massachusetts Wastewater Operator Training and Certification:

NEIWPCC Training Calendar:
https://portal.neiwpcc.org/training-calendar.asp

COVID-19 information:
https://neiwpcc.org/coronavirus-and-neiwpcc/

For more information or questions on NEIWPCC or the MWOT program, please contact us at training@neiwpcc.org or at (978) 323-7929.
When you walk around the Springfield Regional Wastewater Treatment Facility you’ll probably notice some signs. Joe’s Place, Roy’s Condo, John’s Place as well as many others. What is the origin of these signs? It started in the 1990’s when a well liked Operator with many years of service retired. He was honored with a sign at his work area. This became a tradition that has continued to this day. The honoree must have a minimum of 20 years of honorable service. At retirement they are presented with their sign and then pick an acceptable place to post it. Many Mechanics choose the machine shop where a lot of their best work was done. Operators often chose the area of the facility where they worked. A recent Lab Manager chose an entrance door to the lab to post Jane’s Place. Some are more humorous with their selections. Joe was in charge of the waste oil room for the last years of his career and thought everyone would remember his able stewardship when they brought their waste oil to the room. There are a lot of good memories and many years of hard work behind these signs. Thanks to everyone for their service.

The Many “Place’s” At The Springfield Regional WWTF

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Is there any canon more sacred in activated sludge operations than the food-to-microorganism ratio?

I have been in the wastewater treatment business since April 1978 when I started as a laborer at the Blue River Wastewater Treatment Plant in Silverthorne, Colorado. Over forty-two years ago, and the F:M was well entrenched even then. Although not particularly exhaustive, a search for when F:M was first introduced as a process control parameter in activated sludge operations comes up empty. But it remains, as it has for a long time, pervasive. It was the jumping off point, I believe, for the practice, hugely widespread, of using a target MLSS concentration to control the activated sludge process (spoiler: it can’t be). Operators frequently invoke F:M as the reason for plant upsets, either the activated sludge microorganisms are “starving” because the influent organic concentration is too low or “beyond their capabilities” because the influent organic concentration is too high. The thought process here is a direct result of how operators are taught. For example, there is this passage from, arguably, one of the most widely used activated sludge training documents in the world (Office of Water Programs, Operation of Wastewater Treatment Plants, Volume II, 7th Edition, 2007, pg. 58):

“The critical factor in any method of aeration tank control is the food/microorganism relationship and this cannot be precisely estimated for any specific plant. The operator tries to keep enough solids (microorganisms) in the aeration tank to use up the incoming waste (food). Neither too many organisms nor too few organisms should be in the aeration tank in relation to the incoming food.”

Back in the day when engineers were designing activated sludge plants without full knowledge of the science of activated sludge and the benefit of the sophisticated, deterministic models available today, F:M gave them a definitive starting point. If the organic load—pounds of BOD per day—is known, the pounds of MLVSS in the aeration basin can be calculated from a range of F:Ms known, from experience, to provide good sludge quality and, therefore, good treatment. Knowing the pounds of MLVSS and assuming a percent volatile, the pounds of MLSS needed can be calculated. From the pounds of MLSS the aeration basin volume can be calculated assuming an MLSS concentration that won’t overload the secondary clarifier. And so, back in the day, the design began; F:M was a useful design tool. But somewhere along the line, like a coronavirus jumping from animal to human, activated sludge wastewater treatment plant operators were indoctrinated in the use of F:M for process control by an unidentified someone probably from the engineering community: “You must keep the right mass of solids in the system. Must.” Thus, our problems began.

Before presenting the fundamental flaw of using F:M for process control, a dose of reality is in order. The F:M is typically, not always, expressed in terms of BOD. It takes a minimum of five days to get a BOD result, longer if your relationship with the lab is not optimum or if you use a contract lab. I have been working with a pure-oxygen activated sludge plant that controls to an SRT of 1.1 days. For simplicity’s sake, let’s call it 1 day. For that plant, the entire biomass in the reactors has turned over five times by the time the influent BOD is known. Even at a 5-day SRT, the entire biomass has turned over once by the time the influent BOD is known. You cannot control something as dynamic as the activated sludge process with a number that is, at a minimum, five days old. Your biomass today is likely very different than it was five days ago.

But then I hear this all the time: “F:M is just one of several parameters we monitor in controlling our activated sludge process.”

(continued on page 9)
FACT: Even if you’re just “watching” F:M, it is impacting, subconsciously, your process-control decisions. Stop watching it; it is doing you more harm than good (see below).

But there is something even more wrong with using F:M for control than driving down the road looking only in the rearview mirror. The equation—again, deterministic—for calculating the MLVSS concentration at an operating plant is:

\[
\text{MLVSS} = \text{SRT} \times Y_g \times Q \times (\text{BOD}_{INF} - s\text{BOD}_{SCE})/\left[V_{AB} \times (1 + b \times \text{SRT})\right]
\]

where:
- \(\text{MLVSS}\) = mixed liquor volatile suspended solids concentration (mg/L),
- \(\text{SRT}\) = solids retention time (d),
- \(Y_g\) = yield (mg MLVSS/mg BOD),
- \(Q\) = plant flow (Mgal/d),
- \(\text{BOD}_{INF}\) = BOD concentration influent to the aeration basin (mg/L),
- \(s\text{BOD}_{SCE}\) = soluble BOD concentration in the secondary clarifier effluent (mg/L),
- \(V_{AB}\) = online aeration basin volume (Mgal),
- \(b\) = endogenous decay coefficient (1/d).

Algebraically, it is a simple matter to multiply both sides of this equation by \(V_{AB}\), resulting in:

\[
\text{MLVSS} \times V_{AB} = \text{SRT} \times Y_g \times Q \times (\text{BOD}_{INF} - s\text{BOD}_{SCE})/(1 + b \times \text{SRT})
\]

\(M\) in F:M is the pounds of MLVSS in the aeration basin, \(\text{MLVSS} \times V_{AB}\). \(F\) in F:M is the pounds/day of BOD influent to the aeration basin, \(Q \times \text{BOD}_{INF}\). With these substitutions, the equation becomes:

\[
M = [(\text{SRT} \times Y_g \times F) - (\text{SRT} \times Y_g \times Q \times s\text{BOD}_{SCE})]/(1 + b \times \text{SRT})
\]

“Houston, we have a problem.”

Among other factors, this equation says that the \(M\) in F:M is controlled by the \(F\) in F:M. The fundamental question, therefore, is: How can a ratio \((F/M)\) be used for control when the numerator fixes the denominator?

**Answer:** It can’t be.

Although a painful realization after all these years, there is only one reasonable conclusion to be drawn, blasphemous as it may seem: **The F:M ratio has absolutely no place in activated sludge operations nor, for that matter, on certification exams.** Look again at the quote given above from the Office of Water Programs and note the following:

“...The operator *tries* to keep enough solids (microorganisms) in the aeration tank to use up the incoming waste (food) ...

“Tries” because it can’t be done.

*Eric Wahlberg - Wastewater Technology Trainers wastewatertechnologytrainers.com/
 eric@wastewatertechnologytrainers.com*
What Clean Water Infrastructure Looks Like

New influent structure at the Springfield facility that will accept flow from 3 new pipes across the Connecticut River. The project also includes a new pump station with a capacity of 60 MGD.
Preparing For The Massachusetts Wastewater Exam This Fall

The Board of Wastewater Operator Certification has updated the “Recommended Preparation for WWTP Operator’s License Examination” due to the NEIWPCC Massachusetts Wastewater Operator Training (MWOT) Program being offered online this fall.

The Board has come up with a checklist of recommended courses to prepare for the Grade 1, 2, 3, 4 - Municipal Exam and the Grade 1, 2 – Industrial Exam. Expect to see these checklists and the NEIWPCC MWOT schedule the week of August 10. A checklist and schedule for the advanced municipal and advanced industrial recommended courses will be released in early fall. You will be able to find the checklist on the MassDEP and NEIWPCC websites. There is the possibility that some of the advanced courses may be able to meet in a hybrid type setup with online courses and then small group gatherings to discuss questions and problem solving later this fall.

Instead of signing up for the six week Basic Municipal class, the class will be broken into 2-3 hour training segments. The checklist will have dates of each class and layout of all topics that need to be taken so the person preparing for the exam can see what areas they have been trained in and what areas still need to be addressed.

The checklist will also include alternatives to the NEIWPCC MWOT Program. The Board is aware it may take a combo of training approaches this fall to prepare for the wastewater exams. There are a wide range of courses available (online, correspondence, manuals/book study, workbooks, vendor training, YouTube videos, asking questions of experienced operators at your facility or through MAWEA, other training organizations, other state training programs). If you have any materials you use to prepare operators for exams or courses that you think would be helpful to the checklist let me know and I will make sure they are included.

For operators looking for TCH courses for license renewal there are plenty of online opportunities coming out from EPA, NEWEA, MAWEA, MWWA, Rural Water, RCAP, Vendor Training just to name a few. Don’t wait until the end of the renewal cycle to start looking for training.

Email: john.j.murphy@mass.gov

Welcome New Members!

Wilfred Bernier
Patrick Murphy
Adam Kleeburg
Jonna Paquin
Joshua Coty
Timothy Martin
Peter Clough
Ethan Connolly
Craig Burmeister
Update on the NEWEA Laboratory Certification Program

By Tim Loftus

The new and improved Analyst 1 Exam will soon be available at a test site near you! The NEWEA Laboratory Practices Committee is excited to give advance notice of the updated Analyst 1 Exam under the NEWEA Laboratory Certification Program. With the addition of new questions and tweaked existing ones, the subject matter better reflects the knowledge base required for today’s wastewater/clean water laboratorians in the New England region. We expect the full program to be in place within the next couple of months. As in the past, a laboratorian will be able to take a proctored test at scheduled times of the year. And starting soon, the Analyst 1 Exam will be available digitally through a professional exam service, providing many more opportunities for a candidate to take the exam with minimal travel commitment.

The Analyst 1 Exam covers ammonia – N, BOD/cBOD, total residual chlorine, dissolved oxygen, coliform, microlife, pH, phosphorus and orthophosphate, quality control and quality assurance principles, safety, sampling, solids, and general laboratory knowledge. About 12% of the questions are math-based. The Analyst 2 Exam, which will cover more advanced subjects, is expected to be updated in early 2021.

I also want to put in a plug for the Collections Committee (pun intended). They, too, offer a NEWEA Certification Program. The Laboratory Practices Committee and the Collections Committee have been working diligently with the NEWEA Certifications Committee and staff to update exams, qualify proctors, work with a professional testing service, and to standardize all aspects of our combined certification programs. Now we are working on the final touches to roll out these programs. More details to follow.

The NEWEA Laboratory Certification Exam program was developed almost three decades ago to help provide technical training to wastewater personnel throughout New England. Successful completion of the Analyst Exam confirms the technical knowledge to work in a

Colleagues In This Time Of COVID-19

By Tim Loftus

Quick! No thinking. What is the first thing you see when you look at these two images?

![Images of portraits turned upside down]

In general, right-handed people usually see a duck and a face first. Left-handed people usually see a rabbit and an Inuit first.

So, what does this have to do with our jobs? Mostly it is to show that we all have a different perspective on how we view life around us. When we are living stress-free, things tend to go well. We get along with those around us, and we are happy – or at least we can negotiate through our differences.

At the time that I write this, we are more than four months into a big COVID-19 disruption. And it does not look like it will be ending soon. We may have many more months of using face masks, social distancing, changing work schedules, some losing jobs, travel restrictions, entertainment restrictions, more people getting sick and some others succumbing to the virus. We all suffer the effects of underlying stress.

Let’s just say that many of us are getting...grumpy. I admit that I am more easily annoyed now than in the past with colleagues. It’s not that they are performing tasks incorrectly, they just aren’t performing these tasks the way I would do it. This is such a nonissue when everything is going well; not so much with an underlying current of stress flowing through our lives. It’s times like these that I have to remind myself that others do have non-Loftus ways of performing tasks, and at the end of the day, that is okay.

The COVID-19 disruption has certainly turned our world upside down. Sometimes it is a good thing with colleague interactions to mix it up a bit, to look at things from a different perspective. Perhaps there is a better way than my way to perform a task. Speaking about upside down, check out the portraits below of my two buddies. Turn them upside down and look again. Keep in mind the perspectives of your colleagues in these extraordinary times.