NewsLeaks

FALL/ WINTER 2018

Vermont Rural Water Association

Vermont Rural Water Association....Supporting Water and Wastewater Systems since 1982

VRWA Social Media – Network with us now for the latest industry updates!

by Shaun Fielder,
Executive Director

VRWA is now actively posting information updates and showcasing the good work of the association and all of those we work with and support in the Vermont water sector. We are steadily building our follower base and please consider connecting with us. Our experience becoming more active with social media is that it is a great opportunity to build up an important network with all others involved with the water sector. Post activity for VRWA has included establishing connections with instate systems, vendor partners, and our parent group National Rural Water Association, funding partners, other non-profits, and the customers who receive the benefits of public drinking water and wastewater service. Our goal is to get information to you that is pertinent to your job function and posts have been as varied as updates on team member onsite activity and training to reminders on our training sessions and some light hearted fun topics as well. We often work in #ruralwater and #qualityontap to highlight the important of VRWA's efforts and more importantly your efforts in the industry to supply public drinking water and wastewater service. Both are

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Wastewater System Profile:

Richford Lagoon System Working to Meet New Phosphorus TMDL Requirements

by Elizabeth Walker, Wastewater Systems Specialist

The Town of Richford is located in the Northeast corner of Franklin County bordering Canada. As with all systems in the Lake Champlain Watershed the Town of Richford Wastewater Treatment Facility (WWTF) has new phosphorus limits it is required to meet. The WWTF discharge flows into the Missisquoi River meandering its way westerly into Missisquoi Bay.

So what exactly did these extra steps entail? First thing is to introduce the operators that are making all this happen, Chief Operator Daryl Fithian and Assistant Chief Operator Dave West with Simon Operation Services (SOS). They are supported by their Supervisor Kirk Patch. Daryl has been in Richford since September 2014 and Dave since December 2013.

This .380 MGD aerated lagoon system constructed in 1970 serves a community of 588 residential and 6 commercial customers. The operators of the system have been taking extra steps optimizing its process to improve effluent quality. They have been trialing different types of chemicals to precipitate phosphorus. Installing an efficient system for sludge removal and dewatering. Making significant improvements in the collection system to reduce infiltration. All of this being done to keep operating costs down and to reduce the need for installation of additional forms of treatment that would ultimately result in significant increase in the cost to its users.

Kirk Patch and Daryl Fithian

Starting in April 2016 they began trialing a new product by Neo Water Treatment RE100 which lasted for three months. They switched back to an alum product until spring of 2017 when they began using a higher strength Neo product RE300. So far results look promising, the RE300 is a rare earth chloride solutions containing cerium chloride ($CeCl_3$) and Lanthanum Chloride ($LaCl_3$) as active ingredients. RE300 achieves phosphorus removal at a 1:1 molar ratio of RE:PO_4.

As a result, much less of the RE300 product is needed to obtain excellent

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Who We Are

Since 1982, Vermont Rural Water Association has supported water and wastewater systems across the state. We provide many services, including training, source water protection planning, and onsite assistance.

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Vermont Rural Water Association

Letters

Diana,

Good day! I would like to share some great news. Due to our complete evaluation of the water system and identifying all contributing sources of leaks here at North ave. co-op. The recent water bill not only shows the spike has gone down we are now operating $1,500 below what we had been prior to the spike and this does not include all repairs due to the billing period. I am confident that the next bill will show a greater savings then this. Because of this I will be including your services in my yearly preventive maintenance program for NAC. I have been providing services in manufactured housing communities (parks) for over 28 years and have seen the effects that high water bills have on parks and there budget ,are usually the largest expense that contributes to higher rent increases. Due to our efforts and findings we have prevented this from having to happen here at NAC. As more parks are being sold and converting to Co-ops and becoming resident owned communities I will be recommending to them to include your services and show the benefit of leak detection and its value to the operating budget. It has been a great pleasure to work along side of you and look forward to doing so in the future. If I can be of any assistance to you feel free to contact me. Again thanks for your hard work and dedication !

Jay LeClair
JL Contracting Home & Manufactured Housing Services

Letters of Support

If VRWA and our team has assisted you or your system and that was valuable for you, please consider submitting a commendation item to Shaun Fielder (Executive Director). Letters, email, hand written notes are all acceptable and appreciated. We are always collecting these and sharing with legislative contacts to illustrate the value and need for rural water program funding and the services and support VRWA is able to offer all across VT. Thanks for your consideration.

News on Tap

VRWA Annual Conference & Trade Show

Please mark you calendar for our 2019 conference and trade show at the Lake Morey Resort in Fairlee on May 8 and 9, 2019. We look forward to hosting everyone, plan to see registration information posted by us in the first part of 2019.

Water Sector Apprenticeship Program

VRWA has received notice from Vermont Department of Labor we have an officially recognized registration number for our Water Sector Apprenticeship program. We are very pleased to have this in place and are moving full steam ahead on administrative set up to get systems involved as sponsors and most importantly get candidates enrolled as apprentices. We anticipate having all details in order by first quarter 2019 and standby for related information updates.

Happy Holidays

Happy Holidays to all of you from the VRWA team, we wish you the best as we wrap up 2018 and head into a New Year!

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phosphorus removal results as compared to iron or aluminum based coagulants. Although this product is considerably more expensive than the traditional iron and aluminum based coagulants the reduced volume offsets the increased costs. In order to further reduce costs the operators made arrangements to receive the raw material and mix it themselves into the liquid form thus not having to ship the weight of water. Another advantage to the product is it does not freeze, has an unlimited shelf life, and has little effect on pH. Results to date look promising but the trial period is not over and there is consideration for possible dual point injection to further improve results. They have already moved the injection point from a lower crossover pipe to another elevated crossover pipe between lagoons 1-2 that is more conducive to mixing with the supernant water as opposed to from the very bottom of the lagoon where there is the layer of sludge.

They may try at some point adding another point of injection at the head of lagoon 1. Below is a graph showing the monthly pounds and when certain changes have taken place. What is significant in what is shown below is the change in operation of shutting off discharge on weekends to operating 24/7 beginning in April 2017. This was made possible by putting the telescoping valve back in operation. The 2016/2017 April spikes was a result of high infiltration and starting up on a Monday morning with a big rush of effluent flow carrying phosphorus with it. The results from regular consistent flows has shown to be advantageous in keeping the effluent phosphorous number lower and more consistent during peak flows.

The phosphorus total annual pounds limit for Richford is 231 lbs. down from 984 lbs. in its previous permit. Operators will continue making improvements to the collection system and optimizing the use and management of chemicals for phosphorus removal as will be outlined in their phosphorus optimization plan.

Although there is not a lot of influent phosphorus data Richford operators recently began tracking that and it is averaging around 4 mg/l TP which is not uncommon for residential wastewater. They will be doing more influent and other points in the collection system to have a good baseline for influent phosphorus. The effluent tracking of the results is important in telling the story of progress made. Table 2 (next page) is another chart used for tracking their effluent results as it relates to the rolling annual pounds of phosphorus and the limits associated with their permit.

Sludge production in a lagoon system can always be a bit of a challenge and the operators have made significant improvements in the handling. Sludge handling is done utilizing a sludge sled that pumps solids to a recently installed tank purchased used in Massachusetts. The operators poured the pad and bolted the conical steel frame for the tank and installed all the plumbing connections for an overall cost of $20,000. This project resulted in significant savings over purchasing new and doing all the work themselves other than the excavation for the concrete pad. The original budget for installing the tank was $25,000.

Table 1

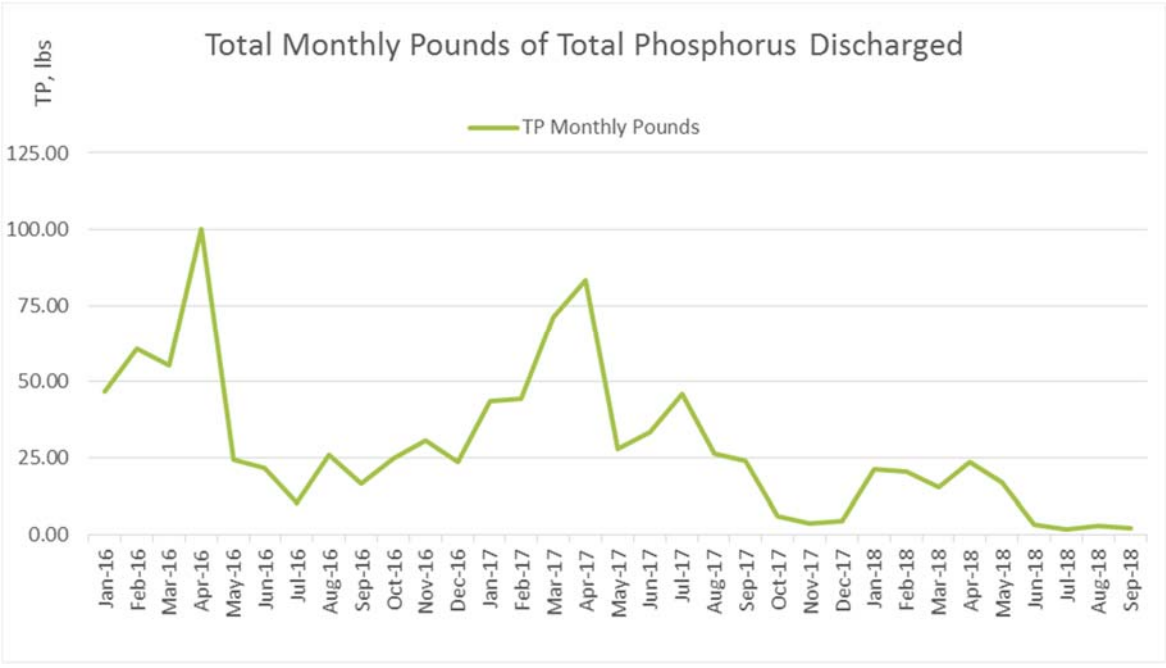
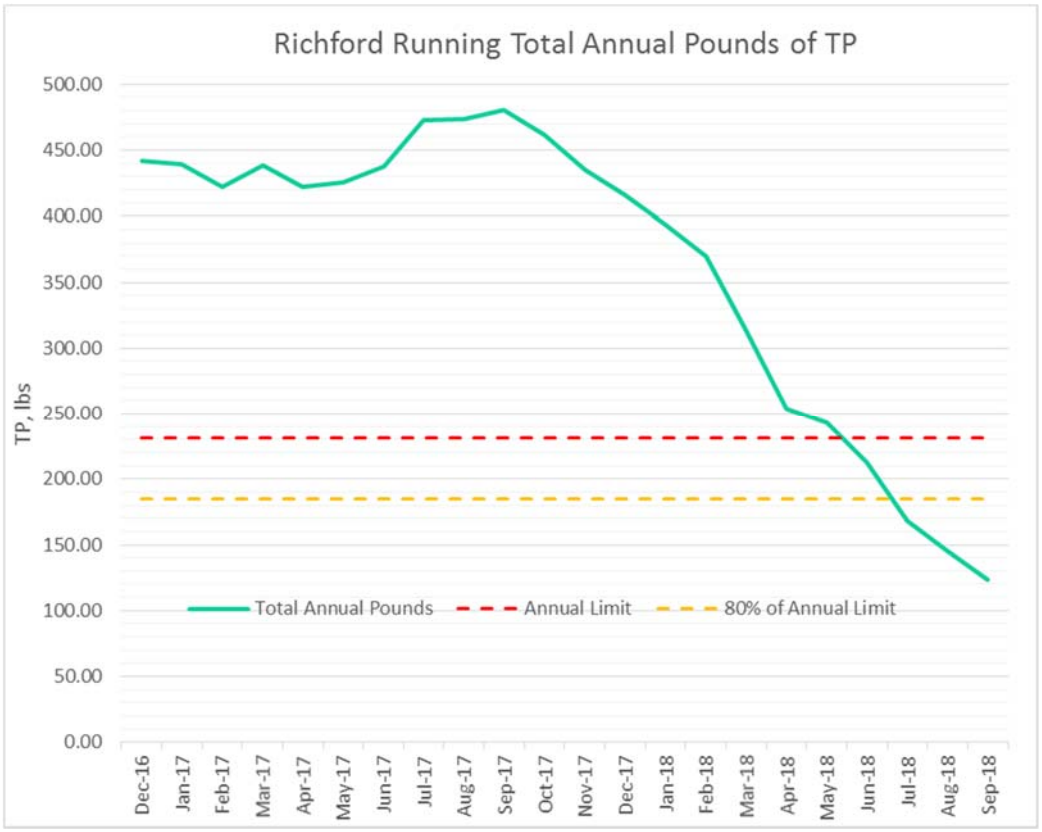


Table 2



Sludge is dewatered using polymer thickening solids from a little less than 1% to 2.5 - 3.0%. The decanted water is pumped back to the head of the facility, previously it was pumped to a location near the effluent end of lagoon 2, another important improvement in reducing phosphorus. Presently the dewatered sludge is disposed of and handled at the Troy/Jay facility.

The following photos show chemical storage building, sludge storage tank, the sludge sled and the sludge tank.

The collection system is another important area that Richford is working on to reduce infiltration and ultimately reduce phosphorus loading. This collection system dates back to 1970 with an upgrade taking place in 1986 to separate stormwater. Richford developed a 5-year plan to repair and/or replace aging manholes and lines. Work began this summer and addressed some of the worst areas. Another area that will be addressed and in some cases a little more difficult is the elimination of sump pumps from individual residences. One really great achievement that should not go with out mentioning is Richford eliminated their last CSO last year.

No doubt much has been done and with continued planned improvements the Town of Richford is hopeful that it will not be necessary to spend capital dollars adding significant additional treatment resulting in increased user costs. Daryl Fithian welcomes any operators to visit and see how this system has been modified in response to the new more stringent discharge requirements. He may be contacted by e-mail at darylfithian67@gmail.com.

Elizabeth Walker can be reached at 802-660-4988 ext. 352 or ewalker@vtruralwater.org

Yankee Ingenuity

Continuing Stories of System Innovations

By Wayne Graham, Wastewater Specialist

This column details unique solutions to difficult problems that operation specialists come up with every day. Below are several cases of them solving large problems, saving money and making life at their second homes (treatment plants) a little easier.

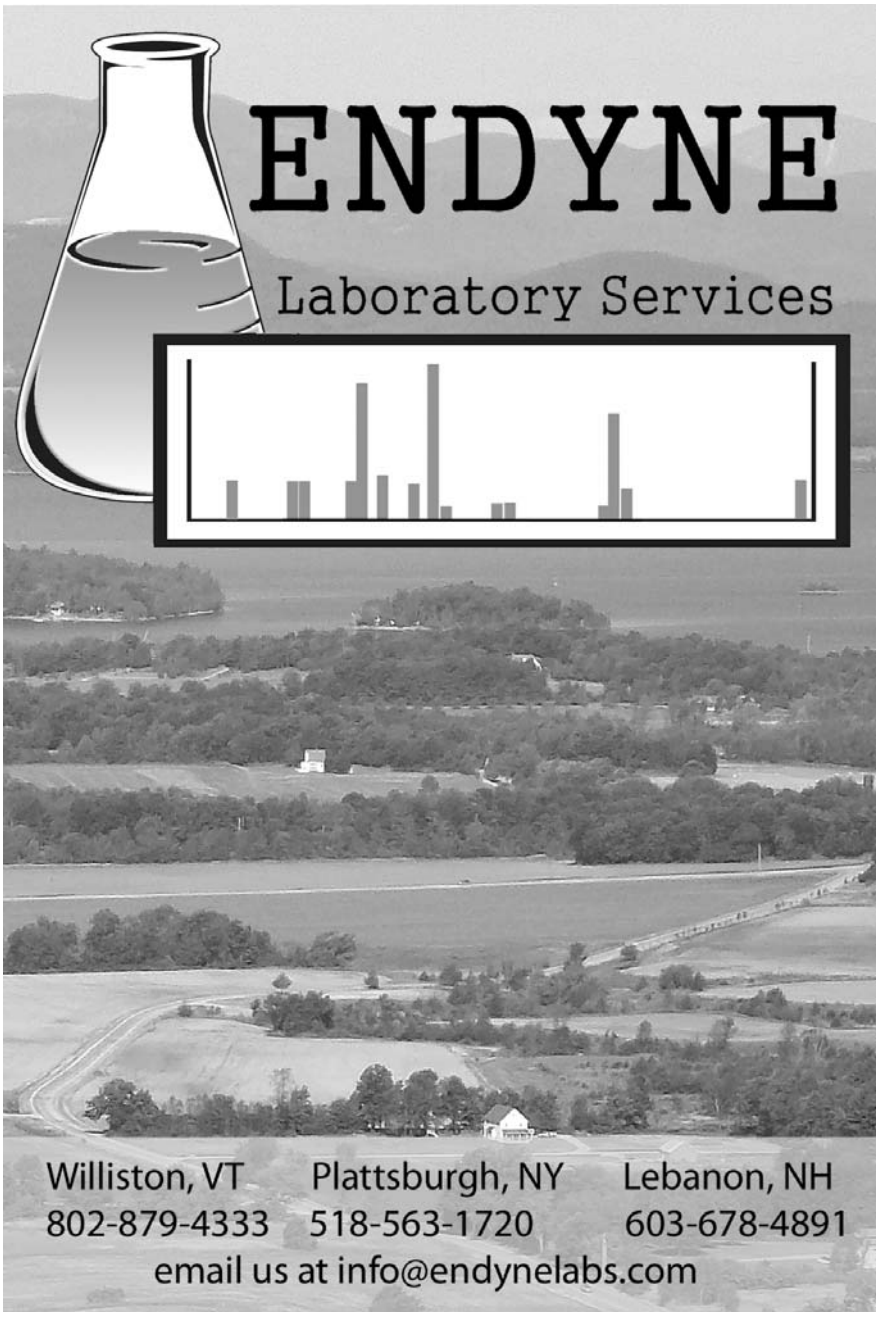
- Ever encounter a pump so bound up with debris and "flushable wipes" that you couldn't remove the tangled mess? The ever inventive Buddy Ball, superintendent Lunenburg FD 2 water and wastewater systems found a quick solution to this issue by using a curb stop screw auger tool to remove the blockage, this saved him from having to dismantle the pump. As a safety note, the days of reaching into a pump with your hands are long gone, hypodermic needles and razor blades make that a very hazardous thing to do. Take Buddy's cue and use tools or pliers to remove such debris, and you might want to invest in puncture resistant gloves as well when working on pumps or handing screenings. See Pic below:

- Collection system smoke testing is a great method for wastewater systems to take advantage of. From identifying inflow/infiltration sources to finding illicit discharge issues into our waterways, it's a tool that we should all use. Smoking up neighborhoods can be a little intimidating to residents so Chris Robinson of the Shelburne Wastewater System uses signs pictured below (along with door hangers and public notification) to inform folks. With a large complicated underground infrastructure the crew at the Montpelier public works made a smoke testing box that fits over square catch basins and also features a hose attachment for smoking pipes and culverts. See pics:

- Operators at Newport City solved a condensation issue at the water filter plant by adding foam insulation to piping and the tanks. Great idea Pedro and Tim and it looks awesome!

If you have interesting ideas that you want to share, send them to me; we will include them in News Leaks in the future. I also encourage you to tour other facilities and share ideas; you will find that networking with other operators can be very beneficial. Several organizations can also help; VTWARN, GMWEA, VT Watershed Mgmnt. and of course, VRWA!

Wayne Graham can be reached at 802-660-4988 ext. 319 or wgraham@vtruralwater.org



Splash-less Bleach

By Diana Butler, Water Systems Specialist

It has been a very active warm weather season for small water systems. The drought and high temperatures have added additional headaches to the already action packed time of year. A very specific headache: total coliform positives. Seasonal water systems generally perform a required start-up shock chlorination disinfection procedure. All systems may find themselves in a situation that requires system disinfection. It is important not only to know and understand how to disinfect your system properly, but also what to disinfect with. Household bleach has commonly been used for this procedure. All bleaches are not the same. Clorox Splash-less bleach contains 1-5% Sodium Hypochlorite, but also contains several other chemicals you do not want in your water supply or system. The ingredient list in Splash-less Bleach from the Clorox company website (www.clorox.com):

Water
Water, also sometimes listed on product labels as aqua, is the most widely used of all solvents. It is a colorless, odorless and flavorless liquid and serves as the base of many cleaning products.

Sodium Hypochlorite
Sodium hypochlorite is an essential ingredient in bleach and a variety of cleaning products, serving different functions depending on the concentration level and product formulation. For example, in Clorox's EPA-registered disinfecting and sanitizing products, sodium hypochlorite is the active ingredient that helps to kill certain germs. In laundry and cleaning products it can help clean, remove stains and whiten. In Liquid-Plumr® products, it helps break down tough clogs.

Sodium Chloride
Sodium chloride is also known as table salt and rock salt. It is commonly used in detergents, hand dish soaps, liquid laundry soaps, and fabric softeners to thicken and stabilize formulas.

Cetyl Betaine
Cetyl betaine is a surfactant used in cleaning and laundry products. Beyond its general ability to clean soils, it is used to thicken cleaning formulas and stabilize foam.

Sodium Carbonate
Sodium carbonate, also known as washing soda and soda ash, is an alkalinity builder, which is added to laundry detergents to improve cleaning efficiency. It also helps remove alcohol and grease stains from clothing. Builders act like water softeners to remove calcium, magnesium and other ions found in tap water that can interfere with the cleaning process.

Sodium Chlorate
Sodium chlorate is one of the substances that results from the natural breakdown of sodium hypochlorite bleach. It further breaks down into sodium chloride (table salt) and oxygen.

Sodium Hydroxide
Sodium hydroxide, also known as caustic soda or lye, is used as a pH adjuster in cleaning products. As an alkali, it is useful in cleaning products for removing soils that are fatty, oily or acidic.

Sodium Polyacrylate
Sodium polyacrylate is used in laundry detergents to prevent soils from depositing on fabrics during the laundry cycle.

Sodium Xylene Sulfonate
Sodium xylene sulfonate is generally used to stabilize other ingredients in a cleaning product to maximize effectiveness of the formula. It is also useful as a co-thickener (in combination with other ingredients) in cleaning products.

These chemicals could damage your well, system components, and are potentially harmful to water aquifers. Splash-less bleach foams because it contains a surfactant (soap). The cleaning properties of this product are ideal for laundry, but possibly disastrous for a drinking water system. Do not let a total coliform positive lead to larger problem for your system. It is critical to establish, understand, and implement adequate and appropriate system disinfection procedures.

The Vermont Drinking Water Supply Rule states that all products or chemicals which may come in contact with water intended for use in a public water system shall meet American National Standards Institute/NSF International Standards, specifically ANSI/NSF Standards 60 and 61.

“Our experience becoming more active with social media is that it is a great opportunity to build up an important network with all others involved with the water sector.”

“VRWA Social Media” continued from cover

critical to public health and environmental protection and just as important the life blood of economic activity in all Vermont communities.

VRWA is using the social media tools to boost regular communications to supplement our email blasts and website posts. If you are new to Twitter or Facebook and aren’t sure if this is for you we understand but will point out these platforms are an effective way for getting quick and pertinent updates delivered directly to you. If you are having trouble with the technology on set up phase and or ongoing use, remember to use the help tools offered by given social media tool. VRWA anticipates additional social media tools such as YouTube in the future and for now please follow us on Twitter @vermontrwa and like our page on Facebook @vermontrwa

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