Enter Again Stage Left——The Sludge Farmer From Newport——Arnold Greenleaf.

Arnold has pioneered and refined the use of the synthetic fabric Geo-bags to dewater and store large volumes of sludge from his Treatment Lagoons for several years now. He has demonstrated that this methodology can save a municipality hundreds of thousands of dollars over contracting for a lagoon sludge cleaning and can also be used on a continuous basis to remove sludge much like an activated sludge plant would waste to a sludge holding tank. You must be willing to experiment and to do the physical labor required to set up and operate the system. The type of polymer used as well as the dosage is important in that you can blind the surface of the textile bag and prevent proper water drainage. PolyAluminum Chloride (PAC) works well in that it flocculates the sludge and also ties up the dissolved phosphorous in the sludge solids and does not gum up the bags surface like some polymers do.

This year Arnold has modified this process so as to enhance bag drainage by using tire chips under the geo bags. Also, to improve on the sleeve connection that ties the sludge feed hose to the bag Arnold has rigidly supported this connection as seen in picture #1 above.

The Continuous Lagoon Sludge Removal Process —is easily accomplished by determining were the sludge pockets occur in your lagoons over time and these sludge pocket areas are similar to clarifiers in an activated sludge plant. With a portable pump you just pump out these sludge pockets to the Geo-bag. A bi-annual sludge blanket monitoring program must be undertaken to learn were the sludge pockets occur in your lagoons so that you can locate your pump suction line correctly.

Bear in mind that a continuous process of removing some bottom sludge from a lagoon will improve effluent quality in several ways. Less blanket means less nutrients will be re-released into the supernatant from the anaerobic sludge layer during spring turnover. This would result in less nutrients available for algae blooms which are the leading cause of lagoon permit violations and less PAC required in your flow process for Phosphorous removal.
Somersworth WWTF Receives NHWPCA 2006 Plant Of The Year Award –

After a facility inspection and application verification the NHWPCA Board of Director’s is pleased to announce that the Somersworth Wastewater Facility has been awarded the 2006 Plant of the Year. This award will be presented at the NHWPCA Winter Meeting in December.

2007 NHWPCA HIGH SCHOOL SCHOLARSHIP AWARDS

The NHWPCA Scholarship Committee is pleased to announce the recipient of this year’s $1000 High School Senior Scholarship Award is Jesse Towne of Bristol NH. Jesse attended Newfound Regional High School and plans to major in Environmental Science at Berlin Vocational Technical College this fall. Congratulations to Jesse in that he has been selected amongst a field of very talented applicants. This year the NHWPCA Board of Director has chosen to award two additional $500. Scholarships in celebration of the 40th Anniversary of the NHWPCA. The recipients of these two scholarships are Carly Gaudette, and Samantha Ray. Carly will be attending the University of Maine this fall and we wish her good luck. Samantha will be attending either UNH, Colby Sawyer or Dartmouth College and we wish her god luck as well.

NEWEA Operator Exchange Program Article

By Nick Konstantoulakis

First Class! In one word that was my experience in the Operator Exchange Program sponsored by NEWEA Maine Ops. I had the opportunity to participate in this program with the New Hampshire Wastewater Treatment Association. I also had the honor and privilege to be a guest for the 40th Anniversary Meeting of NHWPCA Board of Directors.

My first stop was with the Nashua Wastewater Treatment Facility in Nashua, New Hampshire. I was given a tour by the plant’s Director, Mario Lelecac and the Chief Chemist, Nancy Lesieur. This plant has a design flow of 16MGD and an average flow of 13MGD. Presently the facility is being renovated to take on additional flow. I was impressed with the fact that the SCADA (Supervisory Control and Data Acquisition) was located at a variety of stations throughout the facility for easy access to concerned operators. The most impressive part of this facility to me was the digesting process—a 1.3 million-gallon egg-shaped digester. This is a process that I had only read about. To actually see it and climb the 125 steps to the top was a special treat. Wasted sludge is blended, dewatered then fed into the digester. The sludge then sits for twenty days at a constant temperature. Methane gas that is produced is recycled back into the plant’s heating system. After twenty days, the sludge is dewatered and sent to a compost facility.

My next stop was Manchester, New Hampshire, to tour the Manchester Wastewater Treatment Facility. I should mention here that the facility I work at in Mechanic Falls, Maine has a design flow of 1MGD and an average flow of around .200MGD. I should also mention that I’ve only been an operator for two years. The Manchester facility sits on the shores of the Merrimack River, and serves a community of roughly 130,000. This facility processes 33MGD with a design flow of 80MGD. This place was a jaw dropping experience! The Maintenance Supervisor, Kirk Ray (someone should place silver stars on his shoulders and call him “The General“) conducted the tour. I knew I was in for something special when Kirk showed me the six centrifugal pumps that could displace up to 33MGD each! The pride and joy of this facility was its’sludge handling process. The wasted sludge is incinerated! The sludge is first dewatered from gravity thickeners, then pumped to three centrifuges for additional dewatering producing solids of 15% and 21%.

Continued page 11
The Association got to experience another exciting first this year by being a part of NH Chronicle. WMUR anchors Tom Griffith and Tiffany Eddy as well as crew members Donna Smith and Ryan Murphy arrived at the Franklin WWTF on May 21, 2007 to tape introductory segments for "Clean Water Week". It was an exciting day as the wastewater industry would finally get some air time about what they do and how they help protect NH waters from pollution. The crew focused on aspects of the process, such as the purpose of the aeration basins. They were very intrigued by the SCADA system and Tom Griffith was very close to shutting a pump down in Center Harbor! They showed a genuine interest in our profession and expressed appreciation for all you do.

Then, on May 23, 2007, Donna and Ryan arrived at the Dover WWTF to tape a segment with your president, Ray Vermette, about the wastewater process. They interviewed Ray about how a wastewater treatment facility works, the association's involvement in the industry, potential career opportunities, and struggles associated with achieving adequate funding from the community. Ray did an excellent job covering all the important topics during his interview and made the industry as well as the association proud. WMUR did a great job editing to include all our topic requests and getting the important information out to the public. The crew was so easy to work with and they were impressed by our hospitality. This was a huge success for the association and the industry!

We would also like to extend a huge THANK YOU to Bruce Kudrick who made the initial contact with WMUR and is the reason the Chronicle segment even existed. He has been a tremendous asset to the industry and the association. Bruce has dedicated himself to the wastewater profession for 30 years and continues to offer his help and expertise to others, without any need for recognition.
Recent Changes in 40 CFR 136

Below is a synopsis of notable changes in 40 CFR 136 from the Federal Registers dated March 12, 2007 (effective April, 11, 2007) and March 26, 2007 (effective April 25, 2007). This handout is only a guidance document. All operators must read the Federal Register 40 CFR 136 (specifically 40 CFR 136.3) for a full explanation of the changes.

Many samples, but not all, may now also be collected in additional types of containers besides just polyethylene and glass. New containers include low density polyethylene, fluoropolymer and any plastic that is made of sterilizable materials. See Table II Footnote 1 in 40 CFR 136.

Temperatures for storing samples after collection have increased to ≤ 6 °C from less than ≤ 4 °C. Bacteria samples may continue to be stored at <10 °C. See Table II in 40 CFR 136.

Bacteria samples analysis should begin immediately within two hours of collection. The maximum transport time to the lab is six (6) hours, and samples should be processed within two (2) hours of receipt at the lab. See Table II Footnote 22 in 40 CFR 136 in March 26, 2007 Federal Register.

EPA has clarified that the composite sample holding time now starts at the end of composting instead of at the start of composting. See Table II, Footnote 4 in 40 CFR 136.

Deleted test methods. If a deleted test method is cited in a NPDES permit, the permittee may continue using that test method until permit reissuance or permit modification. However, for data quality purposes EPA would prefer that the permittee use the new EPA-approved test methods. If the permittee is currently using a test method not cited in its NPDES permit, the permittee must use a new approved method.

Many test methods have been added and deleted. DES recommends that permittees examine Table IB in 40 CFR 136 to ensure that the current test methods used for NPDES permit compliance are still acceptable. Perhaps the biggest change for New Hampshire permittees is the elimination of EPA Method 1103.1 for E. coli analyses and the approval of EPA Method 1603, Colilert and mColiBlue-24. See Table IA in 40 CFR 136 for a complete list of approved biological methods for wastewater.

If you have any questions, please contact your inspector: Thomas Croteau 271-2985, Stephanie Larson 271-1493, or Roy Gilbreth 271-1494.

40 CFR 136 may be found on the web at www.epa.gov/epacfr40/chapt-l.info/chi-toc.htm.

Members of the NHWPCA at the yearly outing at Ellacoya State Park. You name them. I can only say it looks like the back of Steve Clifton's head at bottom left.
Tom Corey Retires
Tom Corey, former Superintendent of the Manchester WWTF, retired recently after a long successful career in the wastewater field. Tom started in this field many years ago as a mechanic at the Concord Wastewater Treatment Facilities and was exposed to the many problems involved in plant start-ups and routine maintenance. He decided to pursue a degree in management which he achieved and wasted no time putting it to use as Superintendent of the Manchester WWTF 20 years ago. Tom guided the Manchester WWTF thru one upgrade after another with his office overlooking the changing landscape of contractor trailers and ripped up tanks and piping for years on end. Odor control was one issue that Tom solved for the Facility and now all tanks are covered. Being a tough survivor through all of these issues, Tom emerged at the other end of the Manchester WWTF tunnel unscathed as was his nature. Anyway we all wish Tom a rich retirement and will miss him at NHWPCA meetings.

Duane Walker Retires
Duane Walker has developed his career in this field of wastewater treatment for 39 years. Duane started as an operator in the Newmarket WWTF way back in 1968. Duane remembered the first meetings being held to create the New Hampshire Water Pollution Control Association at his Facility. Duane's Grade 3 Wastewater Operators License number is — #26 which proves how long he has been a certified operator. Duane says that he has seen the incredible cleaning up of the Oyster River and Great Bay over the years with kayakers and canoeists on the river all the time now.
Duane has been the Superintendent of the Durham WWTF for a great number of years and has seen that Facility through numerous upgrades. Duane has also been a faithful member of the NHWPCA attending many clambakes as far back as when they were held at Brown's in Hampton.
We will all miss Duane and wish him the best in his retirement.

Merrimack WWTF— Jim Taylor and crew now enjoy this scenic view of the site where the old trickling filter once stood and was removed, during the major facility upgrade recently undertaken.
** Dilution Solutions **
by Tim Loftus

You have a 5.0 mg/L phosphate standard that exceeds the upper test limit for the low-range phosphate analytical procedure. For it to be considered adequate for a QA/QC known-concentration sample you'll need to dilute it to a 0.2 mg/L concentration. Can you easily and accurately make this dilution?

Or your 6 N sodium hydroxide solution is too strong to properly adjust the pH of BOD samples. Instead, a 1 N solution would give greater control. How much of the 6 N solution would you need to dilute to get a 1 N solution?

There are also many other instances in a wastewater laboratory where the dilution of an acid, a base, or a laboratory standard is required so that when the resulting solution is used in an analytical procedure, it will help you attain the most accurate result.

The formula for diluting these types of solutions is simple:

\[
(\text{volume}_A)(\text{concentration}_A) = (\text{volume}_B)(\text{concentration}_B)
\]

Here are two examples using this formula:

#1) You want to make 250 mL of a 0.20 mg/L phosphate solution from a stock solution of 5.0 mg/L. How much of the 5.0 mg/L phosphate stock solution will you need to dilute to 250 mL so that the resulting concentration is 0.20 mg/L phosphate?

Put the information into the formula: 

\[
(250 \text{ mL})(0.20 \text{ mg/L}) = (X \text{ mL needed})(5.0 \text{ mg/L})
\]

Then solve for X:

\[
X = (250 \text{ mL})(0.20 \text{ mg/L})/(5.0 \text{ mg/L}) = 10 \text{ mL}
\]

Take 10 mL of the 5.0 mg/L phosphate solution and dilute it to 250 mL with distilled water (10 mL of solution with 240 mL water). The resulting solution will be 250 mL with a concentration of 0.20 mg/L phosphate.

#2) You have a 6.0 N sodium hydroxide solution from which you want to make only 75 mL of a 1.0 N solution.

Put the information into the formula:

\[
(75 \text{ mL})(1.0 \text{ N}) = (X \text{ mL needed})(6.0 \text{ N})
\]

Then solve for X:

\[
X = (75 \text{ mL})(1.0 \text{ N})/(6.0 \text{ N}) = 13 \text{ mL}
\]

Take 13 mL of the 6.0 N sodium hydroxide solution and dilute it to 75 mL with distilled water (13 mL of solution with 62 mL water). The resulting solution will be 75 mL with a concentration of 1 N sodium hydroxide.

This formula is good for almost any dilution needed in the laboratory, from phosphate and metal standards, metal salt concentrations for jar testing, and acids and bases for sample pH adjustment.

There are some exceptions to the accuracy of this type of dilution. When you use an acid or base for titration in analytical procedures, then you should standardize the acid or base after dilution to confirm its chemical strength. Acids and bases tend to lose some of their strength, especially low concentration ones, when exposed to the atmosphere or are diluted. However, using this formula to dilute the acid or base will get you very close to the desired concentration.

Don't forget that a diluted solution cannot be any more accurate than the stock, or parent, solution. In fact, any form of dilution will lessen the accuracy of the final solution. So, to maintain the integrity of a dilution, always be sure of the accuracy of the stock solution and make your measurements using type A glassware.

The information in this article is very general. As usual, check your federal, state, and local regulations. You may have additional regulations or requirements that you must meet.

If you have any questions, suggestions, or comments, contact NEWEA Lab Practices Committee Chair Tim Loftus at (508) 949-3865 timloftus@msn.com. For more information on the NEWEA Laboratory Practices Committee, please contact Tim Loftus or Elizabeth Cutone, NEWEA Executive Director, 100 Tower Office Park, Woburn, MA 01801, (781) 939-0908, ecutone@newea.org.

All past articles are posted on our website. Go to www.NEWEA.org and follow the link to the Committee Pages then to the Laboratory Practices page.
Wow, I never thought of myself as an old timer in the Wastewater field, but now that I think about the last 24 years I am an old timer and proud of it.

Time has gone by so fast and it seems like yesterday I was working in Franklin as an entry level operator and Wes Ripple as my mentor. His training and commitment to the Wastewater field has been the core of my career.

I think one of my cherished memories had to be in Ashland. They have an aerated lagoon system right by the south bound lane of interstate 93 and a woolen mill (LW something) was the biggest user.

As I remember it. It was clear sunny day in July, the wind was blowing from the west at a petty good rate with gusts from time to time. All in all it was looking like a nice day. Well at about 10 am the WOOLEN MILL had a soap spill, leak to the sewer and into Ashland’s aerated lagoon.

The next thing we new, was that MR. Bubbles lives, the first lagoon looked like a 1.5 acre bubble bath. As time past the foam started to increase to the point that the wind gusts carried so much foam up and over the hill on to RT 93 and traffic had to be stopped. Then we got a visit from the state police who said what the F*%$ is going on here. Larry, my operator, and I tried to knock the foam down with fire hoses to try to keep the bubbles (foaming) from going to the highway. There was so much that the fire hose was working no better than if we ran around with a pin popping bubbles. This lasted for about 4 hours and I can’t say I didn’t laugh about it and still do. I have never seen so much bubbling in my life not even on the Laurence Welch show.

QUOTES from Dave Brennan, Keene WWTF, upon being asked about how long he has been in the Wastewater field.

The Last Seminar

Tim Loftus

The NEWA Laboratory Practices Committee hosted a specialty seminar at the Nashua Conference Center. The seminar was made up of four technical sessions, with each session meeting in a room at the end of one of four corridors. These four corridors each met in the lobby forming a crossroad (as if they were streets). In addition, a continental breakfast was held in another room off one of the session corridors.

To reach the New Technologies session room from the Cryptosporidium session room, an attendee would have to go to the lobby and turn left. To reach the DMR-QA session room from the Laboratory Safety session room, an attendee would have to go to the lobby and turn right. (Note: these directions only give the relative locations of the session rooms to each other. It does not indicate the order of the sessions.)

After three sessions, the attendee had passed through the lobby three times: after eating at the breakfast he turned left in the lobby to attend the first session, went straight through the lobby to attend the second session, and turned right in the lobby to attend his third session which was about New Technologies.

What was the fourth, and last, technical session of the day? Page 11 for answer

Ops Challenge Update –

The Seacoast Sewer Snakes participated in the NJWEA Invitational in Atlantic City this past month and took a first place in Process and a third place in Collection in Division I. Congrats Sewer Snakes!

Next up is San Diego the Nationals, October 14-16. Good luck to our Team.
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<tr>
<th>Date</th>
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<tr>
<td>SEPT 6</td>
<td>Basic Electrical Workshop at Gorham, NH</td>
<td>Register with Granite State Rural Water Separate Registration Form Enclosed</td>
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<td>SEPT 13</td>
<td>Pump System Design &amp; Valve Selection/ Orientation</td>
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<td>Pretreatment Coordinators Workshop- NH DES Aud</td>
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<tr>
<td>OCT 9 &amp; 16</td>
<td>Remedial Mathematics Review- 2 Days Required</td>
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<td>OCT 17</td>
<td>Electrical Safety and What You Need to Know</td>
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<td>OCT 18</td>
<td>Wastewater Microbiology &amp; Process Control at Hinsdale Fire Station</td>
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<tr>
<td>OCT 23</td>
<td>BOD : A to Z</td>
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<tr>
<td>OCT 24</td>
<td>Biosolids Sampling Plans</td>
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<tr>
<td>OCT 30 thru NOV 2</td>
<td>Basic Wastewater Operator Training (4 days) Register with NEIWPCC</td>
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<td>NOV 7 AM</td>
<td>Laboratory Practices Review</td>
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<td>NOV 8</td>
<td>E Coli Bacteria Test Methods for WW Labs</td>
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<td>NOV 14</td>
<td>Applied Wastewater Math Review</td>
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<td>NOV 20</td>
<td>Communicating in an Organization</td>
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<td>NOV 28</td>
<td>Phosphorous Removal Register with NEIWPCC</td>
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<td>NOV 29</td>
<td>Finance Planning for WWTF and Water Distribution Improvements Held At Primex Office</td>
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<td>DEC 12</td>
<td>CERTIFICATION EXAMS—ALL GRADES</td>
<td>Separate Mailing &amp; Registration Required</td>
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NOTE: See course description sheet for cost of each class. NO CASH ACCEPTED!

This form and the course description are available on line at www.des.state.nh.us/wwe/training.htm

**Make checks payable to: TREASURER-STATE OF NEW HAMPSHIRE
Send enrollment form w/payment to: State of New Hampshire DES – Water Division
ATTN: Wastewater Operations Section
29 Hazen Drive, P.O. Box 95, Concord, NH 03302-

0095Facility Name: ____________________________ Facility Contact: ____________________________
Facility Phone: ____________________________ Date: ____________________________
Facility Fax: ____________________________ Type of Payment: ____________________________
Facility E-mail: ____________________________ If your Town is to be billed for the classes at the end of this term, you may fax a copy of the course enrollment form to the Wastewater Operations Section at 603-271-4128.
Woodsville WWTF Operators Pat Butler and Ed Mosher

These two operators work as a team at the Woodsville WWTF and over time have developed a sludge processing and stabilization system that works well and saves the Town a considerable amount of money.

If you will recall from a previous “Collector” article, Pat Butler had conducted some experiments on his own to evaluate the drying effect of freeze/thaw cycles on his waste activated sludge over a one winter period of time. Recently, Pat noticed considerable shrinkage that occurs in his stacked sludge piles between fall and the following spring.

Let's revisit what Pat is doing currently to stabilize and dry his sludge. He starts by creating some very thick waste activated sludge for dewatering. This is accomplished by an experienced process control operator — Ed Mosher. Ed produces some very thick waste activated sludge for Pat to press. Ed accomplishes thicker sludge by operating his sludge holding tank in aerobic/anerobic cycles which Ed says reduces the total volume of solids and also thickens the waste producing at least a 2% feed for Pat to belt press. Pat presses this feed sludge on his small belt press installed by Brian Carroll years ago to about a 10% cake. He then mixes this sludge cake with wood ash to be stored in piles on the covered sand sludge drying beds. After monitoring the pH for sludge stabilization purposes, this sludge/ash mix is piled high and left to freeze/thaw over the winter. By the following spring and into summer a sludge pile volume reduction can be visibly seen as the piles shrink to one quarter of their original volume due to the water release from freezing.

Woodsville WWTF Pat Butler stands in front of the sludge drying/stabilization area he has created.

Pat shovels some of his final biosolids product which sat thru a winter of freeze-thaw cycles.

Woodsville sludge cake foreground and wood ash mixed and stabilized piles further back.

The final product now looks truly like stabilized bio-solids and is 50% solids. This is accomplished without the use of Geo-bags because Pat can pile his sludge quite high after wood ash addition negating the need for the structure of the Geo-bag. The bio-solids can be stored for quite some time due to the volume reduction and is finally hauled off site and land applied by Resource Management Inc. Pat finds that he can store a whole two years worth of sludge on his original sand drying beds and this not only dries the sludge well but also allows the piles to cure. After this curing period the piles of biosolids can then be hauled away for land application.
Dave Bailey, WWTF Superintendent, and his crew have been working for some time on a sludge management plan that would not restrict them to the present situation of hauling a 2% liquid sludge to the Hall Street WWTF in Concord. Dave Bailey has been experimenting with Geo Bags placed inside of haul off containers as can be seen in picture to the right. One drawback to using the bags in a container is that the water evaporation and drainage does not occur as well due to the enclosed bag environment. Removing the bag from the container and then removing the sludge from the bag are all potentially problematic if not well planned out ahead of time. Dave has been considering several other options including purchasing stainless steel fabric or wedge wire to install in a roll off to give him the drainage without the use of the geo bags. A more recent plan may be to fabricate a simple device that would spin out the water to a say 8% solids and then use the existing sludge drying beds for storing and stacking the piles and subjecting the sludge to freeze/thaw cycles similar to what the operators at the Woodville WWTF are doing. Dave is presently dealing with a low effluent phosphorous limit in his NPDES Permit and so he would like to use PAC as the coagulant aid in the dewatering process to tie up the phosphorous.

Sunapee WWTF experiment area. The old sludge drying beds are now sloped with a nice concrete floor with drainage. Two of the containers that Dave has been experimenting with as well as a partially filled geo bag on the left.

Farmington WWTF and the Time Tested “Smoking Cigar Method” of Sludge Removal.

Dale Sprague, Farmington Superintendent, and Steve Deinseadt, chief operator, last I recalled had developed the tried and true “Smoking Cigar Method” of sludge drying and removal. Steve has decided he needs a reward—a good favorite cigar to puff on as he works raking up dried sludge clods from his old sand drying beds. Steve manages the sludge wasting, polymer addition, sludge depth application and drying times on his sand beds. He and Dale look at this as probably the simplest and definitely most inexpensive method of drying and removal of sludge—the human machine enjoying a cigar on a clear sunny day and using the age old sludge farming technique—rake and clod removal. Steve keeps in shape to do this job. I would venture to say that Dale has the least expensive sludge budget in the state. However, Dale cannot handle all of his sludge this way and hires a portable centrifuge once/year to remove and dry the sludge he has stored in his sludge storage tank. Dale has been planning a complete plant upgrade for years but like many other WWTGs in New Hampshire he is waiting for the money—waiting and waiting. Meanwhile using the age old time proven method of drying sludge on sand drying beds with assistance from freeze thaw cycles and cigar driven manpower for sludge removal.

Seems to me that the Newport “Geo-bag method” or the Woodville “pile high and dry method” of sludge drying and stabilization are only excellent modifications to the use of the time proven sand drying bed methodology that Farmington continues to use.
NEWEA Operator Exchange Article continued from pg. 2

The sludge that rolls off the centrifuges then goes to the Fluidized Bed Incinerator (FBI). The sludge and scum is sized to burn. Any residue is collected and taken to a land fill, all while meeting New Hampshire’s stringent EPA emission regulations. If you’re ever near Manchester, NH, drop in—seeing is believing! My next stop was Dover, New Hampshire, where I had the privilege of dining with NHWPCA President Ray Vermette, State of New Hampshire Supervisor of Operations Section, George C. Neill, and Community Services director Douglas W. Steele, II. We had a very interesting and educational supper.

The next day was Starr Island. Six miles off the coast of New Hampshire sits a cluster of nine islands named the Isles of Shoals. We visited Starr Island; a small, seasonal resort get-away that is probably one of New Hampshire’s best kept secrets. If you’re looking for a place that has no televisions, telephones, or lap-tops, then look no more. Of all mainland luxuries, it does not have, it does have a wastewater treatment facility with a Sequencing Batch Reactor plant that processes roughly 12,000 gallons of daily influent. Waste is placed in a series of small wooden boxes and left to dry. Once dried, the operators climb inside the boxes and scoop the solid sludge into barrels. These barrels are then taken to shore. Though small in size, they face many of the same daily challenges the rest of us face, and then some. Consider the logistics of ordering a simple 55 gallon drum of chlorine. Everything, they need has to be shipped by boat. An order for a drum of chlorine cannot be delivered in rough seas, and it is not allowed to sit on the docs overnight. Once the chlorine drums arrive it has to be trucked over coastal rocks and seaweed. In peak season (mid May to mid-September), Starr Island hosts anywhere from 300 to 400 people. Extreme conservation is practiced by all, it has to be. No one seems to mind at all.

The next day, I received a tour of the Dover, New Hampshire WWTF. My host and Facility Director, Raymond A. Vermette, Jr., was an energetic guide. This plant is a Conventional Activated Sludge facility. It has a design flow of 4.7 MGD and an average flow of 2.3MGD. They use ultra violet lights to disinfect because ultra violet light alters the DNA of any pathogen. That was something else I had only read about. The effluent leaves the facility by two large flumes, and above the flow hang a series of long tubular ultra violet lights. I was very impressed with their sludge waste disposal. All their sludge is dewatered and then composted. They mix their wasted sludge with wood ash and wood chips. The piles of compost are then isolated under constant temperature. A network of SCADA systems control and watch over the 20-day process. When complete, they sell a portion of the compost or they give it away free to area residents.

My final stop was with Somersworth Wastewater Treatment Facility in Somersworth, New Hampshire. My host was Stephanie Rochefort. This facility is a Biological Nutrient Removal (BNR) facility. This plant was voted New Hampshire’s plant of the year in 2006, and I could see why. The Headworks building by itself could have won an award. It was incredibly clean and odor free, and is all a part of multi-million dollar upgrade. Septage is delivered to the plant thru an acceptance facility that separates the screenings and discharges septage to storage and pumping tanks. The next step is a Modified UCT process that provides a single activated sludge system that optimizes phosphorus removal while still providing a high degree of nitrogen removal. Eventually, the process ends with an impressive low maintenance cloth media filter that filters out any missed residue.

I would like to thank all those that made my educational trip possible. A special “Thanks” to NESSEA Maine Operator Exchange Coordinator, Mr. Brad Moore, for selecting me. To all of you that I meet in New Hampshire, you treated me like a King—that doesn’t happen every day! I also want to apologize to anyone who had to drive behind me; I’ve been told I drive like someone’s grandmother. To anyone who may have an opportunity to be part of the “Operator Exchange Program”, all I can say is to jump in. There is a pretty good chance that you have not seen it all. Thanks again!

Nick

Joel Drellick, New Hampshire exchange operator from Newmarket, is traveling to Maine to tour and attend Maine’s Fall meeting in Sunday River as a guest of the Maine Wastewater Association.

Answer to puzzle:
The last session of the day was on Laboratory Safety.
Is this a granite quarry? No, it is the work site for the new 72" storm flow interceptor diversion structure and pump station located at the Nashua WWTF.