

COMMISSIONER'S COLUMN

Proof of Success: Participants Say Mandatory Hazardous Waste Training Program is a Big Help

Forty years ago, the improper management and disposal of hazardous waste had become such a major issue across the country that Congress enacted the federal Resource Conservation and Recovery Act ("RCRA") to combat the problem. RCRA emphasizes the use of regulatory inspections and enforcement actions to help ensure that hazardous wastes are properly managed. This command-and-control approach has been, and remains, a valuable tool in establishing compliance. But, over the course of the past forty years, we've learned that, while highly effective, inspection and enforcement alone can't solve every shortcoming. As such, we are always searching for innovative ways to further improve compliance. One such method that NHDES has employed is the Hazardous Waste Coordinator Certification ("HWCC") Program. Established in 2002 by act of the New Hampshire legislature, New Hampshire's HWCC Program has pursued its goal of improving environmental compliance by requiring and providing annual training directly to businesses that produce large amounts of hazardous waste (more than 220 pounds of hazardous waste in a calendar month).

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Acid Rain Impacts to New Hampshire Lakes on the Decline



Acid precipitation results from sulfur and nitrogen compounds emitted into the atmosphere that react with water molecules to form acids. These compounds primarily originate from the combustion of fossil fuels in power plants and automobiles. Since the enactment of the federal Clean Air Act in 1970 and subsequent amendments, several requirements have been established leading to improved air quality and a steady decline in the emissions of the compounds known to cause acid precipitation (Figure 1).

Acid Rain, cont. page 3

Figure 1
Trend in US SO₂ Emissions, 1970 - 2013





NHDES' Hazardous Waste Coordinator Certification (HWCC) Program celebrating the arrival of its 10,000th attendee at its March 18, 2015 training event.

To achieve this, the Program requires that these facilities have on-staff at least one individual who has taken the training course and passed a written examination, thereby demonstrating his/her knowledge of the Hazardous Waste Rules. The HWCC program has improved the ability of companies in NH to properly manage their hazardous waste in two specific areas: 1) companies now have resources to help them find their way through RCRA, admittedly one of the more complex set of rules with which any company has to comply; and 2) the annual training requirement guarantees that someone at each company will have the education and knowledge necessary to maintain the basics of hazardous waste management. New Hampshire is the only state in the nation with this mandatory requirement, and the question is often asked, "Is this mandatory annual training making a difference in New Hampshire?"

While we believe there have been significant improvements in hazardous waste management directly attributable to this Program, until recently NH lacked the resources to collect and analyze the data necessary to provide statistical proof one way or the other. Fortunately, with the full support of EPA's Office of Enforcement and Compliance Assurance, we were recently able to partner with the Public Policy Program at the College of William

and Mary in Virginia. A team of graduate students designed a project to measure the HWCC Program's ability to achieve regulatory compliance and reduce barriers between government and the regulated community. The project used an on-line survey of 1,684 former attendees to assess the value of the HWCC Program. The survey asked participants to rank how strongly they agreed or disagreed with a series of statements regarding their attitudes toward the HWCC Program and hazardous waste management at their facilities. Through statistical analysis of the survey results, the research team determined:

- 86% of trainees believe their overall relationship with regulators has improved as a result of the training.
- 94% of trainees believe the training increased the likelihood they would contact hazardous waste regulators to have their questions answered.
- A nearly equal number of trainees (91%) believed the training also increased the likelihood of seeking compliance help from regulators of other media (e.g., water, air).
- 76% of the trainees believe the probability of having a violation decreased after training, indicating their confidence in the effectiveness of the training.
- Following training, 15% of attendees reduced their hazardous waste generation enough to reclassify their facility to a less-regulated category.
- 92% of trainees prefer the face-to-face training format used by the HWCC program over online options.

This independent study demonstrated that the HWCC Program provides substantial benefit to the regulated community, and that those benefits are far-reaching. Not only are program participants more confident in their knowledge and ability to comply with the rules, but the familiarity they gained with regulators on a personal level during the training significantly reduced communication barriers. This study further determined that reducing the intimidation of interacting with government officials through the HWCC Program produced a spillover effect whereby individuals (and thus the businesses they represent) will seek assistance from the government on compliance issues arising under other regulations. Additionally, it showed that stronger familiarity with waste management rules and best practices allowed businesses to better understand how they could reduce both their generation of hazardous waste and the associated business costs. At a time when there is great interest in using technology to "do more with less," it is clear that personal contact also remains critical to making government effective. The HWCC Program's motto is "Building bridges to compliance." The results of this study strongly support our belief that we are making this goal a reality. ■

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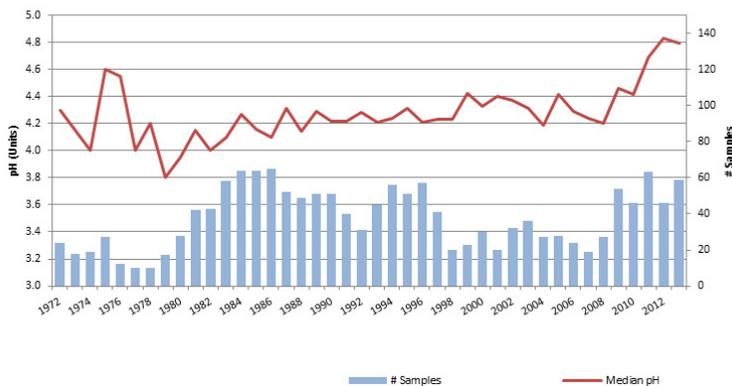
Acid Rain *continued from page 1*

Ever wonder how improvement in air quality translates to how well New Hampshire lakes and ponds are doing with respect to the impacts of acid precipitation? A new report by NHDES biologists summarizes over 40 years of data. These data show conclusively that the rain and snow that falls in New Hampshire is less acidic and that several of the lakes and ponds are showing signs of improvement. The results are similar to those found in several other regional studies in New England.

The pH of water indicates its level of acidity on a scale from 0–14. Water with a low pH (e.g., 4.0) is more acidic than water with a high pH (e.g., 8.0). An analysis of over 1,500 precipitation events by NHDES biologists indicated the average pH increased from 4.30 in 1972 to 4.79 in 2013 (Figure 2). Precipitation unaffected by air emissions normally has a pH of around 5.0. While this may not seem like a big change, pH is measured on a special scale using a natural logarithm, so the change actually represents 63% decrease in the level of acidity. An analysis of the same precipitation samples for two compounds that can originate from acid precipitation, nitrate (NO_3) and sulfate (SO_4^{2-}), also showed a significant reduction in their respective concentrations over time.

Figure 2

pH Trends in Rooftop Rain at NHDES (1972 - 2013)



NHDES biologists have also sampled 30 lakes and ponds since 1982 to evaluate the impacts of acid precipitation. Of these lakes, 10 are in remote locations and have been sampled by helicopter through a co-

operative effort with the New Hampshire Fish and Game Department. For these waterbodies, water samples are collected while Fish and Game biologists stock fingerling trout. The other 20 waterbodies are sampled in the spring and fall at their outlets.

Overall, 30% of the remote ponds had increasing (less acidic) pH trends, 90% had decreasing trends in nitrate concentrations, and 100% had decreasing trends in sulfate concentrations. For the 20 waterbodies sampled at their outlets, there was a higher percentage that showed increasing trends in pH when samples were collected in fall than spring: 30% versus 15%. Spring sampling conditions are thought to be representative of the worst case scenario due to the accumulation of airborne pollutants in snowpack with each snow event throughout the winter. As the snow melts in the spring, the pollutants are rapidly introduced into waterbodies, causing temporary declines in pH, more so than in the fall.

The data used to complete these analyses are a rare commodity and proof of the value of long-term data sets. Investments in these efforts produce valuable indicators for use in tracking environmental quality. The data provide encouraging evidence of the success of national and state air quality policies to minimize the impacts of acid precipitation. The results also highlight that waterbody recovery from acid deposition is not immediate. While some of the waterbodies monitored are showing signs of recovery, trends in a majority of the lakes and ponds monitored were not detectable. The lag in recovery observed in the lakes and ponds can be especially severe in sensitive ecosystems, like those found in New Hampshire, and is attributed to the long-term accumulation of acids and loss of buffering capacity in soils. To realize future improvements in our lakes and ponds requires a continued commitment in maintaining or strengthening the regulations responsible for reductions in acid-causing pollutants.

The report summarizing the findings is posted at <http://des.nh.gov/organization/divisions/water/wmb/index.htm>. For more information, contact Kirsten Nelson at (603) 271-1152 or Dave Neils at (603) 271-8865. ■



twitter.com/NHDES

Collaborative Effort Brings Stability to Leighton Brook

If you've attended a fluvial geomorphology course, the message is always, "rivers don't like fast change." Need proof? Just east of the Epsom traffic circle on the Route 4 bridge you can look south at the Suncook River. This is a river reacting to fast changes that occurred ten years ago. What you can't see is the collateral damage downstream on Leighton Brook because of the Suncook River cutting down its channel bed elevation by up to twenty feet since 2006.

The Suncook River's path was shortened by about a half-mile in May 2006 after seventeen inches of rainfall, triggering an avulsion—a rapid abandonment of the river channel into a new valley—that forced dozens of nearby residents permanently out of their homes and threatened to undermine US Route 4 and Black Hall Road in Epsom. With the Suncook River now occupying a sand-dominated valley, the erosive forces of the river continue to deepen the channel and carve upstream. Leighton Brook was shortened by 1,600 feet in the process. The continued, easterly migration of the Suncook River channel and the advancing headcut on Leighton Brook threatened to undermine the Black Hall Road crossing and homes situated less than ten feet away from the banks of Leighton Brook.

River restoration, stabilization and infrastructure protection requires coordination and collaboration. Drawing upon the expertise of staff among five different programs within NHDES, collaboration from four other state agencies, three



private property owners, two federal agencies, and contracts with two firms that specialize in river restoration design and construction practices, respectively, the Leighton Brook stabi-

lization project got underway in July 2015. was compounded by having homes less than ten feet from the top of banks, an abandoned underground fuel storage tank and a multiple use recreational corridor trail bridge, all within the project area. Creating additional channel capacity in the lower reach of Leighton Brook was required to account for the addition of large wood (trees, slash piles and roots) designed to roughen the channel texture to slow down flow. These natural features not only help to dissipate flood flows and shear stress to prevent erosion but also offer valuable habitat.

The installation of a unique feature called a rock buttress or "launchable riffle" was designed to protect against Suncook River migration and undermining of Leighton Brook. If the Suncook River captures the outlet of Leighton Brook, the stones in the buried buttress will fall into the channel and provide stability against upstream erosion and protect the Leighton Brook channel and floodplain stabilizations.

A multi-agency team will monitor Leighton Brook to gauge the effectiveness of the stabilization construction, detect Suncook River migration, and to document Leighton Brook's evolution as it flows through its newly created channel. The successful completion of this environmental legacy project is a testament to the power of collaboration among state, federal, private and professional stakeholders.

In the short-term, the investment of nearly half a million dollars on this essential stream stabilization project achieved the goal of protecting private properties and the Black Hall Road crossing. In the long-term, as the channel develops and vegetation matures, residents and visitors will come to see a healthy stream corridor habitat that will be stable and resilient for decades to come. ■



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Leighton Brook had no bedrock to help stabilize it. Construction of a stable streambed was required to safely carry the flows for up to a 500-year flood. Over 4,000 tons of rock was imported and placed into a newly excavated channel for Leighton Brook. Integrating natural channel design elements using over 4,000 tons of large rock, smaller gravels, and geotextile was challenging but it will form a stable channel and prevent further erosion of the brook. The challenge

Incentives Available for Improving Water Infrastructure Sustainability



New Hampshire municipalities have many assets we all take for granted, especially when it comes to water infrastructure that may be out-of-sight/out-of-mind. These out-of-sight assets include both “horizontal” assets such as: sewer collections systems, stormwater conveyance systems and drinking water distribution systems; and “vertical” assets such as: sewage pumping stations, wastewater treatment facilities, drinking water treatment and storage facilities, and stormwater treatment facilities.

NHDES is promoting Public Wastewater System and/or Stormwater System Asset Management planning and implementation through the Clean Water State Revolving Fund (CWSRF) Principal Forgiveness program. A subsidy of up to \$30,000 in the form of principal forgiveness is available for each program through CWSRF to promote sustainability of, and planning for, water infrastructure through Asset Management.

Asset Management can help a community: document what the assets are; prioritize asset replacement and maintenance; define the level of service municipal customers want vs. what is affordable; and gain support from customers and community leadership to maintain the desired level of service.

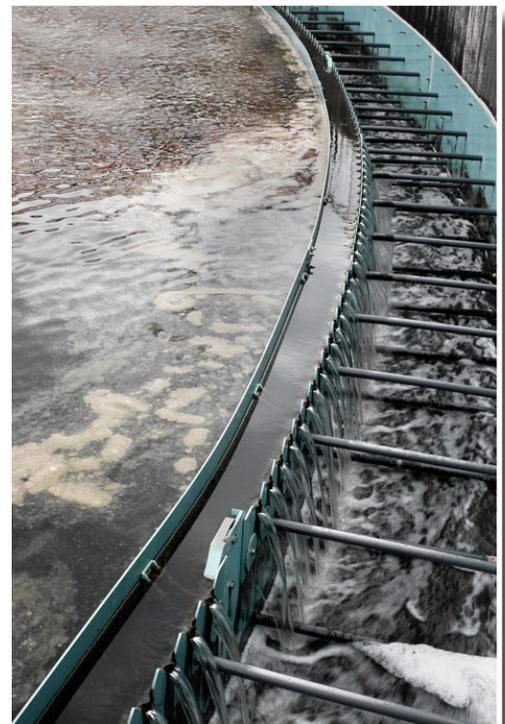
Any work relative to developing and implementing an asset management program that moves the municipality toward a complete and functioning asset management program will be considered for eligibility for principal forgiveness. For example:

- Hiring a consultant to conduct mapping/locating of assets, or data entry.
- Inventorying assets (can be a specific set of assets, such as horizontal assets or vertical assets).
- Purchasing asset management software.
- Determining condition of assets and developing priorities for maintenance and replacement.
- Developing an appropriate level of service agreement through community input.
- Determining life cycle costs and funding strategies for asset replacement.

In addition to CW-SRF Principal Forgiveness program for asset management for wastewater and stormwater, the Drinking Water SRF (DWSRF) program has asset management grants available each year, typically with application due dates in November or December.

For more information on Asset Management Planning and Implementation funding for wastewater systems, contact

Sharon Rivard at sharon.rivard@des.nh.gov or (603) 271-2508; for stormwater systems, Barbara McMillan at barbara.mcmillan@des.nh.gov or (603) 271-7889; and for drinking water systems, Luis Adorno at luis.adorno@des.nh.gov or (603) 271-2472. ■



NHDES Employee Selected for Union Leader's 40 Under 40



Every year, the NH Union Leader collects nominations for New Hampshire achievers under the age 40, from which 40 are selected to be highlighted. The 2016 40 Under 40 includes NHDES Green Yards Coordinator, Tara Albert. Tara has worked with NHDES for nine years and has developed important collaborative relationships with motor vehicle recyclers across the state. She was also integral in developing online training for municipal of-

ficials stressing the importance of well-run auto recycling facilities to the community.

To see the full story, visit <http://www.unionleader.com/article/20160125/NEWS0202/160129711/-1/news0202>. Congratulations, Tara! ■

NHDES Coastal Program Receives Award from The Nature Conservancy



Coastal Program's Steve Couture accepting the Conservation Partner Award

In January, the NHDES Coastal Program was presented with the "Conservation Partner" award for working collaboratively with The Nature Conservancy, demonstrating a strong commitment to achieving and

safeguarding important resources. Through both its own efforts and the partnerships it helped develop and support, the Coastal Program has helped make significant progress in addressing issues such as water quality, coastal land protection and preparing for rising sea levels. The Coastal Program and Conservancy are collaborating on a number of projects including tidal stream crossings, oyster restoration, promoting coastal buffers and the development of Great Bay 2020, a collective impact approach to reversing the water quality decline in Great Bay estuary. ■

King Tide Photo Contest



A new meaning to waterfront property – this photo, taken by Mike Barron in Hampton, was one of the winning submissions in the 2015 Gulf of Maine King Tides Photo Contest. Residents from around the Gulf of Maine turned out to photograph the exceptionally high tides on October 28-29, 2015 as a way to illustrate possible future impacts from sea-level rise. More than 100 images were submitted. ■

Registration is Open for the 2016 New Hampshire Water & Watershed Conference!

Managing New Hampshire's Water for a More Resilient Environment

March 18, 2016, 8 AM-4 PM

Plymouth State University, Plymouth, NH

This conference will explore resiliency by looking water supply and demand, floods and flood hazards, energy, watershed management and planning, legal issues, the value of water, how New Hampshire communities are adapting, and the relationship between water and tourism in New Hampshire.

Please visit <https://www.plymouth.edu/center-for-the-environment/2016-nh-water-watershed-conference/> for more information and to register.

This conference is designed for staff, members, and volunteers for watershed and water quality organizations, municipal staff and boards, university staff and students, consultants, government organizations, and anyone interested in water quality related issues in New Hampshire.

Life after the Deadline – An Overview of the UST Single Wall Closure Deadline of December 22, 2015

In New Hampshire, the cost for cleanup of releases from underground storage tanks exceeds \$200 million and counting. A massive, early national attempt to address these costly releases from tanks was the “don’t wait ‘til 98” campaign, which targeted removal of underground tanks lacking corrosion protection. Although that campaign was highly successful at removing some of the worst of the existing tank systems, many people aren’t aware that cathodically protected single-walled steel and single-walled fiberglass tanks and piping were allowed to remain in place in New Hampshire until December 22, 2015.

Our state’s first UST rules, adopted in 1985 and refined in 1990 and 1997, required all new tanks be double-walled with leak monitoring. New Hampshire was in the vanguard of states adopting double-walled tank and piping requirements; the federal government finally added these common sense requirements last year. The difference between single-walled systems and double-walled systems having leak monitoring is that a release from the latter has a very good probability of being discovered and corrected before it gets into the environment. A release from the former is typically discovered when it shows up in a neighbor’s well or at the time of tank system closure or property sale.



The 1997 amendment of the rules also required that all existing systems meet the same double-wall standard by December 22, 2015. Owners of single-walled systems had more than eighteen years to prepare for the 2015 deadline by either closing their systems or upgrading them to double-walled systems; the vast majority of owners complied by the deadline. Owners who waited until the last minute, however, have found the waiting line for service providers performing system upgrades out the door and around the corner. The

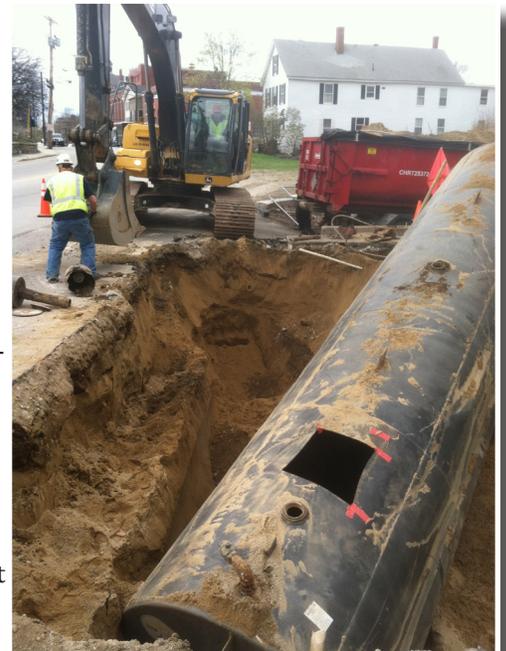
State is expediting the review of upgrade plans and is helping the owners’ efforts to come into compliance. The remaining non-compliant owners are likely to close their facilities as their retail operations are not economically competitive and will not be replaced and/or upgraded. To help ensure that tanks at economically distressed facilities complied

with the deadline, the State provided assistance from its MtBE Remediation Bureau. The MtBE Remediation Bureau has removed over 167 tanks averaging 27 years of age at facilities with MtBE contamination investigation or cleanup needs. Additional MtBE Remediation Bureau-funded tank closures are ongoing.

Statewide, out of the 1,539 UST facilities having 3,505 tank systems, approximately 202 facilities and 425 tank systems have not yet complied with the permanent closure deadline. Of these, approximately 38 single-walled tanks require closure and the balance of deficient systems have double-walled tanks and only require single-walled piping closure or upgrade, or leak monitoring equipment installation to come into compliance.

The remaining non-compliant systems will be addressed under the NHDES Compliance Assurance Response Policy (CARP). CARP is based on comparative risk, mitigating factors (such as plan submittal for replacement/upgrades, closure notifications or both), consideration of need (heating and comparative consequences of temporary storage systems), and consideration of economic gain (i.e., “a level playing field”). Systems may be “red tagged” to prevent gasoline deliveries and orders may be issued, as appropriate.

For more information on the UST closure deadline please see the NH Code of Admin. Rules, Env-Or 400, Underground Storage Tank Facilities (UST Rules) Env-Or 408.05(c), or contact Mike Juranty or Matt Jones at (603) 271-3899. For more information on MtBE Remediation Bureau funded closures, please contact John Pasquale at (603) 271-7179. ■



Discover Wild NH Day

April 16, 2016



Celebrate Our Environment!
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