

## ASST. COMMISSIONER'S COLUMN

### With your help, we're putting New Hampshire's environment on the map

With the long winter finally in our rear view mirror, spring upon us and summer within our reach, many of us (me included) have a renewed enthusiasm towards everything to do with the outdoors. Most of us have begun our spring cleaning, which is as good a time as any to take a step back and appreciate the beauty of New Hampshire's environment. With that in mind, NHDES launched a crowdsourcing website, called *This is New Hampshire*, this past Earth Day where people can share photos that show how they enjoy New Hampshire's unique environment, why they care about it, and what they do to protect it. The need for a healthy environment is in everything we love about New Hampshire: we rely on the land for hiking, biking and mountain-climbing; we rely on the lakes and rivers for swimming, boating, fishing, and kayaking; we rely on the ocean and Great Bay for beach days, sailing and seafood; we rely on wetlands for vibrant wildlife and quality water; and we rely on the air to be safe and healthful. Once you start to look for it, you will see the environment's role in almost everything that makes New Hampshire so wonderful.



#ThisIsNH – View from Sunset Rocks looking northwest. Credit: Cam Nowack.

There is a place for your cleanup photos on *This Is New Hampshire*, too. We know there are people out every day doing their part to protect our environment, and

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### Coastal erosion and sea-level rise adaptation

Erosion problems are threatening Wagon Hill Farm, a public recreation spot at the mouth of the Oyster River in Durham that is popular for its beautiful views, dog-friendly trails and boat access. The town of Durham, which owns the property and maintains public access on the site, has had to move the fence that runs along the shoreline back 16 feet several times since 1989.

For about a year, a team of municipal staff, University of New Hampshire researchers, Strafford Regional Planning Commission planners, and NHDES staff has been working together with the goal of minimizing the erosion, restoring lost salt marsh habitat, and adapting to expected increases in water levels through the design and construction of a living shoreline, a stabilization technique that uses nature-based elements. If installed, the Wagon Hill Farm site will be one of the very first living shoreline projects in coastal New Hampshire.

This work recently got a boost when Durham was awarded a NHDES Coastal Program Design Solutions for Coastal Resilience Grant to continue to study the causes of the erosion and to develop detailed designs that incorporate living shoreline techniques along 300 linear feet of fringing marsh. The project was one of four proposals selected for funding to help communities prepare for

*Coastal adaptation, cont. page 3*

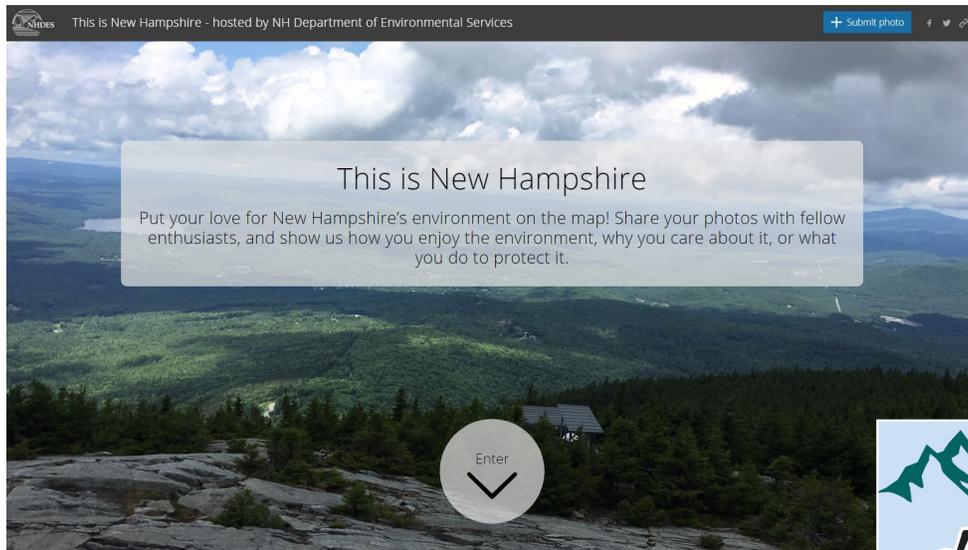
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usually with beautiful backdrops – VLAP volunteers doing water tests at the lake, town residents clearing litter from the park, volunteer Weed Watchers at the boat launches, and hikers clearing trails. These photos are just as important as the others, if not more so; they remind us of the hard work and dedication it takes to keep New Hampshire clean, vibrant, and welcoming.

The best part about *This Is New Hampshire* is it's not just a photo gallery, it's an interactive map that allows you to not only show us what you love about the environment, it will tell us *where* you enjoy it. The website is based on a Geographic Information System (GIS), so when users submit their photos they will also tell us where the photo was taken, and that photo is then given a marker on the map that others will see when they visit the site. With the location, you can be as specific as you want – longitude and latitude, physical address, or even zoom in and scour

the banks of the Merrimack River until you find the exact sandy outcropping where you parked your kayaks to take the photo. You might not even have to provide the location if your photo has been geotagged (when the longitude and

latitude are automatically included in the image's metadata) that information will instantly be shared with the website. Photos can be uploaded from a desktop computer or mobile device.



We hope, through all of your submissions, to build a visual, environmental directory of New Hampshire with this website – a place to which residents and visitors will continue to contribute. Let's put New Hampshire's environment on the map! ■



*L-R: John Adie (now at NHDES, but worked for the City of Concord when they improved their public outreach program), Kristen Noel, Dan Driscoll, Tom Neforas and Gene Forbes.*

On April 6, 2017, NHDES Water Division Director, Gene Forbes, awarded the first ever Award for Outstanding Public Outreach in Wastewater to the City of Concord, NH. This new program recognizes individuals and organizations that seek to educate citizens about the importance of clean water. ■

**ENVIRONMENTAL NEWS** 

*Environmental News* is published six times a year by the New Hampshire Department of Environmental Services.

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*Printed on recycled paper.*

## Coastal adaptation *continued from page 1*

coastal hazards. It will build on the analysis and preliminary plans done during the first phase of work, which was also supported by Coastal Program funding.



A living shoreline uses a variety of structural and natural materials such as wetland plants, submerged aquatic vegetation, oyster reefs, coir fiber logs, sand fill, and stone to reduce erosion. It can be designed to adapt to sea-level rise—naturally building elevation as water levels increase and eventually moving upland if water rises too quickly and if space allows. The Wagon Hill Farm site will include saltmarsh habitat and provide space for the marsh to move inland as sea levels rise.

Next steps for the project team include completing final engineering designs and continuing to reach out to residents and town committees. The team showcased some preliminary conceptual options for a living shoreline to the public at Wagon Hill Farm during Durham Day in September 2016, as well as presented at a recent Town Council meeting. Students will also have the chance to get involved with plantings and monitoring at the site.

The team is currently exploring funding options for construction and hopes that construction will take place in summer 2018. ■

## Landscaping for water quality

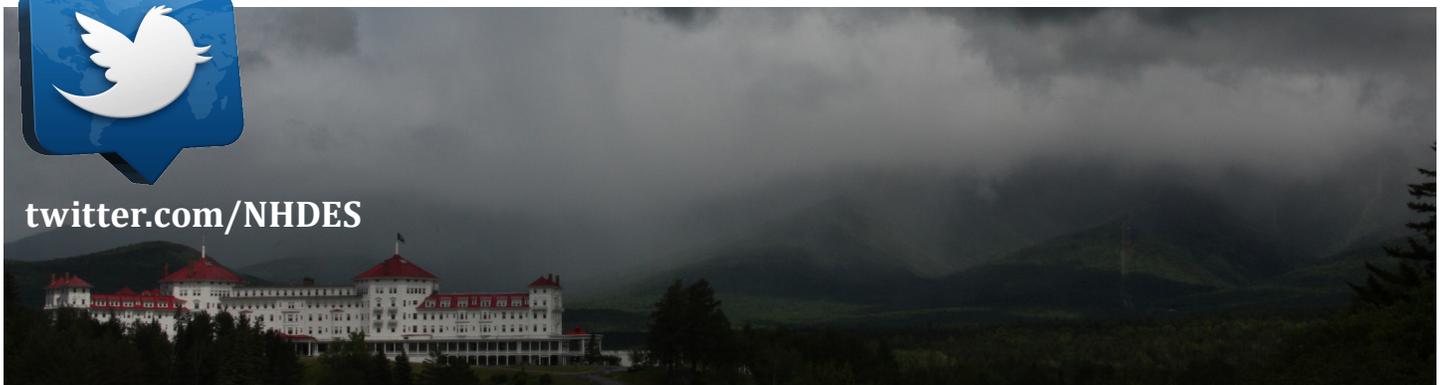
Landscapers designed their own water quality-friendly landscape at the Landscaping for Water Quality in the Lakes Region workshop on March 30 and 31, in Moultonborough, NH. This two-day course was hosted by the NHDES Soak Up the Rain program, UNH Cooperative Extension, NH Sea Grant, Lake Winnepesaukee Association and Moultonborough Conservation Commission. Filled to capacity with a wait list, 48 landscapers who practice in the Lakes Region or nearby watersheds, guests and organizers, learned how to incorporate rain gardens, vegetated buffers and other green infrastructure to capture and absorb stormwater and keep pollutants from reaching surface water. Instructors were faculty and staff from UNH Extension and NHDES, with guest speakers from UNH Stormwater Center, Univ. of Connecticut, local towns and watershed groups. ■



*Photo credit Pat Tarpey, Lake Winnepesaukee Association.*



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## NHDES celebrates 30 years

2017 marks the 30<sup>th</sup> anniversary of NHDES. Much has changed in the last 30 years to help sustain a high quality of life for all citizens by protecting and restoring public health and our beloved environment. While the work in this effort is not complete, NHDES wanted to take a moment to recognize 30 accomplishments/achievements that have impacted our environment and public health for the better over the past 30 years. Each of the six issues of our Environmental News newsletter will focus on five of these achievements, under a specific theme for each issue. For this issue, the following five achievements for “Our Environment” will be the focus.

### Regional Haze

*Why it matters:* The great thing about living in and visiting New Hampshire is enjoying the views of our beautiful mountains and lakes. Of course, it is best when they can be seen clearly. This has not always been the case, however, as plumes of pollutants have been blown into the state, reducing visibility and erasing many of the pristine views we have come to love. These regional haze events occur when small particles in the atmosphere scatter and absorb light. It not only reduces our quality of life, but it impacts tourism and causes health problems. Much of this haze consists of very small particles of pollutants, which can cause respiratory irritation as well as cardiac complications when inhaled. Regional haze events often occur when weather patterns transport pollutants from high-emitting states.



*Presidential Range of the White Mountains, New Hampshire*

*Progress in 30 years:* Regional haze events in New Hampshire have been reduced significantly in frequency and intensity over the past 30 years. Regulations to reduce acid rain, ozone, particle pollution and sulfur dioxide have benefited us by reducing haze formation by about 65% over the past 30 years. While we have already made a lot of progress improving visibility, the federal regional haze rule requires that this progress continue until the manmade portion of the haze is virtually eliminated by 2064. We are well on our way to this goal thanks to cleaner electrical generation, indus-

trial processes, cars and fuels. Emissions of sulfur dioxide, nitrogen oxides, ammonia, particles and organic gases are all major ingredients of regional haze. They will need to be reduced further in the years and decades ahead. Progress won't be easy, and the rate of improvement won't necessarily be uniform, since economics and weather patterns will cause variation. But thanks to a number of air quality programs, haze will continue to diminish and even better views of those beautiful lakes and mountains will come shining through.

### Aquatic Invasive Species

*Why it matters:* Aquatic Invasive Species (AIS) like milfoil, fanwort and water chestnut can have long-lasting impacts on the biology, ecology and recreational values of lakes, ponds and rivers. In fact, invasive species are recognized as the second largest threat to biodiversity. AIS can force out native species and alter the natural look and characteristics of our freshwater resources. There are currently 85 infested waterbodies in New Hampshire, some supporting as many as six different invasive species at one time. What's more, there are always new AIS threats that are literally just a boat ride away, which can bring in new plants and animals to the state's waterbodies.

#### *Progress in 30 years:*

Today, New Hampshire has a multi-tiered approach in addressing invasive species issues, including prevention, early detection, rapid response and long-term management initiatives. The overall rate of infestation has slowed from more than six waterbodies a year to less than one or two new waterbodies a year. Infestations are detected earlier than ever, where chances for eradication are more feasible. The variety of control practices has been expanded, and each has been made more effective at targeting the invasive species and leaving native species behind. Long-term management is aimed at reducing the overall density and distribution of larger and more complex infestations, so that measured reductions in AIS infestations are realized. As a result, New Hampshire's waterbodies are



**HELP STOP THE SPREAD OF AQUATIC INVASIVE SPECIES**



In New Hampshire, you are never more than a short drive away from a lake, pond or river where you can launch your motorboat, sailboat, canoe, kayak or paddleboard into the water.

By always making sure that your boat, trailer and gear are **cleaned, drained and dry** before launching into the water, you will prevent the spread of aquatic invasive species, and will help keep our waters boatable, enjoyable and healthy.

If you have questions or if you believe you found a new infestation of aquatic invasive species, contact the New Hampshire Department of Environmental Services Exotic Species Program at (603) 271-2248.

Updated maps and details of infestations can be found online at:  
<http://nhdes.maps.arcgis.com> > "NHDES Lake Mapper."

better protected from new infestations, and those that are infested have a better long-term prognosis in terms of the ecological health and recreational values of those waterbodies.

### Protecting and Enjoying New Hampshire's Aquatic Resources

*Why it matters:* New Hampshire was among the first states in the nation to pass its own legislation to protect wetlands. The statute has been revised over the years, but the principal goals and focus still remain: to protect these very vulnerable and important features of the landscape that “quietly” provide numerous benefits to people, such as flood attenuation, water quantity and quality functions, areas of important wildlife habitat, and recreation.



*Pennichuck Brook Conservation and Restoration project, Nashua, NH.*

*Progress in 30 years:* New Hampshire's climate is changing, and will continue to change in the future. The protection of aquatic resources and the upland buffer surrounding them is widely recognized as one facet in adapting to a changing climate. One mechanism that has been adopted by NHDES in the last 30 years is considering the protection of habitats of high ecological value as compensation for impacts to aquatic resource areas of lower value, if impacts are unavoidable. This protection of sensitive aquatic ecosystems and wildlife habitats requires coordination among many partners and has become a role of the Aquatic Resource Mitigation (ARM) Program.

The ARM Fund was established to provide wetland permit applicants the opportunity to offset wetland impacts by providing funds into a watershed account. These funds are then disbursed to significant land conservation or restoration projects. The ARM Program recognizes the potential for long-term environmental results from mitigation that considers watershed goals, assists conservation efforts important to a community, and has the ability to target important and vulnerable wetlands in a region. To date, the program has protected 16,000 acres of land and restored over 100

acres with a focus on wetlands and streams, tidal resources, and areas important to endangered species. The 83 funded projects provide opportunities for passive recreation, important breeding areas for species of special concern, and key locations on the landscape to assist in ameliorating more frequent intense storm events. Enabling mitigation to be coordinated through a comprehensive program has achieved great success for communities across the state concerned with retaining these special aquatic features.

### Shellfish Harvest

*Why it matters:* Thirty years ago, none of New Hampshire's tidal waters were open for commercial or recreational harvest of clams, oysters or mussels. The State had no ongoing program to evaluate these waters for public health risks associated with contamination from human or animal waste, chemical contamination, or risks from naturally occurring biotoxins and pathogens. Residents could not harvest these shellfish recreationally, nor could the state's shellfish farmers participate in the region's growing commercial shellfish aquaculture industry.

*Progress in 30 years:* Today, nearly all of the state's tidal waters have been evaluated and are continually monitored for public health risks. The NHDES Shellfish Program maintains a regular water sampling schedule at over 70 stations, tracks over 800 potential pollution sources across more than 250 miles of tidal shoreline, and monitors shellfish harvest areas for the presence of dangerous biotoxins such as “Red Tide.” Over 5,000 acres of estuarine waters (43%) and nearly 52,000 acres of ocean waters (94%) are now open for recreational harvest, and the state's commercial oyster aquaculture industry has grown from four farms in 2011 to 18 farms in 2016. The industry continues to grow, with 2-3 new farms added each year. The NHDES Shellfish Program con-

*30 for 30, cont. page 5*



**30 for 30** *continued from page 5*  
tinues to address new and emerging public health threats such as *Vibrio* bacteria, as well as new species of marine algae that produce potentially fatal biotoxins.

### Great Bay Oil Spill Response

*Why it matters:* Great Bay is New Hampshire's largest and most complex estuary and is a habitat integral to the health of numerous species in the Gulf of Maine. A large oil spill impacting the Great Bay Estuary could be catastrophic. A significant amount of petroleum is delivered by oil tankers into the Port of Portsmouth and is transported up the Piscataqua River to oil storage terminals. The river is known for strong tidal currents and difficult navigational hazards. Preventing spilled oil from moving in these conditions in an area where the river can be nearly three quarters of a mile wide is a daunting and dangerous mission. The environmental and economic consequences of a large spill would likely be significant.

*Progress in 30 Years:* The NHDES Spill Response and Complaint Investigation Section (SRCIS) staff has been working with contractors since 1992 to develop methods and strategies to minimize the amount of oil that could reach Great Bay from a large spill event. NHDES worked with the University of New Hampshire and the local oil spill cooperative (funded by the local oil terminals) from the late 1990s to early 2003 to design, test and improve an initial response strategy that placed 6,000 linear feet of oil containment boom in a "v" configuration across the river to minimize the movement of oil into Great Bay. In 2003, after



numerous trials, NHDES determined that this previously developed strategy could not be successfully deployed. Therefore, NHDES began redesigning the response strategy. A new strategy was developed that included innovative methods of deploying long lengths of boom in fast current. NHDES has managed the testing and modifications of this strategy annually since 2008. As a result of these efforts, a workable strategy has been developed that uses 5,600 linear feet of oil boom to cross Upper Little Bay and direct oil to a single collection point. NHDES trains oil spill response contract workers annually on deployment of the strategy and continues to improve its response capabilities. NHDES staff is well respected by the US Coast Guard for their efforts in the development and continuous improvement of this particular strategy and our spill preparedness. ■

## To restore or not to restore, that is the McQuesten...

by Michele L Tremblay, New Hampshire Rivers Council

**W**hen an eight year-old girl comes to you with dead, wild, and native eastern brook trout and asks why they died, there is no question about restoration.

What began as a New Hampshire Rivers Council (Council) annual clean-up, in partnership with employees from Anheuser-Busch observing World Environment Day, became a comprehensive watershed restoration and management plan that was immediately implemented with stunning on-the-ground results.

The Council, in partnership with NHDES, New Hampshire Fish and Game Department, City of Manchester, Town of Bedford, nonprofit partners, and local businesses, galvanized the planning efforts to restore the McQuesten watershed—a third of which is covered by impervious surfaces. The brook was obstructed by four dams created in the early

1950s, squeezed through two undersized culverts, and disappeared under a collapsed road crossing.

For over a decade, McQuesten failed to meet designated uses supporting aquatic life and primary contact recreation. The impounded areas often had less than six inches of water with several feet of mucky sediment on the pond bottom. McQuesten Brook had lost its way.

With funding from NHDES through Watershed Assistance Grants and the Aquatic Resource Mitigation (ARM) Program, New Hampshire Fish and Game Department, Samuel P. Hunt Foundation, and Council member dues, partners worked with CEI, Inc. to study the watershed and draft a plan with specific recommendations and priorities to improve watershed quality.

Last summer, the removal of the four dams in Manchester,

*McQuesten, cont. page 7*

**McQuesten** *continued from page 6*

and two culverts and a collapsed and abandoned road crossing in Bedford, were partially funded through NHDES Watershed Assistance Grants, the ARM Program and Council membership dues. The City of Manchester donated equipment, labor and the hauling and disposal of materials from dam removal sites.

“DPW was pleased to have the opportunity to assist the New Hampshire Rivers Council in their efforts to restore this watershed,” said Kevin Sheppard, Director of Public Works for the City of Manchester, “With guidance from the Council, together with the department’s equipment and skilled personnel, this collaborative approach was ideal and highly successful.”

The City’s Department of Public Works crews gathered with volunteers to remove the first dam off South Main Street in the heat of summer. Local homeowners generously provided access to the steep site through their backyards. Although one of the hottest days of the year, the site was comfortable due to the shade in the well-wooded area, and ground springs keeping the water cool and clear. With two jackhammers and hand tools, the dam was removed just after midday. Volunteers continued to clean up the first site while City crews were deploying heavy equipment to the sites off Second Street. Within a week, all of the dams were removed.

The Manchester Department of Public Works’ donation was the catalyst for this effort. Without their vision and generosity, the dams would not have been removed. The City’s donation generated non-federal match dollars, a requirement for the Council to access federal grant resources.

The same grant funds supported the Town of Bedford in removing one culvert, replacing it with a full spanning bridge on Eastman Avenue. The collapsed road crossing under which the brook disappeared was removed. On Wathen Road, the culvert was removed completely and

the road discontinued. The stream crossing improvements would not have happened without the financial contributions from the Town of Bedford that allowed for full daylighting of McQuesten Brook to occur.

McQuesten Brook is finding its way again with small tributaries and cool water springs. Seeds buried under water for seventy years are sprouting; growing lushly in the rich bottom sediments of former ponds. On the first morning after the dam removals, night herons, ducks, songbirds, raccoons, native trout, and other fish and wildlife were exploring the newly restored habitat. They found rich sources of food; clear, cool water; and other benefits within the restoration area. Their tracks are evidence of the amazing diversity supported by this newly-restored urban oasis.

To restore or not to restore? If you ask local businesses, residents, native eastern brook trout and the other wildlife flourishing there today, there is no question.

Learn more at [NHRivers.org](http://NHRivers.org). ■



*Wathen Road culvert before and after removal.*



[twitter.com/NHDES\\_Beaches](https://twitter.com/NHDES_Beaches)



## Disposal of household-generated sharps

Used needles, syringes, infusion kits or other similar sharps are infectious waste and need to be managed properly to mitigate risk to public health, safety and the environment. While NHDES prefers that sharps be managed by using a container exchange or mailback program, not every household has access to these services. Another alternative is to use a specially-designed needle cutter or incineration device purchased from your pharmacy.

As a last resort, household-generated sharps can be safely placed in your household trash by following a few simple steps:

1. Put the sharps in a rigid, plastic container like a detergent bottle.
2. Screw on the top, and tape it closed with duct tape or similar.
3. Clearly label the container "Medical Sharps – Not for Recycling."
4. Dispose of the container at a facility authorized to accept it.

Not sure who can accept your household-generated sharps? Just ask your solid waste hauler or transfer station operator. Solid waste operators are trained professionals who can help you with a wide variety of disposal questions.

Disposing of sharps in the trash is an exemption for household-generated sharps only. For businesses and other collection locations, NHDES recommends using a container exchange or mailback program. Explore your options by going to <http://www.safeneedle-disposal.org>.

*Remember:* NEVER throw sharps straight into the trash; NEVER toss them where they can injure someone; NEVER store them in soft, glass, or metal containers; and NEVER place them in recycling bins. By following these few simple tips, we can keep everyone, from your family to your waste handlers, safe. ■



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