



# A Citizen's Guide to Protecting North Hampton's Wetlands and Water Resources

This publication is brought to you by the North Hampton Conservation Commission with a grant from the New Hampshire Estuaries Project, which is a US EPA-funded program of the University of New Hampshire.

[www.northhampton-nh.gov](http://www.northhampton-nh.gov)

Fall 2008

## From dismal swamp to respectable wetland

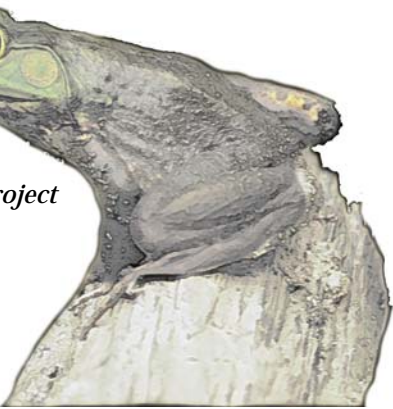
By Dave Kellam,  
New Hampshire Estuaries Project



If you had to define one of the following words, which one would you pick: fen, morass, or wetland?

You might choose "wetland" and guess that it is earth that squishes beneath your feet. But really you could not lose, because all three words fit that definition.

In general, "wetland" is a term that describes many specific types of watery habitats, such as marshes, bogs, and swamps. The legal definition from the U.S. Environmental Protection Agency is "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions." Or, in plain English – wet land.



Surprisingly, the word "wetland" has not been with us for very long. The first official governmental use of "wetland" appeared in a U.S. Fish and Wildlife Service report in 1956. Before the term "wetland," people just used any name for damp real estate, such as marshland, mire, muskeg, quagmire, slough or swampland.

Ironically, when English settlers arrived in North America, they did not have a word for the forested wetlands they encountered, because those types of habitats had long been destroyed in their native England. Since they had no experience with these ecologically important habitats, the settlers simply referred to them as swamps or sometimes "dismal swamps." Proof of this historic name is evidenced by the Great Dismal Swamp National Wildlife Refuge, in southeastern Virginia.

Attitudes toward wetlands remained dismal until Henry David Thoreau fell in love with swamps in the mid 1800s. On June 15, 1840, after spending many hours up to his nose in a Concord, Massachusetts, swamp "soaking up the juices of a marsh," he wrote down his thoughts on wetlands: "When I would recreate myself, I seek the darkest wood, the thickest and most interminable, and to the citizen, most dismal swamp. I enter the swamp as a sacred place - a sanctum sanctorum. There, is the strength, the marrow of nature." Respect for wetlands has increased ever since.

*Continued on page 8*

How do wetlands and wetland buffers protect property values?



*New document details North Hampton's wetland resources and highlights the value to the community.*

*Story on page 3*

## Wetlands sustain North Hampton's beautiful and diverse wildlife



Wikimedia



Wisconsin DNR



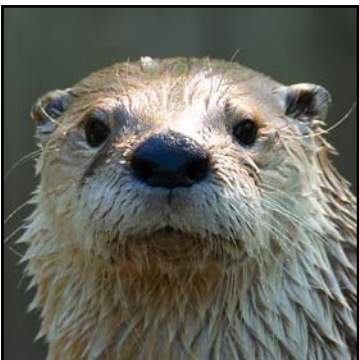
NHEP

North Hampton's wild plants and animals include the great blue heron (left/top), redfin pickerel (left/middle), cherry-faced meadowhawk (left/bottom), river otter (right/top), spotted turtle (right/middle), and slender blue flag iris (right/bottom).

Unlike the bustling urban landscape of Boston, North Hampton residents can still be inspired by daily wildlife sightings. Early in the morning great blue herons and snowy egrets fish in the Little River salt marsh, colorful dragonflies dance across the blue sky, and river otters play in secluded ponds. Some of the best natural beauty that northern New England has to offer still thrives in North Hampton.

Some of the wild flora and fauna in North Hampton are quite rare. The spotted turtle is a beautiful but seldom seen reptile found only in large undisturbed blocks of diverse wetland habitats. The rare redfin pickerel is a small freshwater fish found in North Hampton's weedy pools and streams. The rarest plant documented in the town is the slender blue flag iris. Found in salt marshes, this species is threatened in New Hampshire and has only been recorded in 10 other communities in the last 20 years. The native flower is at the northern limit of its range and has disappeared from many places because of habitat loss.

One reason wildlife flourishes in North Hampton is the amount of wetlands in the town. Approximately, one third of the town is classified as wetlands and these habitats are critical to a variety of plant and animal species. Some wildlife require expansive tracts of undisturbed wetlands like those found at the headwaters of the Winnicut River. This is just one reason why protecting these areas through conservation easements and maintaining wetland buffers is so important.



Eric Bégin



Kathy Davis



Robert H. Mollenbroek, USDA NRCS

### Purpose

The purpose of this newsletter is to provide public information, including technical facts, to North Hampton residents about the importance of protecting wetlands, wetlands buffers and drinking water aquifers. It is also to inform readers of the wetlands protection regulations and give them suggestions about how homeowners can the protect these critically valuable resources.

**Lawn care tips to protect water quality on page 7.**

University of New Hampshire  
123 Nesmith Hall  
Durham, NH 03824

Postal Customer

NON PROFIT ORG.  
U.S. POSTAGE PAID  
DURHAM, NH  
PERMIT NO. 2





## What is a wetland buffer (and how is it like a sponge)?

A wetland buffer is simply the vegetated area directly adjacent to wetlands. It may be along the wooded shoreline of a pond, the grassy border of a freshwater marsh, or the shrubby land along a

flowing stream. Regardless of the kind of wetland, a wetland buffer has lush plant growth and it is this plant growth that makes a wetland buffer act like a sponge.

The roots of plants create tiny spaces in the soil that look like the holes in a sponge. These spaces enable wetland buffers to absorb water very well. As rainwater flows toward a wetland, the porous soil grabs the water. Plant roots absorb some of it, but the rest seeps deeper and eventually enters the groundwater that North Hampton residents rely on for drinking water. And like any good sponge, a wetland buffer cleans the water it absorbs. Rainwater and stormwater runoff that is laden with pollutants is purified when it flows through a well-vegetated wetland buffer.

Because the spongy soil of a buffer soaks up water, wetland buffers are also good at lessening the impact of flooding. A watershed (the land drained by rivers) that has wide vegetated buffers will flood less often than one that is covered in roads, buildings, parking lots, and other structures that prevent water from soaking in the ground. These areas that prevent

**Wetland buffers are Nature's water treatment plants. They clean surface water of pollutants, like nitrogen and sediments, before they enter a wetland and even the groundwater that provides North Hampton's drinking water.**



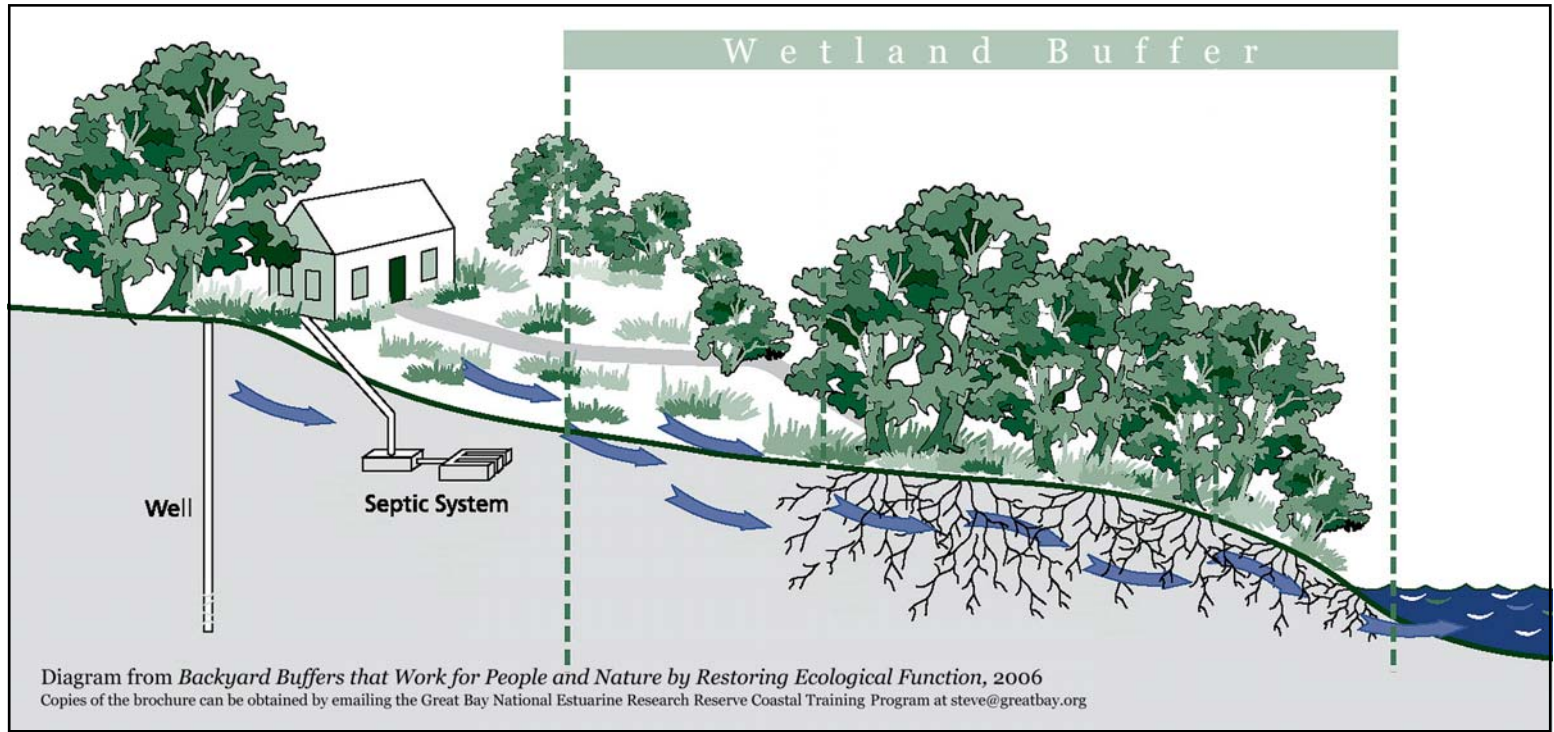
infiltration of water are known as impervious surfaces (read "Imperious Surfaces" to learn more on page 4).

It is clear that wetland buffers cannot contain buildings, roads, swimming pools, or other structures that do not absorb water. This is why in 2003, the Town of North Hampton restricted the building of structures within a 100-foot buffer of all town wetlands. The town's goal is to maintain healthy buffers because of the great benefits they provide all North Hampton residents.

Beyond adhering to the town land use ordinance (see page 5), careful stewardship of buffers is an important role individual landowners can play. Do not store vehicles in a wetland buffer because oil seeping from engines can easily pollute our water. Keep landscaping to a minimum near wetlands and only plant native plants to benefit wildlife (see page 7 for landscaping tips near wetlands). Consider maintaining a buffer larger than 100 feet which will better protect wetlands and attract more beautiful wildlife. Encourage a stable wetland buffer by not mowing it or applying chemical fertilizers, pesticides or herbicides.



Protecting the headwaters of the Little River (above), the river's lower portions (below left) and the Winnicut River headwaters (below right) are vital for the protection of water quality.



## Protect Buffers: Don't Mow to the Edge of Wetlands



Mowing to the edge of a wetland damages the ability of the plants to filter runoff and stabilize the wetland shore to prevent erosion. Letting a lawn grow wild next to a stream or marsh not only improves wildlife habitat and the health of the wetland, but it saves time and money on lawn care around the house.

## Healthy landscaping makes for a healthy watershed

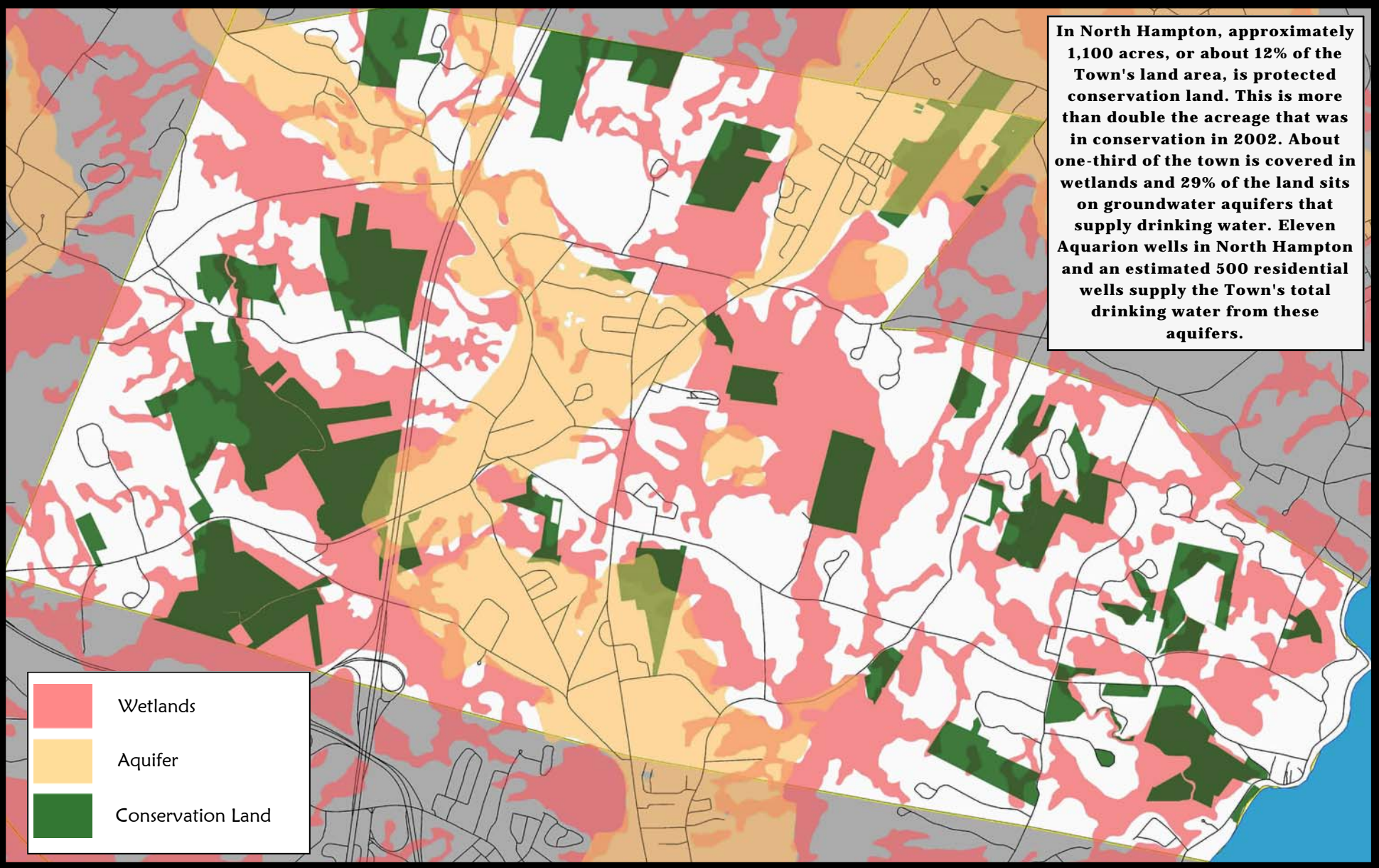
By Barbara McMillan,  
New Hampshire  
Department of  
Environmental Services

No matter where you live, you are in a watershed. Within that watershed, rain and snow falling on homes, lawns, and driveways eventually find their way to the lowest point in a river, lake, pond, stream, or ocean. Often, without realizing it, homeowners add pollutants, including lawn chemicals, fertilizers, silt, and sand to surface waters. However, with a few minor changes to your garden and lawn care routine, you can begin playing an active role in improving water quality in your watershed, while saving yourself both time and money.

Start by examining your landscaping and look for ways it might be contributing polluted runoff. First, ask yourself if you need all that lawn. Reducing the size of your lawn will save you time and money and save your watershed from pollutants like fertilizers, pesticides, and other backyard chemicals. Instead of lawn, plant groundcovers, trees,



North Hampton wetlands, aquifers, and conservation lands



This map is intended for reference purposes only. Consult appropriate maps at the North Hampton Town Office or a wetlands scientist to determine boundaries.

Document characterizes North Hampton wetland buffers and describes connections to public interest and property values

A 2008 publication commissioned by the New Hampshire Estuaries Project and North Hampton Conservation Commission summarizes the role North Hampton wetland buffers play in providing flood control, water purification and other functions that benefit the public.

Dr. Leonard Lord, wetland scientist for Vanasse Hangen Brustlin, studied town wetlands in April 2008 and drafted a technical memorandum that highlighted the importance of the 100 foot wetland buffer setback as established by North Hampton Zoning Regulations.

During his evaluation, Dr. Lord identified the headwaters of the Winnicut River and its tributaries west of I-95 as beginning a high-value, well functioning wetland with relatively little residential development. He did note however that the I-95 and Rt. 111 crossings have had a significant impact on the watershed and buffers.

A particularly sensitive area identified during the review was along Lovering Road. The area is characterized by an expansive marsh near the road crossing of the Winnicut River. A few homes at that site are located very near the wetland boundary and have the potential to negatively impact the marsh. Lord recommends that "these homeowners and others sited near the river should be encouraged to routinely inspect and maintain their septic systems, since failure of these systems would have significant impact on the river" and "lawn care practices in these areas should minimize fertilizer and pesticide use."

The technical memorandum also examines the Little River, which originates and runs its entire length through North Hampton. Lord identified commercial development along Rt. 1 as the most significant impact on the wetland buffer and noted that land protection activities should focus on headwater reaches to have the most ecological value for the watershed.

***Septic Systems should be inspected annually and pumped out every three to five years.***

Lord noted that "due to their position in the watershed, the residential areas in the lower portion of the watershed and the Little River Tidal Marsh will be subject to the greatest impacts associated with increased impervious surfaces and buffer impacts associated with development over time." These impacts include poor water quality and flooding.

During the field review a significant amount of algae was observed floating in the Little River in the area along Rt. 111. Lord cautions that "excess algae typically indicates high nutrient inputs to a waterbody" and is often the result of fertilizers, pet wastes, and/or silt.

"Protecting water quality in the Little River is especially important since North Hampton and other public agencies have invested a great deal of time and money to restore the Little River Marsh, which is key to the health of the ecosystem and character of the town."


To read Dr. Lord's full analysis of North Hampton's wetland buffers, go to [www.northhampton-nh.gov](http://www.northhampton-nh.gov). In a collaborative effort with the Nature Conservancy, the Commission has initiated a water quality sampling and testing program along the Winnicut River to safeguard the watershed and identify and remedy by enforcement, sources of potential contamination.





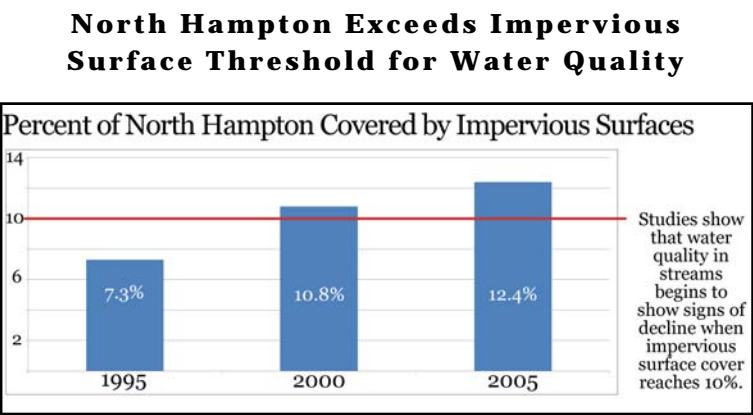
### What Are Impervious Surfaces?

Impervious surfaces are areas covered by material that prevents the infiltration of water into the soil. Examples of impervious surfaces are buildings, pavement, concrete, and severely compacted soils.



### How much is too much?

Various studies from around the country show that stream ecosystems and water quality become degraded as impervious surfaces increase. Damage to streams often occurs when more than 10% of the land within a watershed is covered with impervious surfaces. When the percentage of impervious cover exceeds 25%, most watersheds experience severe habitat and water quality degradation. In 2005, a study in New Hampshire demonstrated that the percent of impervious surface and its proximity to streams can be used as indicators of stream quality.



Since North Hampton already exceeds the 10% threshold for impervious surface, great care must be taken when planning for new development to minimize the addition and impacts of more impervious surfaces.

- ### What can North Hampton do to reduce the impacts of impervious surfaces?
- North Hampton has accomplished many tasks to reduce the impacts of impervious surfaces. The Town has:
- Targeted land conservation efforts to protect areas near water bodies where impervious surfaces have the greatest impact on water quality.
  - Implemented a wetland buffer ordinance that prevents impervious surfaces within 100 feet of wetlands.
  - Encouraged conservation design alternatives that minimize the amount of land disturbed, maintain significant ecological areas in a natural state, and reduce the amount of impervious surface created.

The Town will continue to seek out opportunities to protect sensitive areas from development and to adopt land use ordinances that protect community water resources, but stewardship of water resources and wetland buffers falls mainly on individual landowners.



In 2002, the Town acquired over 560 acres of land to help protect water quality of the Winnicut and Litter River watersheds and the North Hampton drinking water supply.

## How do impervious surfaces affect water resources?

### Increase Flooding

Curbs, gutters, and storm drain pipes are typically designed to move water very quickly from buildings to the nearest river or stream. This is much faster than the way water naturally flows through a watershed. Before land is developed, rainwater slowly moves through wetlands and either seeps into the soil or gradually flows to the sea. Impervious surfaces increase the amount and speed of stormwater flowing into streams and thus increases flooding.

### Cause Stream Temperatures to Rise

The heat of the sun warms roads, roof tops, and parking lots. When rain water flows over warmed impervious surfaces, the heat is transferred to the water and into drainage streams. Increased temperatures lower the



Flooding in 2006 and 2007 damaged property and closed several roads in North Hampton, including Mill Road at the Little River crossing pictured above.

amount of oxygen in the water and often kills aquatic creatures.

### Increase Water Pollution

Impervious surfaces accelerate the delivery of pollutants, such as bacteria and nitrogen, to rivers, lakes, and estuaries. Bacteria can make people and animals sick and nitrogen can cause algae blooms that block sunlight, deplete dissolved oxygen, and kill many forms of aquatic life. Other pollutants of concern are heavy metals and oil from vehicles.



Impervious surfaces, such as roads and parking lots, collect toxic contaminants from cars, trucks, and even the air. When it rains or when snow melts, the flowing water washes the concentrated contaminants off and funnels them to rivers or streams. Reducing the amount of impervious surfaces and managing the runoff greatly improves water quality of surface and groundwater.

## How Homeowners Can Reduce the Impact of Impervious Surfaces

To help protect the quality of North Hampton’s water and to minimize the damaging effects of flooding and pollution, homeowners can do a variety of things that collectively will make a big difference. Homeowners can:



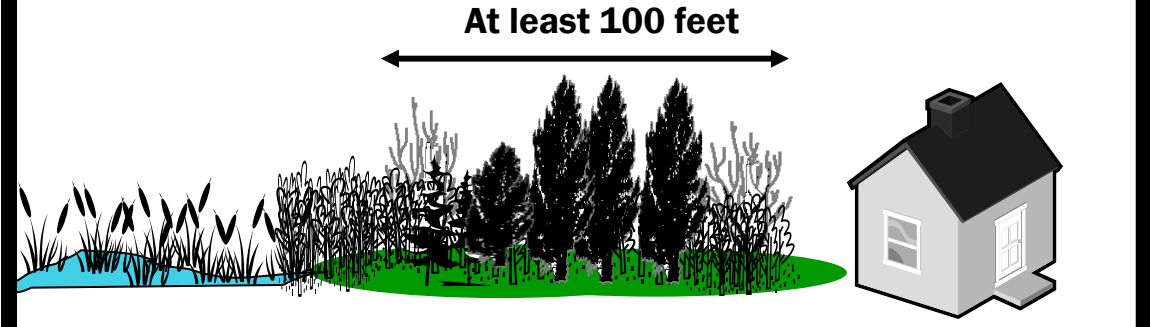
Using pervious pavement to create walkways will encourage groundwater recharge and slow the migration of pollutants to streams and rivers.

- Minimize lawn areas by planting shrubs, ground covers, and trees at the border of the property. Lawns are less efficient than planted landscaped areas at recharging groundwater and maintaining water quality.
- Limit the amount of impervious surface on their properties, such as sidewalks, roofs, driveways, patios and even swimming pools.
- Direct rainwater runoff from gutter drains to areas that are landscaped. Known as rain gardens, these areas increase groundwater recharge.
- Sweep driveways and walkways instead of hosing them down, thus slowing the rate at which pollutants enter local waters.
- Support Town efforts to protect water quality and enhance the quality of life in North Hampton.

### GIVE WETLANDS SOME ELBOW ROOM

**Wetlands need undisturbed space around them that has many wild plants and animals to purify rainwater and to lessen the impacts of flooding.**

At least 100 feet



**WETLANDS****BUILDINGS**





## From North Hampton’s Conservation Commission

Much of North Hampton is comprised of critically important environmental ecosystems. About one-third of the Town's land area is wetlands, hosting two major river watersheds, the Winnicut and the Little River and two significant salt water estuaries, the Little River and the Bass Beach Salt Marshes. Moreover, the Town depends solely on indigenous groundwater aquifers for drinking water supply.

These ecosystems are being threatened from several fronts. First, the Town's impervious surface area is 12.4% of the Town's land area, thereby causing surface water runoff to exceed the 10% surface area guideline at which level wetlands deterioration begins. Second, North Hampton has already experienced contamination of part of its drinking water supply from the Coakley Landfill Superfund site, with underground chemical leaching into residential wells and with the closure of a water company well which could have been contaminated by the chemicals. In addition, while Town voters passed an ordinance for a 100-foot wetland buffer in 2003, it has also continued to routinely allow variance approvals to develop structures within those buffers. Finally, with growing pressures for continued development, the few remaining marginal lands are being developed in areas dangerously close to important wetlands resources and continued abuses such as filling wetlands and storing hazardous materials on the land continue, since regulatory enforcement resources are overburdened.

North Hampton can ill-afford the accelerated continued deterioration of its wetlands resources. The stakes are very high, particularly with the threat to losing valuable drinking water aquifers. It is with this heightened level of concern that we bring you this informational newsletter.

We welcome any feedback you may have on this newsletter by dropping off the comment form in the library or sending an e-mail to [northhamptonconservation@comcast.net](mailto:northhamptonconservation@comcast.net).

North Hampton Conservation Commission

## We would like to hear from you

The Conservation Commission welcomes your thoughts about this publication or any other natural resource issue concerning North Hampton. There are two ways to share your thoughts:

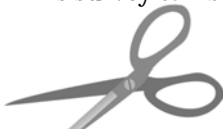
1. Email comments to [northhamptonconservation@comcast.net](mailto:northhamptonconservation@comcast.net)
2. Fill out the form below and either mail it to the town or drop it off at the library.

Your name \_\_\_\_\_

Preferred way to respond to you:  
Phone number \_\_\_\_\_  
Email address \_\_\_\_\_  
Mailing address \_\_\_\_\_

Question or Comment:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Did you find this newsletter useful?  
☐ Very Useful    ☐ Somewhat Useful    ☐ Not Useful  
This survey can be mailed to:



Town of North Hampton  
Conservation Commission  
237 Atlantic Avenue—2nd floor  
North Hampton NH 03862

## Article IV—District Regulations Complete listing [www.northhampton-nh.gov/](http://www.northhampton-nh.gov/Public_Documents/NorthHamptonNH_PZDept/regsTOC)

### Section 409 Wetland Conservation Areas

**409.1 PURPOSE: IN THE INTEREST OF PUBLIC HEALTH, CONVENIENCE, SAFETY AND WELFARE, THE REGULATIONS OF THIS DISTRICT ARE INTENDED TO GUIDE THE USE OF AREAS OF LAND WITH EXTENDED PERIODS OF HIGH WATER TABLES, AND TO ACCOMPLISH THE FOLLOWING PURPOSES:**

- A. To control the development of structures and land uses on naturally occurring wetlands which would contribute to pollution of surface and groundwater by any means.
- B. To prevent the destruction of natural wetlands which provide flood protection, recharge the groundwater supply, and the augmentation of stream flow during dry periods.
- C. To prevent unnecessary or excessive expense to the Town related to the provision and maintenance of essential services and utilities which arise because of unwise use of wetlands.
- D. To encourage those uses that can appropriately and safely be located in wetland areas.
- E. To preserve wetlands for ecological reasons including, but not limited to, those cited in RSA 482-A.
- F. To preserve and enhance those aesthetic values associated with the Wetlands of this Town.
- G. To provide a single and consistent approach for identifying and delineating wetlands based on the most advanced professional standards and scientific analysis.

### Section 414 Water Resources Protection

#### 414.5 AQUIFER PROTECTION DISTRICT ORDINANCE

##### 414.5.A AUTHORITY AND PURPOSE

- Pursuant to RSA 674:16-21, the Town of North Hampton adopts an Aquifer Protection District and accompanying regulations in order to protect, preserve, and maintain potential groundwater supplies and related groundwater recharge areas identified by the Town. The objectives of the Aquifer Protection District are:
- A. To protect the public health and general welfare of the citizens of North Hampton.
  - B. To prevent development and land use practices that would contaminate or reduce the recharge to the identified aquifers and all inter-related waters in town.
  - C. To assure the availability of public and private water supplies for the present and the future growth of the Town in accordance with the Master Plan.
  - D. To encourage uses that can appropriately and safely be located in the aquifer recharge areas.
  - E. To heighten awareness of the need for annual review of the Coakley Site monitoring wells and the testing of residential wells.

**Read the complete North Hampton Planning and Zoning Ordinances and Regulations On-line at the Planning and Zoning Department Page on [www.northhampton-nh.gov](http://www.northhampton-nh.gov)**



- Learn about:**
- **Permitted land uses**
  - **Restricted land uses**
  - **Maximum impervious surface cover**
  - **Septic system setbacks**
  - **And more**



## Bringing back tidal flow helped salt marsh and provided flood relief

By Cathy Coletti, NH Coastal Program



For 50 years, a culvert under Route 1A in North Hampton behaved like a clogged bathtub drain. The single, small culvert could handle neither the tidal flow from the ocean nor the rain draining off the land. The salt marsh across the street, where tides are essential for life, was slowly and steadily dying.

To make matters worse, the wide-open 200-acre marsh has its limits to how much water it can hold, especially when so many manmade structures are nearby, like seawalls and pavement, causing water to get trapped and spill over into roads and basements. This is especially pronounced during coastal storms when water running off the land meets the high tides with nowhere to go.

During a storm in October 1996, over six feet of water covered Little River Marsh, flooding nearby residences and causing a public outcry for the town and state and federal agencies to take action.

In 2000, after three years of project planning, a partnership of agencies, coordinated by Ted Diers from the New Hampshire Coastal Program at the New Hampshire Department of Environmental Services and Alan Ammann from the Natural Resource Conservation Service, replaced the undersized culvert with twin 6 foot by 12 foot box culverts. Diers said that the experience showed how to build and sustain partnerships around restoration projects.

In this same spirit of partnership, NHDES continues its investment in the Little River Salt Marsh with Phase II of the restoration work currently being planned. The goal is to bring more tidal flow to the upper reaches of the salt marsh, where standing water collects and mosquitoes make their breeding pools. More



The shores of the Little River in North Hampton

tidal flow will move the water and bring in hungry fish to these stagnant pools to have dinner on the insects they will find there.

Restoration is a key aspect of conservation in New Hampshire. Our coast was the first part of the state to be developed, making it fitting that it leads the way in restoration activities. As this project demonstrates, restoring natural function to our ecosystems helps humans at the same time it rebuilds ecological integrity.

For more information on the Coastal Program's Restoration Program, please visit [www.des.nh.gov/coastal/restoration](http://www.des.nh.gov/coastal/restoration) or call 603-559-1500.

## The headwaters of the Winnicut River are special and worth protecting

By Dr. Ray Konisky, New Hampshire Chapter of the Nature Conservancy



The Winnicut River flows through expansive swamps in the northwestern part of the town.



The headwaters of the Winnicut River that create a peaceful open landscape in the northwest corner of North Hampton are an important resource for water quality and wildlife resources. The area was identified as an important conservation area in the Land Conservation Plan for New Hampshire's Coastal Watersheds due to its expanse of undisturbed open space, influence on town aquifers, and impact on the environmental health of Great Bay.

The headwaters of the Winnicut River begin in Line Swamp, in the southwest corner of town. The river continues north into Greenland and eventually ends in Great Bay. This watershed has significant capacity to detain flood waters, provide water quality restoration, and has significant wildlife value. During heavy rains, the marsh will absorb the excess surface water much like a sponge and slowly release it into the Winnicut River. This slowing of the water helps keep flood waters within the banks of the river. As the water flows through the marsh it is cleaned and rid of harmful pollutants. This is especially important since the major aquifer

that supplies the drinking water for the town is very near this wetland. The open, largely undisturbed marsh land is home to a variety of animals and plants that need this type of habitat to survive. There are heron rookeries located throughout the area and numerous sightings of deer, beaver, and muskrat.

In addition, the Winnicut's direct connection to Great Bay makes it an important watershed for migratory fish species like alewife, eel, shad, and smelt. The current dam at the head-of-tide near Route 33 now prevents these threatened species from passing from the estuary into upstream fish habitat. New Hampshire Fish and Game is now leading an effort to remove this obstruction and re-open as many as 40 miles of habitat to migratory fish. Once above the dam site, however, fish will still face a dense network of road crossings and culverts that limit migrations. To address this, The Nature Conservancy of New Hampshire is completing an inventory of the more than 40 watershed culverts and assessing each for fish passage potential and possible improvements.

To protect the Winnicut River, care must be taken to keep the headwater marshland open and well vegetated. The vegetated land along the Winnicut River and its tributaries west of I-95 have undergone relatively little residential development, with the most intensive development occurring between Rt. 1 and I-95 in the center of town. Highway crossings, particularly those of I-95 and Rt. 111, have significant impact on the watershed and buffers. In addition to the obvious threat to wildlife, the roads negate the flood protection qualities of the marsh and enable pollutants from automobiles to quickly wash into the water, thus diminishing water quality. Continued protection by the town and abutting residents is critical to maintain the many benefits provided by the Winnicut River.

*Editorial note:* Your Conservation Commission is working in a collaborative effort with the Nature Conservancy to test and monitor water quality along the Winnicut River. Test results showing contamination will be referred to regulatory officials for enforcement.



Re-establishment of sharp-tailed salt marsh sparrows is one of the main goals for the New Hampshire Audubon's Little River Salt Marsh Wildlife Sanctuary. Habitat restoration is the most important activity that will enable the raspy trilling call of this sparrow to be heard again.



## Removal of Greenland dam will restore migratory fish to the Winnicut River

The Winnicut Dam in Greenland will be removed in 2009 to restore migratory fish habitat in the Great Bay tributary. The restoration of the river is important for rainbow smelt populations, as well as river herring and American eels.

The dam is owned by the New Hampshire of Fish and Game Department and is the only human-made barrier to upstream fish movement along the main stem of the river. The water below the dam is influenced by the tides. The dam



Smelt are just one species of fish that will benefit from the increased spawning habitat made available in the Winnicut River.

currently restricts fish movement within the Winnicut River, which in turn affects other ecological systems that are dependent upon the fish populations for dispersal within the ecosystem.

Although a fish ladder was incorporated into the dam when it was built in 1957, its design has proven to be inefficient in enabling fish to pass.



# Homeowners Guide to Protecting Buffers and Water Quality

## Top 10 ways to improve and protect water quality around the house

When it comes to keeping North Hampton's water clean, it is often the individual homeowner who can make the biggest contributions. The following are 10 activities that individuals can take on their properties to maintain healthy water quality.

### #10 Plant Rain Gardens

Direct downspouts and sump pump discharges to areas planted with water-loving plants.



### #9 Landscape with Native Plants

Planting native plants reduces need for chemical pesticides and fertilizers and provide food and habitat for many wildlife species.

### #8 Mow High

Mowing your lawn higher than 3 inches will produce a lush turf that holds water, is weed-resistant, and requires less fertilizer.



### #7 Minimize Erosion

Maintain lush plant growth in areas with steep slopes to hold soil in place. Minimize soil loss on seeded areas by using straw mulch.

### #6 Manage Stormwater Runoff

Slope driveways and patios to direct rainwater to vegetated areas that recharge groundwater.

### #5 Prevent Chemical Spills

Secure stored oil, gasoline, fertilizer, and pesticides in leak-proof containers and never near wetlands.



### #4 Maintain Your Septic System

NH Department of Environmental Services recommends that septic systems be inspected annually and pumped every three to five years.

### #3 Minimize Impervious Surfaces

Build the smallest buildings, patios, and driveways as possible and use water-permeable materials.

### #2 Reduce Fertilizer Use

Grow and maintain plants that required no fertilization. Reduce lawn area and use only slow release fertilizers.



## #1 Maintain Healthy Buffers to Wetlands

Maintaining 100 feet of lush, vegetated areas adjacent to wetlands will filter stormwater runoff, reduce erosion, lesson impacts of flooding, and provide adequate habitat for many wildlife species.

## Reduce Landscaping Chemical Use



Fertilizers, insecticides, and herbicides are damaging to our water supply. Where fertilizers are a must, choose organic, slow release ones. For pesticides and herbicides, choose those with the shortest lives, and those which affect only the targeted species of pests or weeds. Better yet, use none.

## More Information

**Slow-Release Fertilizers for Home Gardens and Landscapes** (<http://extension.unh.edu/Pubs/HGPubs/slowfert.pdf>) - UNH Cooperative Extension factsheet that defines slow release fertilizers and offers options.

**Landscaping at the Water's Edge: An Ecological Approach** (cost \$20, call 603-679-5616) - UNH Cooperative Extension manual for NH landowners and landscapers that describes ecologically-based design and low impact maintenance practices.

**Proper Lawn Care In the Protected Shoreland - The Comprehensive Shoreland Protection Act** - (<http://www.des.state.nh.us/factsheets/sp/sp-2.htm>) - NHDES factsheet that describes appropriate techniques for homeowners.

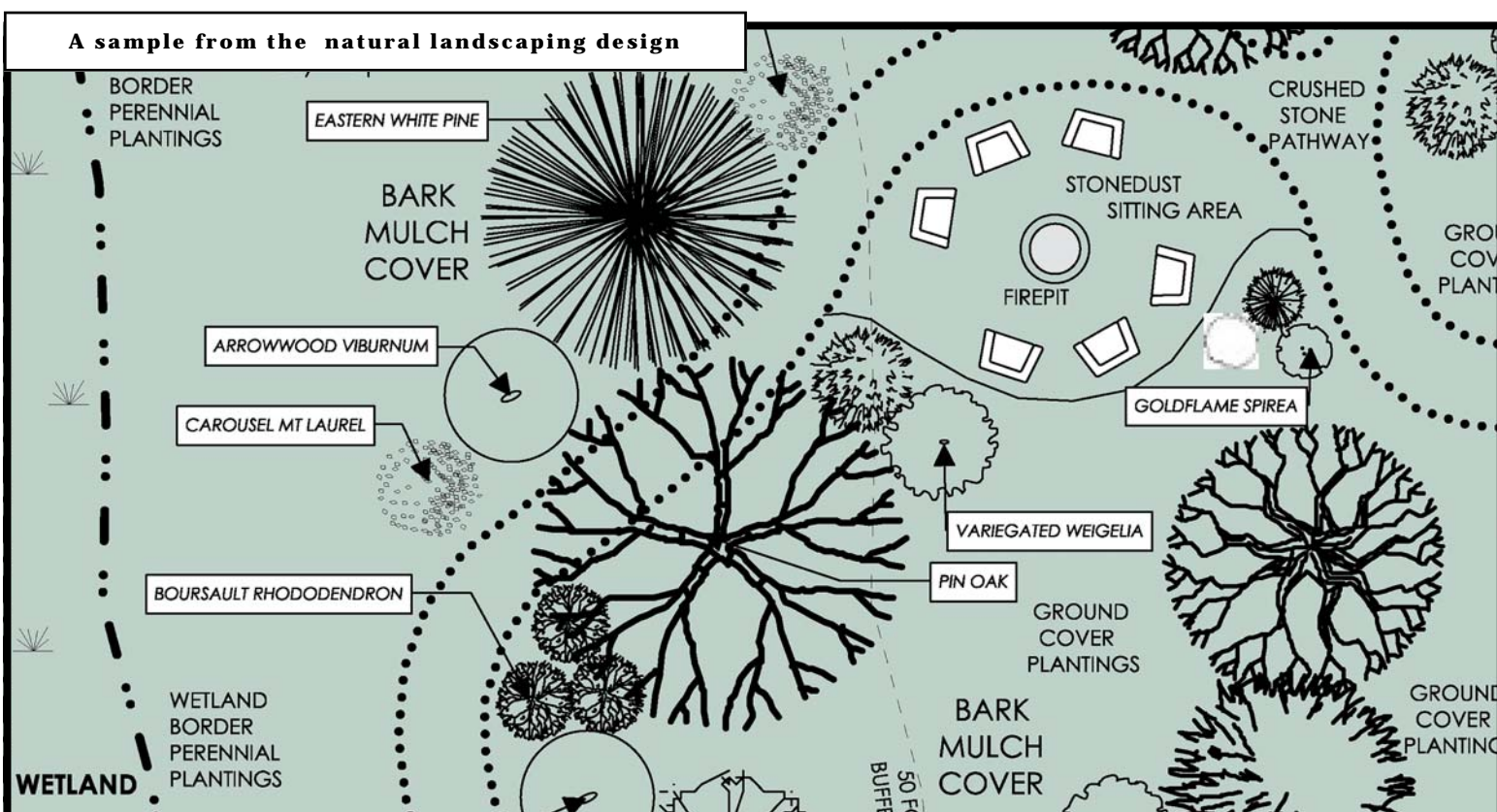
## Backyard buffers that work for people and nature by restoring ecological function

In 2006 the City of Portsmouth and several conservation organizations worked together to create a brochure to increase awareness about wetland buffers in the community and provide property owners with landscaping designs for healthy buffers.

The brochure includes three detailed landscaping plans. The first is called the Wildlife Enhancement" plan that suggests packing the 50 foot buffer with fruit bearing plants like highbush blueberry, bearberry, and winterberry to provide food and habitat for resting or nesting. The second landscaping

plan is called the "stylish gardener" and introduces exciting plant color and texture into the buffer to enhance the visual landscape, with plants like purple beech, shamrock inkberry, and wetland iris. The final landscaping design offered in the brochure is called "Natural Design" uses Northeast native plant varieties that require low maintenance and provide a mix of evergreen, deciduous and coniferous plants.

Each plan also includes recommendations for maintaining the design and suggested plant lists.



Copies of this brochure are available from the City of Portsmouth by contacting Portsmouth Environmental Planner Peter Britz at [plbritz@ch.cityofportsmouth.com](mailto:plbritz@ch.cityofportsmouth.com) to request copies.

**What are the benefits of healthy wetland buffers?**  
Wetland buffers provide a long list of benefits to society and the buffer landowner.

Here is a partial list:

- Provide erosion and flood control
- Prevent water damage to homes and buildings
- Filter sediments and debris
- Absorb and transform nutrients that would pollute surface waters
- Regulate stream flows
- Moderate stream water temperatures
- Stabilize the banks of waterways
- Protect in-water habitats
- Enhance wildlife habitats and corridors
- Provide recreation
- Enhance the aesthetics of the landscape



## North Hampton’s Aquifers

An aquifer is any formation in bedrock or sand and gravel that can yield a useable amount of water. In addition to bedrock aquifers, North Hampton is fortunate in having three major aquifers in sand and gravel that are utilized for water. North Hampton sand and gravel aquifers are shallow, some only 50 to 60 feet beneath the surface, while our bedrock aquifers are hundreds of feet deep. The majority of residential wells in town tap into bedrock aquifers.

Aquarion Water Company has eleven bedrock and gravel packed wells in North Hampton located primarily in the southeastern and northwestern parts of Town. The shallow sand and gravel aquifer wells yield markedly higher volumes than the bedrock wells. However, our sand and gravel aquifers are more susceptible to contamination because of their shallow depth.

***sand and gravel  
aquifers are more  
susceptible to  
contamination***

This was confirmed in the late 1980's, when some residential wells in North Hampton in the LaFayette Terrace and North Road areas were found to be contaminated by the Coakley Landfill Superfund site. The DES indicated in 1986 that " 1,1 dichloroethane is the predominant contaminant found to date in the overburden water supply wells in North Hampton, most of which were found on the west side of Rt 1 off Birch Road. This fact, combined with the contamination found in the groundwater, surface waters and Little River tributaries near the Birch Road area leads us to conclude Birch Road is a high risk area for contamination of private water supply wells." Subsequently, the water company's Hobbs well, located in the general vicinity of Birch Road, was closed as a result of concerns with its potential contamination. While we are not aware of any indications of further contamination, to safeguard our groundwater aquifers, we must be continually diligent in monitoring ground water and in maintaining drinking water protection areas near our wells.

## Healthy landscaping

*Continued from page 2*

flowers, and shrubs that encourage water infiltration. Before you spread fertilizer test your soil to see if you need it. If you must fertilize, select a slow release fertilizer or organic fertilizer to avoid excess nutrients running into the water. Most importantly maintain a fertilizer-free buffer around wetlands.

Where you need to have a lawn plant a mixture of grasses, clover, and legumes because a mix of the different species requires less nitrogen fertilizer and water, and is more resistant to diseases and pests. Consider planting native plant species instead of non-native plants. Native plants generally require much less water, pesticides, fertilizers, or trimming.

***How much  
lawn do you  
need?***

Professional landscapers and gardeners suggest top dressing lawns with compost. Compost reduces the need for fertilizers and water by supplying nutrients and helping the soil retain moisture. For more information on how your backyard can help water quality, contact Barbara McMillan, Outreach Coordinator, N.H. Department of Environmental Services, (603) 271-7889.

For information about your garden or lawn, soil testing, native plants, composting, and more, contact UNH Cooperative Extension Family Home & Garden Education Center Info-Line (877) 398-4769.

## Dismal swamp

*Continued from page 1*

Today we know that wetlands have many benefits and offer great recreational opportunities including hiking, kayaking and wildlife viewing. They are an important part of the hydrologic cycle, positively affecting water quality and water supply.

Wetlands provide valuable flood storage, sedimentation control, and natural water filtration. And wetlands are vital wildlife habitats, home to some of the most endangered animals in New Hampshire, including the sedge wren, the marbled salamander and the ringed bog haunter dragonfly.

Across the United States, roughly half of the wetlands have been lost in the last 200 years. But not all states are the same in terms of wetland loss.

New Hampshire has lost the least amount in the Northeast, just about 9 percent of its original wetlands. We are much better off than California, which has lost 91 percent of its historic wetlands. However, New Hampshire has experienced decreases in water quality and some wildlife populations, especially in the southeastern portion of the state.

To curb these downward trends, in 1969 New Hampshire enacted law RSA 482:A, which states "no person shall excavate, remove, fill, dredge or construct a structure in surface water, bank or a wetland without a permit from the Department of Environmental Services." Passage of this law was significant because it showed that people understood that a wetland has great public value, even if it exists entirely on private land.

Given that we now better understand the services wetlands provide to wildlife, the environment and humanity; it seems they may be due for another name change. Perhaps it would be more appropriate to rename them "lifelands." Something to consider.

## New rule changes for landowners adjacent to tidal portions of the Little River

On July 1, 2008, changes to the NH Comprehensive Shoreland Protection Act (CSPA) were adopted and some North Hampton landowners were affected by the new regulations. The act states that all coastal waters subject to the ebb and flow of the tide are under the jurisdiction of the CSPA.



The act establishes restrictions within a 250-foot buffer zone of protected waters. The reference line for coastal waters is the highest observable tide line, which means a line defining the furthest landward limit of tidal flow. This does not include storm events.

The protected shoreland begins at the reference line and extends 250-foot landward. The 250-foot mark is not a setback. It is the jurisdictional limit of the CSPA. However, within the jurisdictional limit, there are setbacks from the reference line. Activities prohibited or restricted at varying degrees within 250 feet of the reference line include construction of impervious surfaces, land clearing, tree cutting, and installation of septic systems. Learn all of the details of the CSPA at <http://www.des.state.nh.us/CSPA/>

In addition, Wetland, Subsurface (including subdivision) or Alteration of Terrain permits require supplemental information about the property if any part of the proposed project falls within the protected shoreland.

Questions regarding the CSPA may be directed to [shoreland@des.state.nh.us](mailto:shoreland@des.state.nh.us)

## New invasive plant threatens seacoast



Pepperweed is an invasive species that threatens Seacoast habitats. The plant can grow four feet tall and produces white flowers at the top of its smooth, fleshy stem.

Populations of pepperweed have been located in Hampton and Rye. The NH Coastal Program seeks volunteers to find new infestations. For more information contact the Coastal Program at 603-559-1500.

**Town of North Hampton**  
Town Offices  
237 Atlantic Avenue—2nd floor  
North Hampton NH 03862  
Phone: 603-964-8087  
Hours: M-F 8:00AM - 4:00 PM  
[www.northhampton-nh.gov](http://www.northhampton-nh.gov)

**Land Use Boards**  
Contact:  
Wendy Chase, Planning and Zoning Administrator  
[wchase@northhampton-nh.gov](mailto:wchase@northhampton-nh.gov)  
603-964-8650

**Special thanks to the subcommittee of town officials that reviewed this document:**

- Emily Creighton**  
(Select Board Chair)
- Phil Wilson**  
(Planning Board, Chair)
- Tim Harned**  
(Water Commissioner)
- Chris Ganotis**  
(Conservation Commission Chair)
- Lisa Wilson**  
(Conservation Commissioner)
- Lee Brooks**  
(Conservation Commissioner)
- Phil Thayer**  
(Conservation Commissioner)
- Richard Stanton**  
(Zoning Board of Adjustments, Chair)

This publication was produced by the New Hampshire Estuaries Project, which is a U.S. EPA—funded program at the University of New Hampshire with the mission to protect, enhance, and monitor the environmental health of the region's estuaries.

