2009


Greenland Conservation Commission

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Where the Wild Things Are!
A Natural Resources Inventory for Greenland
by Theresa Walker, Rockingham Planning Commission

Where is the biggest wetland in Greenland? How much of Greenland is forested? What types of birds can be found in Greenland? Where does most of our drinking water come from? The answers to these questions and many more can be found in the newly completed Natural Resources Inventory (NRI).

For the past year and a half, the Greenland Conservation Commission, a sub-committee of town residents, and staff from the Rockingham Planning Commission have been compiling this very thorough and detailed inventory of all the natural treasures found in Greenland. The report is chock full of interesting facts, data, explanations, and maps about the varied natural resources and ecosystems Greenland is lucky enough to have.

Three Fast Fixes For Reducing Stormwater Runoff
Rain Gardens, Rain Barrels and Green Roofs
by Jean Enns, Conservation Commission

Last year the U.S. Environmental Protection Agency and the U.S. Botanic Garden produced a great video titled ‘Reduce Runoff: Slow It Down, Spread It Out, Soak It In’ to showcase green techniques such as rain gardens, rain barrels and green roofs for managing stormwater runoff in urban areas. While Greenland may not exactly be considered “urban,” we are certainly not free from stormwater runoff and its associated impacts. Incorporating any of these three ‘do-it-yourself’ techniques at your home or business is an easy way to help protect our water resources.

Rain gardens, rain barrels and green roofs mimic the natural way water moves through an area before something was built on it, like a house. The idea is to deal with stormwater on site, and not send it downstream.

These techniques all do good things for the environment. They reduce the volume of stormwater in streams, they recharge your groundwater, and they capture harmful pollutants that would ordinarily contaminate wetlands, streams, rivers and Great Bay.

Rain gardens allow water to soak into the ground and become absorbed by plants instead of rushing into our storm sewers and polluting waters downstream. Essentially, they allow rainwater to spread out and slow down just long enough to soak into the ground. Rain gardens help naturally cleanse rainwater from a roof.

Keep an eye on that “Dam Cam”
Dam Removal Begins at Winnicut River Site
by Jill Scabill, Conservation Commission

After six years of planning, the Winnicut Dam is scheduled to be completely removed by Thanksgiving. The project finishes in the spring of 2010 when contractors plant natural vegetation to restore the river’s banks. The dam is being removed to open up 30 miles of passageway for migratory fish who swim upstream to breed but have not been able to since the dam was put in place.

A public event will be held on Thursday, October 15th at 2:00 p.m. to celebrate the start of the dam’s removal, the successful partnership, and most importantly, the restoration of the river.

The project was spearheaded by a collaboration of partners including the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, New Hampshire Department of Environmental Services Coastal Program (NHDES), New Hampshire Fish and Game Department, USDA Natural Resources Conservation Services, NH Charitable Foundation, the Coastal Conservation Association, the NH Mooseplate Grant Program and the Town of Greenland. The design firm Stantec engineered the plans and Absorption Technologies, Mooseplate Grant Program and the Town of Greenland.

A Citizen’s Guide to Protecting Greenland’s Water Resources
This publication is brought to you by the Greenland Conservation Commission with a grant from the Piscataqua Region Estuaries Partnership

www.greenland-nh.com/ConservationCommission.html
2009

Where are Greenland’s most precious natural resources?
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Prime Time

Why the most valuable of Greenland wetlands should be designated as Prime Wetlands by Jill Scabill, Conservation Commission

State RSA, 482-A:15 – Prime Wetlands are wetlands of substantial significance to a community due to their size, unspoiled character, fragile condition or other relevant factors. Biodiversity, Great Bay has a multitude of benefits for Greenland including recreational opportunities, fishing, aesthetics and rich natural landscapes and ecosystems. In addition to these incredible benefits Greenland is also home to some of the most productive ecosystems on earth: wetlands, both freshwater and tidal. With the substantial increase in development Greenland is also home to some of the most productive ecosystems. In addition to these incredible benefits Greenland has experienced over the last decade, these wetlands are being heavily encroached upon, while in addition steadily degraded every year. Wetland degradation affects the entire community because as wetlands are filled or up on lose their productive abilities to filter and clean our drinking water, store and reduce our floods. Protects us from erosion along the coast, reharce our aquifers, or provide critical habitat for our wildlife.

It is clear that these vital ecosystems must be protected. In order to the size and unspoiled character of some of the wetlands within Greenland they can be designated as Prime Wetlands and would then be better protected against encroaching development and subsequent degradation. Once a wetland is designated as Prime, any proposed development, such as a subdivision, within 10 feet of the wetland will require a public hearing to determine the community of the proposed development and to gather all citizens comments and concerns. The community’s comments coupled with an on-site evaluation will be needed before any building permit can be issued. Designs will ensure a fair consideration of the public’s needs and well being when evaluating the impacts of development on our natural resources.

To designate Prime Wetlands, Greenland would:
1. Identify wetlands that natural resources values national to inventory and evaluate our community’s wetlands.
2. Select a subset of the highest quality and most significant wetlands for protection.
3. Hold a public hearing to discuss the evaluation and the effect of prime wetland designation.
4. Vote to approve the designation of selected wetlands.
5. Submit the maps and report to the New Hampshire Department of Environmental Services.

There are 26 communities across the state that have Prime Wetlands designations including Exeter, Brentwood, Fremont and Newmarket.

Designating Prime Wetlands is a powerful way for Greenland residents to vote for and have a voice in protecting natural resources so that our grandchildren will be able to live in a prosperous, healthy, and beautiful community.

WETLAND/SHORELAND BUFFER

Water buffers provide many benefits to a landscape, as well as all citizens of Greenland.

Wetland buffers provide:
- Erosion and flood control
- Sediment and debris control
- Pollutant removal
- Stream flow regulation
- Shoreland stabilization
- Wildlife habitat enhancement
- Recreational opportunities
- Rural character

Diagram from Backyard Buffers that Work for People and Nature by Restoring Ecological Function, 2006. Copies of the brochure can be obtained by contacting the Portsmouth Environmental Planning Department or the Coastal Training Program at the Great Bay National Estuarine Research Reserve.

The Condition of Great Bay

Activities that take place on the land can have a profound effect on the health and sustainability of water resources. With intense development pressures in New Hampshire’s seacoast region in recent decades, land use policies and decision-making have had a profitably contributed to the water quality of Great Bay. The threat of stormwater pollution to the Great Bay Estuary is evident in trends that are occurring both on land, and in the water. In 2005 UNH’s Complex Systems Research Center mapped the amount of land in New Hampshire’s coastal watershed that is covered by impervious surfaces. Initially, measured that 20% of the land in New Hampshire’s coastal watershed was covered by impervious surfaces. The percentage of impervious cover in the watershed grew to 31.5% in 1997, to 33.6% in 1999, and to 35% in 2005. In Greenland, the land use and approval by Greenland’s Conservation Commission with support from Piscataqua Region Estuaries Partnership (PREP).

Stormwater runoff carries with it a host of pollutants, including nutrients, sediments, oils, metal, and nitrogen, which is emitted by cars and accumulates on roads and parking lots. It also occurs when rainwater or water from melting snow washes pollutants off of roads, parking lots and rooftops into streams. These conditions, collectively called impervious surfaces, prevent water from seeping into the ground and becoming cleansed naturally.

The Condition of Great Bay
by Tom Irwin, Conservation Law Foundation

For those who can not attend, the partners have installed a “dam cam” – a small camera mounted on a pole overlooking the construction site that will take a photo every 15 minutes so that the public can keep an eye on the project from home. The “dam cam” can be viewed at www.eastcoast.com/winnicut/

The Winnicut River Needs YOU

In 1998, the NH Volunteer River Assessment Program (VRAP) was established to promote awareness and education of the importance of maintaining water quality in New Hampshire’s rivers and streams. VRAP aims to educate people about river and stream water quality and ecology and to improve water quality monitoring efforts for the protection of water resources.

Citizens who want to participate in VRAP may contact the Greenland Conservation Commission at 431-7131, or by email at conservation@greenland-nh.com.
Buffers: What Are They and Why Should I Care?

A buffer is simply the vegetated area directly adjacent to something. If it is a wetland buffer it is, in Greenland, next to an unprotected wetland where water quality is reduced. If it is a wetland buffer it is, in Greenland, next to an unprotected wetland where water quality is reduced. Buffers are now even more important for communities being polluted by dissolved nitrogen. Maintaining soil quality, reducing pollution, and protecting water is now the goal. State and local ordinances help protect Greenland’s wetlands and watersheds. One way these structures are mandated is to ensure that roads do not cut directly to the water, which causes flooding and erosion. The design of a wetland buffer is a key component in improving water quality. The Path Less Traveled

The Path Less Traveled

Wetland and Shoreland Buffers

Wetland and shoreland buffers protect water resources by acting as a buffer zone that allows water and snowmelt by allowing it to seep into the ground. Therefore, it is in everyone’s best interest to maintain healthy buffers so we can maintain clean drinking water in Greenland. Buffers help maintain water quality and promote healthy wildlife. Buffers: What Are They and Why Should I Care?

HOW MUCH BUFFER IS ENOUGH?

Research shows that each function of a wetland typically requires a minimum wetland buffer width. To prevent sediment from washing into streams, at least 150 feet of buffer is needed. To mitigate the impact of flooding, 200 feet of buffer is needed. For adequate wildlife habitat, 300 feet of uncut, natural buffer is needed. Beyond adhering to the town’s regulations, careful stewardship of buffers is an important individual responsibility of landowners. No one should store vehicles in places that oil leaks can reach the ground and possibly pollute our water. Keeping landscaping activities to a minimum and planting only native plants will benefit wildlife and create a more stable environment. Consider maintaining a large buffer (300+ feet) of natural, uncut area to better protect wildlife and attract more beautiful wildlife. These measures are not mandated by law, but they make good ecological sense.

Preparing for a Changing Climate

Determining Culvert Vulnerability To Increased Stream Flows Due To Development and Climate Change

Like many small towns across the Northeast, New Hampshire Seacoast communities are currently experiencing increasing pressures on local lands targeted for residential and commercial development. Greenland faces this pressure due to its easy access to the open building lots, and its close proximity to beautiful natural resources such as Great Bay and the Atlantic Ocean. Careful planning is needed to protect Greenland’s rural character and resources from being damaged by too many roads, roofs, driveways, and parking lots. One way these structures damage our water is by funnelling rainwater and snow melt (collectively called stormwater) into streams and rivers, which causes flooding and erosion. Research clearly shows that the more developed land becomes, the more flood damage and environmental damage occurs.

The Path Less Traveled

The design of a wetland buffer can have a big impact on the water quality of the water. The thick plant growth of a healthy buffer will have a robust root system that holds the soil in place during rain storms and allows water to seep into the ground. The roots remove many contaminants from rainwater, such as dissolved nitrogen, before it enters streams or your drinking water. Routing rainwater through a vegetative buffer will improve water quality. The Path Less Traveled

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How Buffers Help Wetlands

The protection of wetlands and buffers benefits the state is protected by the Comprehensive Shoreland Protection Act, which regulates activity within 150 feet of tidally influenced land. Shore brook, Barker brook and Piscataqua brook the state’s Comprehensive Shoreland Protection Act (CSPA) has jurisdiction. Landowners near these tidal waters and marshes should go to the NH Department of Environmental Services website (dps.state.nh.us) and read about the CSPA. State and local ordinances help protect Greenland’s wetlands and water quality, but research suggests that these buffers may not be enough to protect all of the valuable services provided by wetlands.

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The main purposes of the NRI are to:
• Map and describe significant natural resources in Greenland;
• Identify areas of high ecological value;
• Recommend options for the protection and management of natural resources in town.

This effort to inventory Greenland’s treasures was born from the obvious intensified growth and development that Greenland has faced in the last decade. The town’s transformation from a predominantly rural community to a suburban town mirrors the experience of towns across New Hampshire’s seacoast. The growth of the state and particularly the southeastern region is not predicted to slow. Given this, Greenland is faced with the challenge of finding a balance between growth and development and the protection of the significant natural resources in the community. The rural and historic character of Greenland in combination with the Great Bay Estuary, Packer Bog, rivers, salt marshes, forests, and farms provides a high quality of life for residents and excellent habitat for native plants and animals.

The challenge of conserving significant resources in the face of increasing development and population pressures is not an easy one, but one that Greenland has proudly accepted. The Planning Board, Conservation Commission, Selectmen and residents can use the NRI as a foundation for policies and programs to protect farmland soils for local food production, groundwater for drinking water supplies, and wildlife habitat for diverse and healthy ecosystems. Greenland residents want to retain the high quality of their natural resources for future generations and the NRI can help achieve that goal.

The key natural resources of Greenland are:
• Great Bay, Winnicut River, Pickering Brook, Brackett Brook, Packer Brook, and other rivers and streams and their associated wetlands;
• Aquifers underlying Breakfast Hill Road, Post Road, and Portsmouth Avenue, all which provide drinking water;
• Remaining large blocks of open land, including farmland;
• Forests with a diversity of woodland species.

All of these natural resources have provided, and continue to provide, Greenland residents with the necessary elements of life, opportunities for recreation, and a legacy for our children.

Much of the information in the NRI was contributed by Greenland residents. A 2006 survey of our citizens provided information on a multitude of wildlife and other natural resources that was not known previously. The citizens of Greenland were fundamental to the NRI because local knowledge captures a more accurate picture of Greenland’s natural resources. The result is an inventory that reflects every aspect of Greenland’s rich resources, from the water quality in a stream to a backyard sighting of a fox.

The NRI is available for review at Town Hall and will be available on the Town’s website (http://www.greenland-nh.com/ConservationCommission.html). Citizens are asked to read and review the NRI and add to it with both photos and facts by emailing (conservation@greenland-nh.com) or mailing the Conservation Commission.

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A 2006 New Hampshire Fish and Game Wildlife Action Plan is the most comprehensive wildlife assessment ever completed in New Hampshire, identifying 225 species and 37 habitats in greatest need of conservation. Wildlife habitat is categorized in the Plan in four tiers:

Tier 1 – Highest quality habitat in NH
• Tier 2 – Highest quality habitat in an ecoregion or watershed
• Tier 3 – Other significant habitat at the regional scale
• Tier 4 – Locally significant habitat

Greenland has 5,044 acres of Tier 1 habitat, almost 60% of the land in town. Approximately 40% of that land is protected from future development. The town has 1,666 acres of Tier 2 habitat, which is protected from future development. Ninety-eight acres are designated as Tier 3 habitat, a little over 1% of land in town. Ten percent of this habitat is protected. Almost 1,120 acres of land in Greenland is classified as Tier 4 habitat, approximately 18% of the land in town. Fifteen percent of this land is protected from development.

The 2008 population of Greenland was 3,283. The population of Greenland grew 22% between 1990 and 2000. OEP projects Greenland’s population in 2020 will be 3,280 and 3,420 in 2020.

The Great Bay Estuary is Greenland’s most significant salt water resource. Covering 17 square miles with nearly 1,500 miles of tidal shoreline, Great Bay is unusual because of its inland location, more than five miles up the Piscataqua River from the Atlantic Ocean. Oysters, clams, and lobsters are harvested from these waters, as well as striped bass, bluefish, herring and smelt. Bald eagles, ducks, and geese spend the winter on the Bay’s open waters.

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What Each Homeowner Can Do To Improve Greenland

The Landscape Design Process

Ten Design Principles To Help Protect and Improve Your Shoreland Property:

1. Protect and Improve Soil - Improve poor soil with compost, and keep soil covered with plants or mulch to reduce compaction and erosion.
3. Pick the Right Plant - Install plants for Greenland's climate. Hardy native shrubs may resist pests and diseases. Non-native plants may require more water and attention. Match a plant's native size to the landscape; keep views open without pruning. Consider using plants to help block severe winds.
4. Think Rainwater Speed Bumps - Plants reduce the force and speed of rainwater flowing over land, especially on slopes. Dense planting will retain water, releasing it slowly, which conserves soil by reducing erosion. Plants between a stream and impervious surfaces, such as driveways, slow down rainwater and reduce downstream flooding.
5. Buddy-up Buffers - Maximize the benefit of a buffer by connecting yours with your neighbor's buffer.
6. Limit Impervious Surfaces - Replace existing asphalt or concrete driveways and walkways with water-permeating materials such as stone dust, brick, or pavers. This helps increase the amount of water seeping into the soil (plus they look great).
7. Rethink Your Lawn - Instead of all grass, consider trying ground covers and vertical layers of plants. These tougher surfaces slow rainwater and help filter it.
8. Minimize Chemicals - Instead of spraying pesticides, prune and remove infected plant parts. This will minimize disease and insect problems.
9. Reduce for the Lazy Man's Landscape - Design choice, like keeping lawns small or using native plants, reduce the time and money needed to maintain a lawn. Low-maintenance landscapes limit the need for maintenance and are also better for the environment.
10. Remember, “Your Land Matters” - Your actions on your land directly affect the ponds, streams, rivers, wetlands, and groundwater in Greenland. Detergents used in car washing, chemicals used in lawn treatments, and gas and oil leaks from mowers may contaminate groundwater.

What Kinds of Plants Grow in Buffers?

For this information for this article was excerpted by permission from “Landscaping at the Water's Edge: An Ecological Approach” by the U.S. Cooperative Extension Service. Copies of this guide-page guide for free may be ordered at extension.unh.edu or by calling 603-862-1564.

Natural vegetation adjacent to ponds and streams includes shrub wetlands, plants in lowlands, and upland plants. Homeowners wishing to fortify their landscape at the local nursery should match the type of plant to the buffer zone (see figure).

Weeds should be controlled by hoeing or other non-chemical means. Weeds may compete with desired plants and reduce soil fertility.

What do you feel are the values of Greenland's rivers, streams, ponds, wetlands and/or Great Bay?

Cite ten specific examples of what you feel are the values of Greenland's rivers, streams, ponds, wetlands and/or Great Bay.

Tell us what you think about Greenland's water resources. Email your thoughts or questions about Greenland's water resources to conservation@conservation.nh.com

Support well-reasoned efforts to protect private property rights while preserving our water resources.

Tell us what you think about Greenland's water resources. Email your thoughts or questions about Greenland's water resources to conservation@conservation.nh.com

What do you consider to be the most important thing citizens can do to protect Greenland waters?

Cite ten specific examples of what you feel are the most important thing citizens can do to protect Greenland waters.

Volunteer or get personally involved with our local boards and committees to assure that we are husbanding our waters in a fashion that will be sustainable for generations to come. It is up to us individually to vote in good stewards, and vote out of office those that don't “get the value” of our local waters.

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Smart Growth Begins with Conservation Subdivision Design

As Greenland grows, careful planning becomes more important to ensure that our natural resources are protected.

There are three steps that are taken in conservation subdivisions designs that set it apart from conventional designs:

1. Developers take a detailed site inventory of the parcel features and identify natural and cultural features vital to preserve prior to developing a site plan or formal application. These features and resources include: slopes, soil types, wetlands/ground pools, small streams, aquifers, floodplains, wildlife habitats, corridors and rare habitats, historic and cultural features such as stone walls, aesthetic views, and trails.

2. The approach to the design of the site is responsive to and reflective of the features identified in the inventory. If there is a wetland on site the buildings are placed in order to provide an appropriate buffer and preserve the area, not fill it. If there is a large tree system abutting the site the design of the buildings would allow access to the trails for the residents.

3. The building areas, lot lines, driveways, and roads are placed after the conservation areas and natural features are identified and preserved. A strong effort is made to minimize the need for impervious surfaces.

New Hampshire RSA 674:21 gives communities the authority to adopt innovative land use controls such as open space development and many communities throughout the Seacoast have done just that. At 3000 acres, Stratham town's conservation subdivision design adopted a proactive open space development ordinance that has proven to be quite successful at maintaining and protecting open space while allowing for continued growth.

In conservation subdivision designs, the buildings and site plan are altered to fit the landscape, the landscape is not altered to fit the buildings.

Conservation subdivision design is a proactive way for Greenland to smartly manage its impervious population increase while also protecting the resources that all residents enjoy.

Advantages of Conservation Subdivisions

Compared with conventional layouts, conservation subdivisions offer many potential economic, social, and environmental advantages.

1. Open space enhances a town’s quality of life, which is an asset that attracts quality businesses and economic growth.
2. Because homes are not so widely scattered, town services cost less and installing utility lines, streets, driveways, and sidewalks is cheaper.
3. Open space can be used as a public recreation land.
4. Home values increase when adjacent to protected open space.
5. Homes tend to appreciate faster than those in conventional developments.
6. Open space can be a buffer that protects wetlands, streams, and ponds.
7. Water quality is enhanced when streets and driveways are minimized.
8. Open space can provide wildlife habitat that connects wildlife preserves or protects unique or fragile areas.
9. Smaller yards are less expensive to maintain.

Sources - See Reference List on Page 12

Did You Know?

Research shows that once a watershed is covered with more than 10% impervious cover (like roads, buildings, and parking lots), the water in streams begins to show signs of decline.

In 2005 (the last time it was measured), impervious surfaces covered 12.5% of Greenland. This means water in our streams is already being negatively impacted.

Impervious Surfaces Are A Problem In Greenland

Believe it or not, there is a frog over your head

The grey tree frog is a common, if not often seen, Greenland resident. Grey tree frogs live mosty in wooded areas, especially wetland or riparian buffers. They are nocturnal and eat insects. They are scarce for living in trees with sticky toe pads and the ability to change color from grey to bright green to blend into their surroundings. The frog pictured to the left, was found in Greenland on a small beech tree. It changed color to match the bark. The grey tree frog below is given to match a leaf.

Who Knows?

More than 50 different kinds of dragonflies can be found in Greenland.

Conservationist Chuck L.

Buffer Plant Spotlight: Orange Jewelweed

Orange jewelweed can be found in many buffers in Greenland where its seeds wait to expire when handled too roughly.

Orange jewelweed is an annual plant native to North America and can be easily found in Greenland. It thrives in wet soils, ditches, and along creeks. The trumpet-shaped flowers are orange with three petals.

The leaves are slightly lobed and roped water. The droplets that form on the leaves after a rain shine in the sun. They look like tiny diamonds, which is how the plant was given its common name. Similarly, if you submerge the leaves in water underders and will take on a silvery sheen.

The ripe seed pods hang from the plant and have projectile seeds that explode out of the pods when they are lightly touched. This is the origin of another common name for the plant: touch-me-not.

Jewelweed is a traditional remedy for skin rashes and fresh jewelweed juice is said to ease itching of stinging nettles.

Balancing Development and Open Space

Balancing Development and Open Space

by Jill Scullion, Conservation Commission Member

There are 4 assumptions that can be made in regards to Greenland:

1. Growth in Greenland will continue.
2. Greenland citizens want to preserve the town’s open space and historical areas.
3. Current conventional subdivision regulations do not adequately protect open space.
4. There needs to be a subdivision process that is fair and equitable to established and incoming residents of Greenland as well as developers.

Introducing – Conservation Subdivision Design

Conservation subdivision design goes beyond the simple goal of clustering buildings together and preserving a portion of the parcel as open space. Conservation subdivision design accommodates the natural and cultural resource attributes of a property and reflects the broader environmental and social goals of the community. It allows for greater flexibility in design to provide for greater natural resource protection.

In conservation subdivision designs, the buildings and site plan are altered to fit the landscape, the landscape is not altered to fit the buildings.

Conventional Subdivision

Conventional subdivision standards create more impervious surfaces because longer, wider roads and driveways, are needed to connect houses with bigger lawns that are spread throughout an area (top). Conservation subdivision standards enable shorter roads, narrower, shorter roads, less lawn, and more natural open space (bottom).

Conservation Subdivision

Conventional Subdivision

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2. The approach to the design of the site is responsive to and reflective of the features identified in the inventory. If there is a wetland on site the buildings are placed in order to provide an appropriate buffer and preserve the area, not fill it. If there is a large tree system abutting the site the design of the buildings would allow access to the trails for the residents.

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Compared with conventional layouts, conservation subdivisions offer many potential economic, social, and environmental advantages.

1. Open space enhances a town’s quality of life, which is an asset that attracts quality businesses and economic growth.
2. Because homes are not so widely scattered, town services cost less and installing utility lines, streets, driveways, and sidewalks is cheaper.
3. Open space can be used as a public recreation land.
4. Home values increase when adjacent to protected open space.
5. Homes tend to appreciate faster than those in conventional developments.
6. Open space can be a buffer that protects wetlands, streams, and ponds.
7. Water quality is enhanced when streets and driveways are minimized.
8. Open space can provide wildlife habitat that connects wildlife preserves or protects unique or fragile areas.
9. Smaller yards are less expensive to maintain.

Sources - See Reference List on Page 12

Did You Know?

Research shows that once a watershed is covered with more than 10% impervious cover (like roads, buildings, and parking lots), the water in streams begins to show signs of decline.

In 2005 (the last time it was measured), impervious surfaces covered 12.5% of Greenland. This means water in our streams is already being negatively impacted.

Impervious Surfaces Are A Problem In Greenland

Believe it or not, there is a frog over your head

The grey tree frog is a common, if not often seen, Greenland resident. Grey tree frogs live mosty in wooded areas, especially wetland or riparian buffers. They are nocturnal and eat insects. They are scarce for living in trees with sticky toe pads and the ability to change color from grey to bright green to blend into their surroundings. The frog pictured to the left, was found in Greenland on a small beech tree. It changed color to match the bark. The grey tree frog below is given to match a leaf.

Who Knows?

More than 50 different kinds of dragonflies can be found in Greenland.

Conservationist Chuck L.

Buffer Plant Spotlight: Orange Jewelweed

Orange jewelweed can be found in many buffers in Greenland where its seeds wait to expire when handled too roughly.

Orange jewelweed is an annual plant native to North America and can be easily found in Greenland. It thrives in wet soils, ditches, and along creeks. The trumpet-shaped flowers are orange with three petals.

The leaves are slightly lobed and roped water. The droplets that form on the leaves after a rain shine in the sun. They look like tiny diamonds, which is how the plant was given its common name. Similarly, if you submerge the leaves in water underders and will take on a silvery sheen.

The ripe seed pods hang from the plant and have projectile seeds that explode out of the pods when they are lightly touched. This is the origin of another common name for the plant: touch-me-not.

Jewelweed is a traditional remedy for skin rashes and fresh jewelweed juice is said to ease itching of stinging nettles.
Invasive Plants

An invasive plant is any vegetation that is a non-native species that monopolizes light, water, nutrients, and space - to the detriment of other species. Many of these plants are exotics, introduced either intentionally or accidentally from another country. Exotic invasive species are able to grow rapidly and spread quickly in a short period of time.

Watch out for invasive species in your wetland and shoreland buffers. When possible pull these plants out and throw them away in the garbage to avoid spreading the plant.

If you suspect you have an invasive species on your property, contact Rachel Stevens, Land Stewardship Coordinator of the Great Bay National Estuarine Research Reserve in Greenland, at 778-0015 or rachel.stevens@wildlife.nh.gov

Plants to watch out for in Greenland

**Black swallow-wort** is a relative newcomer to Greenland, where it has been found in a few spots. Where found, it has covered and killed native plants. To identify the plant, look for a twining vine with five-petaled star shaped flowers or 2-3 inch seed pods. If you find a patch of swallow-wort, report it to Rachel Stevens (778-0015 or rachel.stevens@wildlife.nh.gov).

**Asiatic bittersweet** is a bright orange berry that is a beautiful in a holiday wreath, but the vines strangler trees and can completely overwhelm buffer areas. The vines spread by seeds and underground runners that can seemingly sprout up from nowhere. Vigilantly pulling down and throwing away the vines is needed to control this plant.

Three fast fixes . . .

local garden centers, hardware stores, or look on the Internet), and they are an easy do-it-yourself green technique for collecting rooftop runoff water for later use. Rain barrels alone help to dramatically reduce the impact of water that’s coming off of your property. Look for barrels with a tap and hose at the bottom of the barrel which allows for easy access to the water. If there is a screened opening at the top to keep mosquitoes out. Also look for a downspout diverter insert for directing water flow into your barrel, making for easy collection. In some cases a “rain chain,” a decorative chain that hangs from the valley or gutter point of your roof, is useful, although these are not as effective in directing water into your barrel.

Last but not least, many businesses, institutions and residences are implementing green roof strategies. Green roofs are roofs that have had specially designed traps of vegetation laid on them. The trays are designed for maximum water absorption and climate conditions, as are the plants, and can be easily installed by non-professionals. Pathways and seating areas can be created for aesthetic appeal, allowing for a place to retreat (if accessibility and codes allow), or the roof can be completely transformed for maximum runoff control.

The UNH Cooperative Extension worked with the City of Manchester in creating a green roof on a portion of its City Hall building using a system called GreenGrid. GreenGrid is a modular roof system composed of a series of pre-planted modules made of recycled waste, that can be easily placed directly on a roof or other structure with sufficient structural capacity.

A greenroof installed on City Hall in Manchester in 2002.

Many of the benefits gained from implementing a green roof can include:

* Reducing the energy needed to heat and cool the building below.
* Saving money by extending the life of the original roof.
* Filtering air pollutants.
* Improving air quality.
* Absorbing noise.
* Reducing the risk of flooding and overflowing sewers.
* Providing habitat for butterflies and other pollinators.

To sum up, rain gardens not only reduce water runoff or provide wildlife habitat, they also improve the aesthetic value of your home or business. Rain barrels are a very easy way for homeowners to save money on water bills, conserve water, and help protect the environment. Green roofs, while perhaps not a first choice for some, are quickly gaining ground as a smart way to beat soaring energy costs, let alone help protect our streams, rivers, and ponds, make our community more sustainable, and address some of the larger pollution issues faced by Great Bay by reducing the impacts associated with stormwater runoff. You can make a difference!

References cited in this newspaper

Three Fast Fixes For Reducing Stormwater Runoff (page 1)


GreenGrid roofing systems http://www.greengridroofs.com/greenroofs.htm

The Condition of Great Bay (page 3)


Wetlands and Shorelands Buffers (page 4)


Conservation Subdivisions (page 10)


There are no bad dogs, just bad dog owners.

In some Greenland neighborhoods, dog waste is a major source of bacteria in streams. Dog owners can eliminate this pollution by simply picking up after their dog and burying the waste or putting it in the trash. Routinely cleaning dog waste from pens and play yards prevents rainwater from flushing bacteria into streams. If you walk your dog(s) at Greenland Recreation Field, Caswell Field, or Krasko Field, please use the newly installed dog waste receptacles.

NEVER DUMP DOG WASTE DIRECTLY INTO A STORMDRAIN