

The Sampler

PROTECTING NEW HAMPSHIRE'S LAKES THROUGH THE DEDICATION OF VOLUNTEERS
PUBLISHED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
VOLUNTEER LAKE ASSESSMENT PROGRAM, SPRING 2006

Simple Things You Can Do To Reduce Runoff from Your Property

by Andrea LaMoreaux, DES VLAP Coordinator

Did you know that approximately half of the surface water quality problems nationwide are associated with nonpoint source pollution? Polluted runoff from the land is called nonpoint source (NPS) pollution. It occurs when rain or snowmelt flows overland as runoff, or through the ground as groundwater, picks up pollutants, and eventually discharges to a body of water.

Growth and development can have direct effects on the quality of water resources. The more forestland, meadowland, and wetland areas that are converted to impervious surfaces, such as roof tops, driveways, roadways, and parking lots, the more stormwater runoff flows off the landscape and into surface waters and groundwaters. If stormwater runoff is not treated



A rain garden can collect runoff from your property and allow it to infiltrate into the ground instead of becoming polluted stormwater runoff. (www.ceiengineers.com)

to remove pollutants, such as nutrients, pesticides, bacteria, and petroleum products, the quality of receiving waters will be negatively affected.

A prime example of the negative consequences of stormwater runoff can be seen in Lake Tahoe, California/Nevada. Lake Tahoe has always been known for its crystal blue water and amazing clarity. However, its clarity has been decreasing by as much as a foot per year! The best Secchi Disk depth reading measured in the lake during the past 10 years is 78 feet, which is much less than a 1968 reading of approximately 102 feet. Since Lake Tahoe is free of point source discharges (discharges from pipes) from

factories and wastewater treatment plants, it has been determined that nonpoint source stormwater runoff is one of the largest contributors to the alarming loss of lake transparency.

NPS pollution is widespread and we all contribute to it in many ways, including by driving a car, applying fertilizer to a lawn, or converting land for a new home or business. Ultimately, the goal we should all be striving for as responsible watershed stewards is the prevention of nonpoint source runoff within our watersheds. Although this may sound like a daunting task, the good news is that limiting the amount of stormwater runoff and the negative effects that it has on our lakes and ponds, and the environment as a whole, is something that each of us can participate in. Review the list below to learn how you can minimize nonpoint source polluted runoff to your lake, starting in your very own yard!

Build or purchase a rain barrel. A rain barrel is a container that collects precipitation that flows off rooftops from a down-

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Connor's Corner



by Jody Connor
DES Limnology Center Director

As you dedicated volunteer monitors know, Andrea and I are always striving to improve the Volunteer Lake Assessment Program (VLAP) to make it more accessible to new groups, and to provide new challenges to our existing volunteers. This year we are expecting a record 165 lakes to be monitored through VLAP. Along with the new lakes and new volunteers, are new watershed protection initiatives that we hope you will embrace.

One new initiative we hope many of you will help us with is identifying sources of chlorides to your lake. VLAP data indicates that the conductivity and chloride levels have increased dramatically in recent years in most New Hampshire's lakes that are located near developed areas. This may have some serious negative effects on lake ecosystems. Please read your 2005 Annual VLAP report to determine if we have indicated that this may be a problem in your lake.

We also encourage you to educate your town officials and fellow citizens about ways to protect and improve surface water quality by becoming an active participant on your town planning or zoning board or conservation commission. You can make a big difference in protecting your town's water resources. Within the last year, under the guidance of VLAP volunteer monitors, several towns have voted-in watershed ordinances that will protect lakes from uncoordinated, piecemeal

development which generates polluted stormwater runoff. You can help initiate responsible watershed management in your town by giving copies of this newsletter to your neighbors, and posting copies in public places such as the town hall, library, general store, and/or community center.

DES and Plymouth State University (PSU) have initiated the establishment of a water quality laboratory at PSU that will also serve as a VLAP satellite laboratory for volunteers in the northern region of the state. This laboratory will loan equipment to volunteer monitors and will also accept surface water samples for analysis, reducing volunteer commuting times and fuel costs. Details on the opening of the PSU lab will be forthcoming.

With the tremendous growth of the VLAP program over the years, and with a limited state funding source, we are in the process of initiating a program to accept funding from outside sources to support program expansion. The new VLAP law, that was passed in June 2005 and is discussed in greater detail on page five of this newsletter, allows DES to accept outside funding which will allow the program to continue to improve and serve additional volunteers and lakes. We will roll out the sponsorship initiative to the public soon. We hope that you will help us support this new and innovative approach that will help us all achieve an even better VLAP.

Water Quality Predictions for the 2006 Season

Looking ahead to the upcoming summer season, you all should be aware of what short-term trends to expect for New Hampshire lakes. Let's first look at last year's predictions. I

predicted a quicker and more dense growth of aquatic plants, especially in those lakes that had milfoil infestations. I also predicted a significant spring diatom increase, greater filamentous green algae growth, more incidences of cyanobacteria blooms, and reduced lake clarity all as a result of significant spring phosphorus loading. Judging from the VLAP data and the complaints received during Summer 2005, these predictions held true for many lakes.

Unfortunately, similar conditions prevailed in 2005-2006 as did in 2004-2005. New Hampshire received record amounts of rainfall in October 2005, resulting in a record amount of

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Attend the Annual Volunteer Lake Assessment Program Workshop!

May 20 in Concord

The 2006 VLAP Annual Refresher Workshop will be held on Saturday, May 20, at the Department of Environmental Services in Concord from 8:30 a.m. to 12:30 p.m. There is no fee for this workshop and complimentary snacks and beverages will be provided.

All workshop participants will learn about the latest lake management legislative updates, VLAP program updates, and what cyanobacteria is and how to prevent it from becoming a problem in New Hampshire lakes. Also, the recipient of the 2006 Volunteer Limnologist Award will be revealed!

In addition, attendees can choose to attend two of the three following sessions: Aquatic Plant Identification Workshop, Lake Ecology and Sampling Refresher, or Ask the Experts question and answer session.

If you would like to attend, please contact Andrea LaMoreaux, VLAP Coordinator, at (603) 271-2658 or at alamoreaux@des.state.nh.us.



Dedication to John Alger

We dedicate this issue of *The Sampler* to John Alger, who passed away on October 11, 2005.

John Alger was a fellow Volunteer Lake Assessment Program monitor, lake enthusiast, and a State Representative who fought to protect not only the quality of his favorite lake, Loon Lake in Plymouth, but all lakes and ponds throughout New Hampshire. John was a co-sponsor of HB 487, which was signed into law in June 2005 to formally establish VLAP with DES.

We will always remember John for his support of VLAP, for his love of New Hampshire's lakes, and for his friendship. He will be missed!

2005 Volunteer Limnologist Award Recipients

At the 2004 Annual Volunteer Lake Assessment Program workshop, DES initiated a tradition of recognizing at least one volunteer for his or her dedication and commitment for volunteer lake monitoring. This award has been appropriately named the Volunteer Limnologist Award because each time a volunteer monitor collects a water sample from a lake or pond or conducts a Weed Watcher survey, the volunteer is performing the role of a true limnologist.

Potential recipients of this award are evaluated based on their years of service collecting water samples through VLAP and also surveying aquatic plants through the Weed Watchers Program. Potential recipients are also evaluated based on their involvement in educating their community about lake quality and watershed management issues.

In 2005 we recognized four individuals and one lake association as Volunteer Limnologists, as follows: Leslie Enroth, Kezar Lake; Bob Compton, Dering Lake; Bill Martin, Mascoma Lake, Baron Fryer; Pine River Pond; and the Webster Lake Association. We also awarded an overall Secchi Disk Award to Bill Martin.



Bill Martin, Mascoma Lake, Enfield.

Bill has sampled Mascoma Lake through VLAP for a number of years and he has also coordinated Weed Watcher surveys and the Lake Host Program. He spearheaded the Lake Mascoma Watershed Study to track down bacteria and phosphorus sources within the watershed. And, Bill continues to be actively involved in educating the community and state representatives about water quality issues in the Mascoma Lake watershed and throughout the state. Congratulations, Bill!

Attend the VLAP Workshop to find out who will receive the 2006 Volunteer Limnologist Award ... it could be you!

VLAP Monitors Help DES Assess NH Lakes

by Bob Estabrook, DES Chief Aquatic Biologist

You may have heard of terms such as “305(b) report”, “303(d) list”, and “list of impaired waters.” These all reference a requirement that all states have to report every two years to the federal government on the quality of the state’s surface waters. A summary of the results for lakes from the 2004 report is provided in this article. The 2006 report is in progress and information on the report can be found at www.des.nh.gov/WMB/swqa/. The results of the 2004 assessments for individual lakes can also be found at this site.

How Are Assessments Made?

Water quality standards require lakes to meet all designated uses. The two main designated uses are primary contact (swim use) and aquatic life use. Generally if a lake meets these uses it will meet all other uses (e.g., secondary contact, drinking water supply and wildlife). The one exception to this is the fish consumption use. All New Hampshire lakes are considered impaired for the fish consumption use because of the statewide fish consumption advisory.

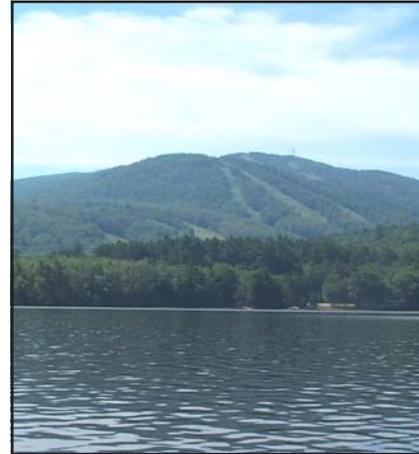
For each designated use, a core group of selected parameters are needed to make an assessment. Other parameters can be used to assist in the assessment but are not essential. In general, a minimum of 10 results within the past 10 years are needed to make an assessment, and if more than 10 percent of the results exceed the water quality criterion, the lake is listed as impaired. The exception to this rule is bacteria where only two results are needed.

Primary Contact Use: The core parameter is *Escherichia coli* (bacteria). A minimum of two samples collected during the summer season are needed to make an assessment. Chlorophyll and cyanobacteria scums are also used to assist in the assessment.

Aquatic Life Use: The core parameters are dissolved oxygen, pH and no obvious impairment of the biological community. The presence of an exotic plant species such as variable milfoil is an example of an impairment of the biological community. Toxics are also used to assist in the assessment. Assessments using pH can include values from any depth and any season. Dissolved oxygen (DO) assessments are based on profiles taken between 10 a.m. and 2 p.m., and at least half of them must be taken from June through September. Values from the epilimnion or upper 25 percent of depth are compared to the DO criterion.

Assessment Results for 2004

Assessment results are tracked based on acres of lakes rather than numbers of lakes. A little over one-half of the lake acreage in the state were assessed in 2004. Of those assessed, 98.5 percent fully supported the swim use. The causes of the impairment for the impaired lakes were primarily chlorophyll and cyanobacteria and not *E. coli* bacteria. For the aquatic life use, only 9 percent of the assessed lake acreage were fully supporting. Over 85 percent of the impaired lake acreage was caused by the presence of exotic plants and nearly 15 percent was due to low pH values (a few lakes were impaired by both so the total per-



Mountainview Lake, Sunapee.

centage is greater than 100 percent). This lack of support is somewhat misleading because the entire acreage of a lake is listed as impaired if exotic plants are present – not just the infested acreage. Lake Winnepesaukee is impaired for exotics and this one lake alone accounts for 57 percent of the impaired acreage.

How Can Our Monitoring Group Help Assess the State’s Waters?

By monitoring your lake through VLAP, you are already helping DES assess lake quality in the state! Although the VLAP sampling program is designed to document trends in trophic quality to provide data for protecting your lake from increased eutrophication, the data is also being used for these federally-required assessments. In fact, for many of the water quality criteria, only VLAP lakes could be assessed for the 2004 report because these were the only lakes with sufficient data. Ways that your monitoring group may be able to help DES improve upon its ability to assess the quality of the state’s

NH Lake Assessments
continued on next page

VLAP Legislation and Adopt-A-Lake Initiative

A significant law that will usher in a new era for the Volunteer Lake Assessment Program was signed by Governor John Lynch in 2005 at the New Hampshire Lakes Association Annual Lakes Congress.

This law establishes VLAP within the New Hampshire Department of Environmental Services. While VLAP has been in operation since 1985, this law formally establishes the program and the coordinator position in the DES hierarchy. This will give DES and you, our dedicated volunteers, a secure volunteer lake monitoring pro-

gram for the future. In addition, this legislation allows DES to apply for and accept gifts, donations of money, federal, municipal or private grants, or other funds or incentives from any source to expand the capabilities of VLAP.

We are now exploring many funding opportunities to enhance and strengthen the services that VLAP provides to volunteer monitors and lake associations. As participation in VLAP has grown tremendously since its inception, and as it is expected to continue to grow, our first objective is to hire ad-

ditional staff so that the program can continue to provide a quality and timely service to our existing volunteer monitors, and accommodate new volunteers and lakes.

DES has been working closely with the New Hampshire Lakes Association and the New Hampshire Business and Industry Association to develop a VLAP Adopt-A-Lake Corporate Sponsorship Initiative. We hope to unveil this initiative within the next few months. Since many businesses in New Hampshire have a vested interest in ensuring that the state has quality lakes, we anticipate this opportunity will be well received by the business community.

If you know of any individuals that live in your watershed who are affiliated with a business that might be interested in learning more about the Adopt-A-Lake Initiative, please let the VLAP Coordinator know.

NH Lake Assessments continued from previous page

lakes include:

1. DES encourages each monitoring group to sample their lake at least three times per sampling season, and, if possible, more frequently. An increase in data collection at lakes already participating in VLAP would enable DES to determine water quality trends and report on the quality of surface waters throughout the state with more accuracy and confidence.

2. DES encourages all monitoring groups to sample their lake for *E. coli*. While bacteria are generally not a problem in New Hampshire lakes, we recommend that each monitoring group take at least two *E. coli* samples along the shoreline each sampling season so that each VLAP lake can be assessed for swimming.

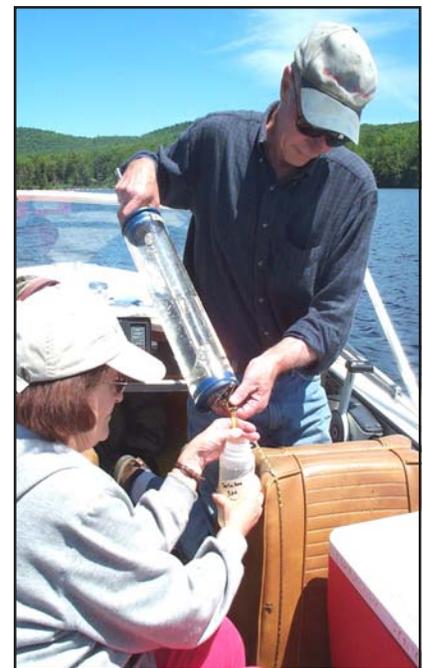
3. DES encourages lakes to collect the dissolved oxygen profile between 10 a.m. and 2 p.m. Profile data collected outside

this time period cannot be used for assessments under the current protocol.

4. DES encourages all monitoring groups to spread the word about VLAP! Please invite other lake associations, community officials, and residents that live near a lake to join VLAP. An increase in the number of lakes that are monitored through VLAP would further enable DES to determine water quality trends and report on the quality of surface waters throughout the state.

Regardless of an individual's or group's motivation for sampling their lake or pond through VLAP — whether it is to improve community planning decisions, to do their part in protecting the local environment, or to protect their own investment in property adjacent to a lake or pond — the end result is the same: VLAP volunteer monitors play an integral role in DES's mission to protect and report on the quality of New Hampshire's lakes!

Thank you!



Helga Mueller (left) and George Tompkins (right), Lake Tareleton, Piermont.

The Battle of 2006: Canada Geese vs. the Lake Tarleton Volunteer Monitors

by Sara Sumner, DES Beach Program Coordinator

Well folks, spring is here and this is one competition you don't want to miss! The Lake Tarleton volunteer monitors are battling the ever-troublesome Canada geese population!

Lake Tarleton is a 315-acre lake located in the town of Piermont. The development within the watershed and along the shoreline is minimal and the lake is home to Lake Tarleton State Park. The State Park operates a small beach area used by park visitors and local residents. Unfortunately those local residents include Canada geese; estimated at a whopping population of approximately 40 to 50 individuals during 2005. Unless something is done to discourage the Canada geese from residing on the lake, it is expected that the population will almost double during the 2006 season.

Canada geese are beautiful creatures, but are a force to be reckoned with. One goose can consume up to four pounds of grass per day, creating about three pounds of fecal matter. This fecal matter houses nutrients and potentially harmful bacteria and pathogens. The nutrient composition consists mainly of carbon, nitrogen, and phosphorus, which can contribute to algal blooms and excessive plant growth in lakes. That's right, Canada geese are flying fertilizers! Not only do they fertilize lakes, they also pose health risks to humans that recreate in surface waters containing fecal deposits. Their fecal matter may contain the swimmer's itch organism as well as *E.coli* bacteria. When present in excessive amounts

in surface waters and ingested by humans, *E. coli* may cause gastrointestinal problems such as nausea, vomiting and diarrhea. For these reasons, swimming in waters frequented by Canada geese is not recommended.

So, how do we rid our lakes of a bird protected by the Federal Migratory Bird Treaty Act? Well, the Lake Tarleton volunteer monitors are embarking on a humane mission to prevent Canada geese from returning to their lake. During the summer of 2005, the volunteers contacted the DES Beach Program Coordinator and the Lake Tarleton State Park Regional Manager after the DES Beach Program issued a beach advisory for elevated bacteria levels at the park beach. The obvious source of the *E.coli* was the resident Canada geese. DES provided the volunteers with background information on Canada geese and how to manage the population. The volunteers then drafted a game plan and met with DES and the park manager to discuss management options. Since Canada geese typically do not respond to just one management activity, several coordinated activities are required to deter the population. The volunteers quickly realized that a team with a multifaceted strategy would be necessary to compete with the geese.

Enter the Battle of 2006: Team Canada Geese versus Team Tarleton! The volunteers have taken the early lead, wasting no time by scheduling an early spring application of a naturally occurring compound called Flight Control on the



grassy areas frequented by the geese. The Flight Control compound is visually distracting and is a method proven to be effective in deterring the nesting and feeding of Canada geese. Team Tarleton anticipates that this strategy will prevent the geese from nesting and feeding along the park shoreline. Team Tarleton's next line of defense will be to maintain a grass height of at least six inches from spring through early summer at the park. Finally, a large plastic floating swan will be anchored in the lake just outside of the swimming area to scare the geese away, and a sign will be posted asking beach patrons not to feed the geese. Team Tarleton anticipates that the first steps of their game plan will deter the geese from roosting at the lake, while the latter steps will prevent them from "just visiting."

All in all, Team Tarleton is making a valiant effort at battling the stubborn, occasionally vicious, and growing Team Canada Geese! Stay tuned for an update and, in the meantime, check the DES website for more information on battling geese at www.des.state.nh.us/factsheets/bb/bb-53.htm.

If you have a problem with Canada geese at your beach areas contact Sara Sumner at (603) 271-8803 or ssumner@des.state.nh.us.

Deering Planning Board Mandates Low Impact Development

by Bob Compton, Deering Planning Board Chair and VLAP Monitor

Since the passage of the Deering Lake Watershed Protection Ordinance at last year's town meeting, the Deering Planning Board has mandated low impact development (LID) techniques for all new subdivisions within the Deering Lake watershed. It is a strategy that the board feels will soon be standard procedure most everywhere.

"Sometimes it's like wrestling with a bull," says Bob Compton, a Deering Planning Board member, "when the Board suggests a low impact development strategy to professional engineers who have their own way of dealing with stormwater runoff based on antiquated best management practices." In many instances, Compton reports, the experts aren't as up to date as they could be about best management practices to manage stormwater runoff.

Compton is a longtime New Hampshire Department of Environmental Services Volunteer Lake Assessment Program monitor for Deering Lake. He



attributes much of his knowledge about mitigation practices for stormwater runoff and nonpoint source pollution with his involvement in VLAP and the resulting connection with DES staff, including Andrea LaMoreaux and Jody Connor.

"Most often, we get blank stares when we suggest a naturalized vegetated stormwater recharge area closer to a house site instead of a proposed long open swale with a holding pond at the bottom," Compton says. "But, in every case so far, we have saved applicants money, and, at the same time, reduced the impact to the natural hydrology of each site."

Compton cites the encouragement and constant support of the DES Biology Section staff as

one of his board's strengths. "We are always tapping them for information and background about innovative, state-of-the-art water quality expertise."

"We, as a planning board, have to be able to truly believe in and be ready to back up what we are asking developers to do ... especially when it represents change. When developers realize that what we are asking for usually saves them money, they get on board real quick."

In one case this year, the Deering Planning Board convinced a developer to incorporate a bioretention area to handle stormwater runoff from a site situated on an aquifer. The low impact development proposal literally saved the applicant thousands of dollars compared to the originally proposed conventional storm drain configuration.

Compton insists that low impact development strategies will soon be the norm for most communities. "It's usually less expensive to implement and always lessens the impact on the land."



Larry Coleman, Pool Pond, Rindge.

What It Means to be a VLAP Volunteer

- V** is for the valuable work you do.
- O** is for the opportunity we have to assist you.
- L** is for the labor you endure for the love of your lakes.
- U** is for the understanding of lake ecology you gain.
- N** is for the nutrient samples you collect.
- T** is for the turbidity samples you collect.
- E** is for your enthusiasm and energy.
- E** is for the way you encourage your fellow watershed residents to become responsible lake stewards.
- R** is for remembering just how lucky we are to know you.
- S** is for saying "Thank you, and keep up the splendid work!"

Andrea LaMoreaux, VLAP Coordinator

What's New In the World of Aquatic Weeds?

by Amy P. Smagula, DES Exotic Species Program Coordinator

Over the winter, the Exotic Species Program has been working on a number of new projects. The following is a summary of just some of those activities.

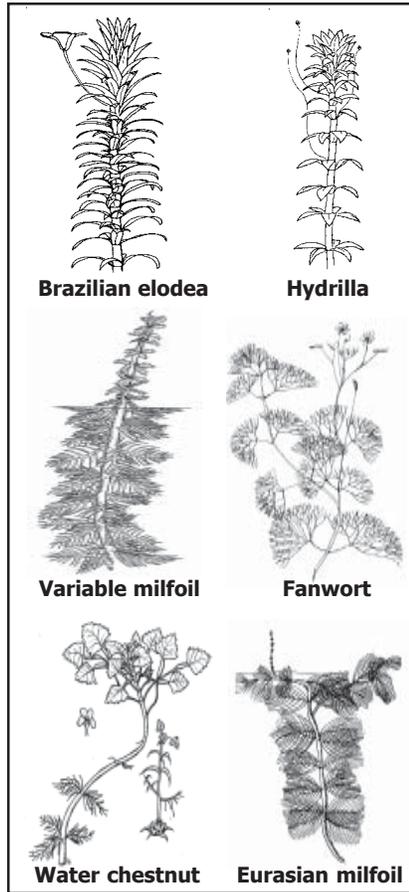
Exotic Species Infestations:

Good news! In 2005 we documented only one new infestation of exotic aquatic plants in New Hampshire. Fanwort (*Cabomba caroliniana*) was identified in Wilson Lake in Salem, a small waterbody which was originally a quarry but has filled in with water. The infestation is a result of the downstream migration of fanwort fragments from Arlington Mill Pond, which is just upstream from Wilson Lake. No new exotic milfoil infestations were found in 2005.

Exotic Species Rules: The rules for the exotic species program expire in Fall 2006. Work has already started on amending and re-adopting rules for the program, which will include the expansion of the prohibited species list, clarification on criteria to list species as prohibited, and rules outlining contractual procedures for funding control projects. More details will follow on the exotic species website.

Statewide Aquatic Nuisance Species Management Plan:

DES, in cooperation with several other state agencies, private stakeholder groups, and the aquatic plant industry, has embarked on the path of drafting and eventually adopting an Aquatic Nuisance Species (ANS) Management Plan. The plan is something that the Federal ANS Task Force has requested individual states develop. The plan allows for the review of all activities related to non-native aquatic species



(plants, animals, pathogens, etc.) activities within each state, and works to strengthen programs and collaboratives. In addition, the plan identifies avenues to funnel federal dollars into states with plans to assist them in preventing and managing exotic aquatic species in their states.

Legislation: The 2006 legislative session is an active one for exotic species. There are currently four bills within the legislature dealing with various aspects of exotic species like milfoil. Two bills seek to add additional funding to the program, primarily for control activities, one seeks to remove a sunset provision on the funding for prevention and research grants for milfoil and other exotic aquatic

plants. The final one addresses the use and regulation of aquatic herbicides to control exotic aquatic plants. DES is actively tracking each bill.

Control: In 2006, DES is working with various lake associations and marinas across the state to grant up to \$80,000 in matching funds for exotic aquatic plant control projects.

Management Plans: DES signed a memorandum of understanding with the New Hampshire Fish and Game Department that now makes it mandatory to develop long-term management plans for each waterbody that has an infestation of exotic aquatic plants. The management plans will document recreational, economic, aesthetic, and ecological values of waterbodies, and will outline a plan on how to manage exotic plants while minimizing risks or threats to the values of the waterbody. DES plans to work with lake associations and municipalities to put these plans together. If you live near a lake with exotic milfoil or another exotic aquatic plant, you may soon be asked to participate in the data gathering phase for the lake management plan.

Prevention and Research

Grants: In 2006, DES will be granting funds for three projects dealing with the prevention of exotic plant infestations. Grants will be awarded to the New Hampshire Lakes Association to coordinate the Lake Host Program; to the Squam Lakes Association to coordinate a signage/education program for their work on exotic milfoil in the Squam Lakes;

Exotic Aquatic Plants
continued on next page



2006 Legislative Update



There are several bills that DES is following that relate to lakes. For the most up-to-date information, visit the New Hampshire General Court website at www.gencourt.state.nh.us/ie.

HB 1684

- Creates a commission to study the leasing of state-owned waterfront property.
- Establishes a moratorium on leasing of state-owned waterfront property.
- *House voted this bill inexpedient to legislate.*

HB 1407

- Repeals the sunset provision in the Milfoil and Other Aquatic Weeds Prevention Program and therefore assures continued funding for milfoil prevention programs including the Lake Host Program and milfoil research programs.
- *This bill passed the House Recreation, Resource and Development Committee (RR & D), passed the House Ways and Means Committee, the House floor, and the Senate Environment and Wildlife Committee. The bill will be voted on by the Senate floor in mid-April.*

HB 1701

- Requires all boat registration fees collected to be remitted to the Department of Safety Services.
- Increases boat registration fees by \$4.
- Applies the increase in registration fees to the exotic aquatic weed control fund.
- *This bill passed the RR & D Committee but the House Ways and Means voted this bill inexpedient to legislate.*

HB 1418

- Authorizes the payment of road toll refunds to the navigation safety fund or the lake restoration and preservation fund if requested by the applicant.
- *This bill passed the House Transportation Committee, the House floor, the Senate Finance Committee and the Senate floor. As of the writing of this newsletter, the bill awaits the Governors signature to become law.*

HB 1317

- Authorizes DES to use herbicides to control exotic weeds.
- *This bill passed the House RR & D with amendment. The legislation was altered to form a study committee made up of representatives from the House, Senate,*

DES, Department of Agriculture and Fish and Game. The goal of the study committee is to streamline the permitting process for herbicide application for exotic aquatic weed control. This bill will be heard in the Senate in mid-April.

SB 282

- An added amendment to a Bill to allow Police officers to authorize the towing of abandoned vehicles from private property. This amendment will transfer authority to DES to be contacted and to follow-through on the removal of any submerged gasoline powered vehicle.
- This amendment also requires vehicle removal within a 48-hour time period and contains fines of \$500 per day that the vehicle remains submerged.
- *This bill passed the Senate and passed the House Transportation Committee. It will soon be heard on the House floor.*

HB 162

Also, many of you may already be aware that HB 162, the proposed speed limit bill, that would set maximum daytime and nighttime speed limits on lakes passed the House but did not receive Senate support.

Have you
scheduled your
annual DES
biologist visit yet?

If you haven't, please
contact the VLAP Coordinator at (603) 271-2658 or
alamoreaux@des.state.nh.us.

Exotic Aquatic Plants continued from previous page

and, to the Milton Three Ponds Protective Association to gear up their monitoring programs and to educate lake residents and lake visitors about exotic aquatic plants. DES is also working with Plymouth State University to develop a research project related to variable milfoil growths in Squam

Lake.

More information about exotic species regulations, grants, control projects, and general program information can be found on the Exotic Species Website at www.des.state.nh.us/wmb/exoticspecies.

Amy Smagula can be contacted at asmagula@des.state.nh.us or (603) 271-2248.

The Pillsbury Lake Community Fights Unregulated Development

by M.J. Turcotte, VLAP Monitor and PLC Member

It started six years ago – one year after I moved to Webster's Pillsbury Lake Community ...

In November 1999, the dirt road I live on served four houses. Beginning in 2000, I noticed wooded areas near my house were being clear-cut within 150 feet of the lake shoreline. Between 2001 and 2004, three new houses were built on a total of one acre of land. There was already one house on that side of the road, so that meant four houses on one and one-quarter acres.

This type of development was not just happening on my road. From 2000 through 2005, there were 142 building permits allowed by the Town of Webster, and 60 of these were issued for development within the Pillsbury Lake Community, an area of 300 acres of land, most of which are one-quarter acre lots that were meant to hold seasonal homes. I discovered that the town had no building codes and that, although Pillsbury Lake Management (PLM) Inc. had civil authority to enforce the original subdivision Restrictions and Easements, the PLM Board did not exercise this authority.

I couldn't believe that there would be four septic systems (three new) on one and one-quarter acres of land on the same side of the dirt road that leads to my house, with three of them being situated immediately adjacent to 250 feet of waterfront. I wanted to know how this could happen. So, during the five year period, I attended PLM Board meetings and Water District meetings (Pillsbury Lake has its own community water system, which was built to support seasonal homes but

has a moratorium on new hook-ups) and started asking questions. I looked up laws, rules and obtained fact sheets from the Department of Environmental Services and presented the information to the Water District Commissioners for distribution. I complained about the building and violations to anyone at the DES who would listen. I joined the Volunteer Lake Assessment Program and tested the quality of the lake at my own expense. I gave out information to anyone who asked.

For various reasons, little happened to mitigate the increasing development at Pillsbury Lake. The selectmen, planning board and DES said they recognized the development pressures at Pillsbury Lake and that the quality of the lake could be in jeopardy. But, development was occurring on nonconforming lots and no one was certain what could be done to restrict the development.

In August of 2005, at the annual meeting of the Pillsbury Lake Community, seven new members were elected to the PLM Board. Their motivations for volunteering included concerns that increasing development with little regulation was having negative effects on their community and the quality of the lake. A special assessment was voted to hire a lawyer to interpret the restrictions and easements and to advise the PLM Board on its authority. The board prepared a roster for attendance at the selectmen's meetings. One of the PLM Board members was on the planning board as an alternate. The PLM Board president developed a close rapport with the Conservation Committee chair-

man. The PLM Board sent out a mailing to all members of the community with information on the community, the town of Webster, and the Pillsbury Lake Water District. Fact sheets on shoreline protection and permits needed from DES were also included, along with a contact sheet listing telephone numbers and email addresses for all the PLM Board members, the district commissioners and the town of Webster offices. The PLM Board informed the selectmen and the planning board that the Pillsbury Lake Community restrictions and easements would hereafter be enforced.

Development continued. During the summer of 2005, seven houses were built on clear-cut lots uphill of the lake, two of which were built on the waterfront leaving little vegetative buffer. In late 2005, when the PLM Board determined that a proposed town zoning article, which would implement a town-wide 4 percent building cap would not significantly reduce the rate of development around Pillsbury Lake, 45 petitioners presented a warrant article to the selectmen to amend the zoning article to put a 2 percent cap on building permits for the Pillsbury Lake Community. This meant that of 32 possible building permits for 2006, the Pillsbury Lake community would only be allowed three to four permits, instead of the five-year trend rate of 16.

After submitting the amendment the PLM Board implemented an aggressive outreach campaign to gain voter approval of the 2 percent cap amend-

The Pillsbury Lake Community
continued on next page

Groups Receive Grants to Address Watershed Management Issues for VLAP Lakes

The Department of Environmental Services' administers the Nonpoint Source Local Watershed Initiative and the Watershed Restoration grant programs, which are available to municipalities, regional planning agencies, non-profit organizations, and conservation districts to address watershed management issues. Following is a summary of a few recent DES grant funded projects that are focused on watershed management issues for lakes monitored through VLAP.

Partridge Lake, Littleton:

The Partridge Lake Property Owners Association received grant funding to develop a watershed based plan, design and

The Pillsbury Lake Community continued from previous page

ment. Tactics the Board employed included: attending planning board hearings, conservation commission meetings, and town budget meetings to speak in favor of the 2 percent cap amendment; endorsing a candidate for selectman whose opponent was vehemently against the 2 percent cap; posting signs on well-traveled roads urging support of the 2 percent cap; providing inserts geared to effects on the town, such as taxes and infrastructure, for the local newspaper discussing the 2 percent cap; and, on Town voting day, campaigning at the polls in support of the 2 percent cap and the community's endorsement for selectman.

The 2 percent building cap amendment for the Pillsbury Lake community was passed on March 14, 2006, 190 to 121 votes! This is a great example of how a group of concerned citizens can make a difference!

install stormwater BMPs and design and distribute a watershed guide on water quality.

Silver Lake, Harrisville: The Silver Lake Land Trust (SLLT) received a grant to conduct a study on ways to improve stormwater and septic system management. The SLLT has taken the lead for septic system assessments while one of DES's on-call consultants is investigating stormwater improvements.

Pawtuckaway Lake, Nottingham:

The Pawtuckaway Lake Advisory Committee received grant funding to develop a watershed based plan, design and install stormwater BMPs and design and distribute a watershed guide on water quality.

For more information about grant opportunities, visit www.des.nh.gov/wmb/was/grants.htm or contact Andy Chapman at (603) 271-5334 or achapman@des.state.nh.us.

Forging a Watershed Community

The Beaver Lake Watershed Partnership (BLWP) held its inaugural meeting on January 30 and its second on March 27 with nearly 30 stakeholders from Auburn, Chester, and Derry participating.

The project began when the BLWP was funded through a Watershed Assistance Grant from the New Hampshire Department of Environmental Services and administered by the Beaver Lake Improvement Association. The BLWP is conducting a watershed survey, writing a watershed management plan, creating a Beaver Lake Watershed curriculum, building a website, and documenting the entire process with a video production. The Beaver Lake and Harantis Lake Volunteer Lake Assessment Program data as well as other DES studies are providing valuable data and guidance for this planning effort.

Naturesource communications, Boscawen, was selected as the project lead with team member Gomez and Sullivan Engineers, PC. The BLWP has drafted a set of priorities that are the basis for the plan's

goals, objectives, and supporting activities, as well as a draft table of contents for the plan and a quality assurance project plan for the watershed assessment. Partner, Pinkerton Academy, is working with its faculty and students to create Stream Teams that will conduct watershed surveys and ground-truth for GIS data for the watershed plan and its partner towns.

The dynamic and continuously updated plan will provide guidance to the watershed towns on innovative methods and technologies for protecting and conserving water and land resources. The resulting plan will be updated throughout the entire process—and beyond.

For further information, contact Michele L. Tremblay, nature-source communications Project Team Manager, at (603) 796-2615 and mlt@naturesource.net or visit the Partnership at BLWP.net.

Limnologists in Training Answers

(from page 12)

1. B, 2. D, 3. F, 4. E, 5. G, 6. A, 7. C

Limnologists In Training

by Alicia Carlson, DES Environmentalist

Can you guess the number one threat of pollution to New Hampshire's surface waters (lakes, ponds, streams, and rivers)? Is it factories or wastewater treatment facilities discharging their wastes? Nope! It's nothing that comes out of a pipe. It is much harder to locate. Give up? The number one polluter is called **nonpoint source pollution**.



What exactly is that? Nonpoint source pollution comes from a variety of areas that are within a **watershed**.

Things like farms, parking lots, roads, and construction areas are considered sources of nonpoint source pollution. And, how are these polluting our lakes and rivers? Good question!

People use **fertilizers** on their lawns, **pesticides** on crops, spread salt on roads, and even ignore their pets' wastes as it

accumulates on roadsides and park grounds. These items contain chemicals and other **pollutants** that can be contained in **runoff** during a rainstorm. When the rain washes across the land, pollutants are picked up and flow along with the water. The water eventually reaches a lake or river, and in goes the pollutants!

There are many other types of pollution that affect our lakes and rivers. Read through this

newsletter and see how many more you can find! Or, visit the U.S. Environmental Protection Agency website, which has a number of fact sheets discussing nonpoint source pollution at www.epa.gov/owow/nps/facts/.

Now, try to match up the following vocabulary words with their correct definitions. Find out how much you learned about nonpoint source pollution. Good luck!

Write the letter of the definition in the space next to the vocabulary word that you think it best fits. (*Answers; page 11*)

- | | |
|-----------------------------------|--|
| 1. Fertilizers ____ | A. Water that flows over the land. |
| 2. Limnologist ____ | B. Chemicals used to make plants grow. |
| 3. Nonpoint source pollution ____ | C. An area of land that discharges to a waterbody. |
| 4. Pesticides ____ | D. A person who studies lakes and ponds. |
| 5. Pollutants ____ | E. Chemicals used to kill or repel pests. |
| 6. Runoff ____ | F. Pollution that is difficult to detect. |
| 7. Watershed ____ | G. Chemicals that make our water dirty. |

Webster and Highland Lakes Watershed Solutions

The Department of Environmental Services recently awarded a grant to help form a Partnership that will lead to the development of a Watershed Management Plan for Webster and Highland Lakes. The Partnership Group includes residents and other stakeholders from Webster and Highland Lakes, municipal officials from the City of Franklin and the Town of Andover, and a consultant team led by Vanasse Hangen Brustlin, Inc., Hutchins Consulting Services, and naturesource communications. The overall goal is to draft a watershed plan that clearly identifies water quality impairments and sources and recommends actions that the Partnership will implement during and after the planning process.

Along with over 17 years of VLAP data from Webster and Highland Lakes, the Partners are referencing and analyzing a variety of reports including a diagnostic and feasibility study and lake monitoring reports prepared by the DES. Using their local knowledge, the Partners will sleuth out areas where algae and other water quality issues have been reported, identify possible causes in the watershed, and form recommendations for solutions. The Plan will be released in the late fall of 2006.

For further information, contact Bill Arcieri, VHB Project Team Manager, at (603) 644-0888 x2504 and warcieri@vhb.com.

Sampling Tip: To Use or Not Use A View Scope

A view scope is a long tube, usually with a clear bottom, that can help reduce interference from glare and choppy water when used to view the Secchi Disk in a lake. There have been several scientific studies that have concluded that the view scope allows for less variability between observers and more sensitive measurements of Secchi Disk depths of six meters or more. Studies have also shown, including a study conducted through VLAP during the summer of 2005, that the difference in Secchi Disk depth readings taken with and without the use of a view scope can vary up to 30 percent, and even more in some cases. Studies have also shown that it may be most appropriate to collect non-view scope transparency measurements on the shady side of the boat and view scope measurements on the sunny side of the boat.

Since most VLAP groups have collected Secchi Disk transparency measurements for many years without the use of a view scope, it would not be scientifically justifiable for these groups to suddenly switch to using a view scope. A sudden switch to using the view scope would make it impossible to compare historic non-view scope transparency results to view scope results for the purpose of assessing long-term trends in lake transparency.

Therefore, if your group is interested in measuring Secchi Disk transparency with the use of a view scope, we ask that your group conduct a comparison study at your lake between the two methods for a period of years. What this will involve is your group continuing to collect the Secchi Disk depth without the use of a view scope on the **SHADY** side of the boat and collecting the Secchi Disk depth with the use of a view scope on the **SUNNY** side of the boat. You will see that the VLAP field data sheet has been revised so that you can record both sets of results. In addition, we ask that you record the weather conditions (particularly with respect to the sun conditions) and time of day that the readings were taken. This data will be used in the future to determine if it is appropriate to apply a conversion formula to earlier transparency data collected without the view scope at your lake so that these data can be compared to data collected with the view scope.

While the DES Limnology Center has a few view scopes to loan out, we encourage interested groups to purchase a view scope, or make a view scope according to instructions provided here.

How To Make A View Scope

Materials

- 2-foot section of 4-inch PVC or ABS pipe *with black interior*
- PVC glue
- 4-inch PVC coupler
- Plexiglas cut in a circle (this will require you to start with a square that is at least 4 inches x 4 inches)
- Clear silicone rubber sealant
- One 5 ½-inch pull handle
- 2 screws (if not supplied with handle)
- Foam pipe insulation or weather-stripping (for face protection)
- Drill and screwdriver

Instructions

1. Cut the PVC pipe to a length of approximately 24 inches if it is not already.
2. Glue the PVC pipe onto the coupler.
3. Size the Plexiglas to fit into the coupler (make it slightly smaller than the outside diameter of the pipe).
4. Cut and file the Plexiglas into a circle. This can be tricky. A saber saw or a jigsaw with a fine-toothed blade is recommended. Make sure that the Plexiglas is well secured when cutting it. It may be necessary to use a grinding wheel and/or file to get it to the proper size and shape.
5. Lay a fine, continuous bead of clear silicone on the inside "shelf" of the coupler.
6. Place the clean Plexiglas onto the sealant and press in, making sure not to squeeze out all of the silicone.
7. Lay another continuous bead of silicone around the Plexiglas edge to seal from both sides.
8. Wet your finger and push or drag lightly on the silicone going around the outside edge circle to seal the Plexiglas against the PVC pipe.
9. Drill two small (1/8-inch) holes in the side of the coupler so that air will not be trapped in the open end of the coupling when the view scope is put into the water.
10. Mount the handle approximately 4 inches from the end of the scope that you will be looking into. Use two screws (stainless steel sheet metal screws are best). Pre-drill holes that are smaller than the screw size with a drill bit. Put a small amount of PVC glue in the pilot holes and on the screws. Be sure not to over tighten the screws.
11. Cut the pipe foam or weather-stripping and glue it to fit around the end that you look into.
12. Allow the view scope to dry 24 hours before using.

Salt: An Emerging Issue for Water Quality

During New Hampshire winters, a common activity is clearing the latest onslaught of snow and ice from our roads, driveways and sidewalks. Although safety is our primary concern with snow removal, the use of salt (sodium chloride) and other de-icing products have a negative effect on water quality.

In some regions of New Hampshire, testing over the last 25 years has indicated that chloride levels have increased steadily and substantially in freshwater streams, rivers, lakes, ponds, wetlands, and groundwater. In some waterbodies, elevated chloride levels are so high that they threaten the health of sensitive fish species and smaller organisms that serve as the primary food source for fish. In addition, elevated chloride levels in drinking water supplies can pose a health risk to people in need of restricting their sodium intake.

Our water resources are being inundated with chloride from many sources. Water runoff from local roadways, parking areas, driveways, walkways, and salt storage areas, and discharges from water softening systems from regional water suppliers and individual

homeowners all contribute to the problem. This creates quite a challenge for reducing salt use and protecting water quality in New Hampshire.

Unlike other pollutants, salt cannot be treated or removed from runoff — what salt is spread on the ground and pavement moves through the natural system and eventually reaches our groundwater and surface water.

Low Salt Diet for Your Yard

Our only option to restore our water quality is to better manage our salt use. DES and the Department of Transportation are working with the Environmental Protection Agency to further study chloride levels in certain regions and identify needed reductions to restore better water quality. These organizations will be taking appropriate actions themselves and working with area communities to reduce salt use and releases to address this problem.

Each of us at home and at work, should try to use salt only when absolutely necessary, and then use only enough for safe passage. If you can see salt crystals on the walkway or drive after the ice is gone, sweep it up and store it to be re-used during the next storm. Learn to

gauge how much is enough and use salt only when necessary. The warmer it is, the less salt it takes to melt the ice.

Stored salt should never be left exposed to rain or snow. Store salt under a roof or in a sealed container. If this is not possible, then outside piles should be placed on concrete pads and covered with temporary waterproof materials, such as a tarp. Keep salt piles away from storm grates; these drain directly to rivers and ponds.

Sand can also be a pollutant. If using sand or other abrasives for winter maintenance, be sure to sweep up any left over material. The particles can clog storm water inlets and sewers. They may wash downstream and end up in streams and lakes smothering aquatic plant and fish habitat. In addition, sand use can contribute to increased air pollution if the particles become airborne from wind or vehicles.

Research continues on the effectiveness and safety of alternative de-icing chemicals. Calcium magnesium acetate (CMA) is being produced and has few of the negative environmental impacts associated with salt. Currently alternative materials are more expensive, but may be practical in some situations.

This article originally appeared in the January 2005 edition of GREENWorks: Ideas for a Cleaner Environment published monthly by the DES Watershed Management Bureau. To read other GREENWorks Articles, visit www.des.nh.gov/gw-list.htm.



Snow removal on the Kancamagus Highway (www.freephoto.com).

Connor's Corner
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phosphorus loading to most of the state's surface waters. The question is: How much phosphorus was flushed out of the lakes during the floods and how much remained in the lakes to serve as the 2006 summer nutrient supply? During the winter, minimal ice and snow thicknesses on the lakes did little to limit the amount of sunlight penetrating into the water column and it is likely that winter productivity in the lakes was not suppressed as usual. Ice-out came very early for most lakes this spring so lakes will likely heat up faster than usual.

With the high sediment and phosphorus loading during fall 2005, the early ice-out this spring, and the increasing intensity of the sunlight as the spring progresses, I predict another early spring diatom increase in most lakes. Anticipate low clarity and highly turbid waters from April through June. Also, expect to observe a yellow scum on your lake in late-May through June. This yellow scum is natural pine pollen deposition that will temporarily decrease lake clarity but will soon become waterlogged and either wash up onto the shoreline or sink to the bottom of the lake by the third week of June allowing clarity to increase in July. If the late spring and summer months provide sufficient sunlight, look again for high concentrations of filamentous green algae in most nearshore areas that typically have little wave action and mixing. The appearance of cyanobacteria in surface waters is typically difficult to predict, but if you observed these green-blue scums in your lake last season, you should expect a repeat performance for this sum-

mer. It is likely that cyanobacteria scums, which typically look like green paint chips or vehicle coolant discharges, will appear in late-July through September.

Although we received large volumes of runoff during the fall of 2005, the recent drought has left many of our lakes at or below the normal level. If it doesn't rain more than usual this spring, many lakes will likely experience reduced areas of shallow nearshore zones. The combination of lower surface water levels and increased sunlight penetration into the

Simple Things You Can Do
continued from page 1

spout. The water that is caught can be used on lawns, gardens, and indoor plants. By collecting rainwater, not only will you reduce the amount of nonpoint source stormwater runoff from your property, but you may also save money and water. To build your own rain barrel, check out the internet at www.lid-stormwater.net/raincist/raincist_specs.htm.

Install a rain garden. These are bowl-shaped gardens designed to catch rainwater from impervious surfaces and help it to infiltrate the soil, thus reducing stormwater runoff and recharging groundwater. You can find directions on how to start your own raingarden at www.raingarden.network.com.

Limit the amount of impervious surfaces on your property. Revegetate a bare slope or pave your driveway with pervious pavement rather than traditional asphalt. Pervious pavement allows for water to soak through it and into the ground. Infiltration trenches and vegetated swales near your driveway are also useful for in-

creased stormwater absorption. More information on pervious pavement can be found at www.stormwatercenter.net.

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Construct a perched beach. If you are a waterfront property owner and either have, or would like to have a sandy beach, then a perched beach would be your best option to prevent stormwater runoff and erosion. Perched beaches are located entirely out of water and have little or no slope. You can learn how to construct a perched beach on the DES website at www.des.nh.gov/wetlands/guidebook/beach.htm or by contacting the DES Wetlands Bureau at (603) 271-2147.

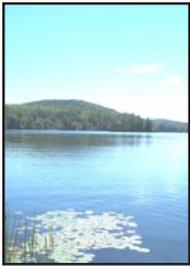
While DES is working hard to reduce nonpoint source pollution throughout New Hampshire in several ways, we need your help! We must all realize that each of us has a responsibility to contain, treat, and infiltrate stormwater from our property and it is easy to do.

Please commit to implementing one of these techniques to reduce nonpoint source pollution from your property and show your neighbors and local business owners!

Publications: What's Hot

Lake Quality Reports Now On-line

A variety of water quality reports on New Hampshire lakes are now available on the web. They can be accessed at www.des.nh.gov/wmb/lakes/lake_water/. They include reports on acid rain, trophic surveys and diagnostic lake studies, as well as links to other lake-related sites. Both summary data and individual lake reports are available for essentially all New Hampshire lakes under the "Trophic Surveys" program. Based on information requests received at DES, the trophic reports are the most popular.



Lake Winona,
New Hampton.

In addition, the annual Volunteer Lake Assessment Program reports are available on the VLAP website at www.des.nh.gov/wmb/vlap/.

ILE Workbooks

The Interactive Lake Ecology (ILE) student and teachers' workbooks are available for purchase! The curriculum includes chapters on lake for-

mation, water properties, the water cycle, the aquatic food chain, watersheds, pollution, non-native species, lake testing and classification. In addition, vocabulary exercises, experiments, and activities are included. While this curriculum was originally designed for middle school students, it can be adapted for older students and adults. For information, contact Alicia Carlson at (603) 271-0698, or visit the ILE website at www.des.nh.gov/wmb/ILE.



At the request of our volunteer lake monitors, two new fact sheets have been created and are posted on the DES website, as follows:

New Biology Fact Sheets

"Why Watersheds Are Important to Protect," www.des.nh.gov/wmb/wmb-19.htm.

"Give Your Lake a Voice: Create a Lake Association," www.des.nh.gov/wmb/wmb-20.htm.

Hard copies of these fact sheets can be ordered from the DES Public Information Center at

pip@des.state.nh.us or (603) 271-2975.