



SUPPLY LINES WITH THE SOURCE



Newsletter of the NHDES Drinking Water & Groundwater Bureau
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Forested Watersheds Help Save on Water Treatment Costs

A study by the U.S. Environmental Protection Agency, the U.S. Forest Service, and the Trust for Public Land links declining forest cover in water supply watersheds with lower water quality and increased water treatment costs.

The research found a correlation between land cover and an index of water quality based on three parameters that bear strongly on water treatment costs: total organic carbon, turbidity, and alkalinity. Specifically, lower turbidity was related to higher forest land cover and higher turbidity was related to higher urban land cover and higher agricultural land cover. Among the various measures of land cover, such as forest cover or urban cover in the entire watershed, forest cover within a 100-foot buffer around water bodies showed the strongest correlation with the water quality index, although forest cover within a 300-foot buffer showed a stronger correlation with turbidity.

When several land cover characteristics were combined into various linear models, the model with forest, urban, and agricultural land cover explained 66 percent of the variation in turbidity among the treatment plants.

Although turbidity alone was not found to be significantly related to treatment cost, there were significant relationships between total organic carbon and treatment cost and between the water quality index and treatment cost. Given the high variability in the data and the relatively small data set, the study does not indicate what economic impact a given amount of land use change would have on a particular treatment plant. For example, a 10 percent increase in urban land cover resulted in an increase in treatment cost ranging from 2 to 51 percent. The study looked only at chemical treatment costs, not capital costs.

The study is based on a survey of 60 water treat-

ment plants across the country treating between 1 million and 100 million gallons per day, with an emphasis on a 20-state area, including New England, the Mid-Atlantic, and portions of the upper Midwest. The paper expands on an earlier study conducted by the Trust for Public Land in 2004 and published in cooperation with the American Water Works Association. That study, which found that for every 10 percent increase in forest cover in the watershed, treatment and chemical costs decreased about 20 percent, is available at www.tpl.org/content_documents/protecting_the_source_04.pdf.

The more recent study, "Statistical Analysis of Drinking Water Treatment Plant Costs, Source Water Quality, and Land Cover Characteristics," can be found at www.palwv.org/wren/library/documents/landnwater_9_2008_whitepaper.pdf. ©

Generator Grants Available for Municipal Water Systems and Village Districts

New Hampshire Homeland Security and Emergency Management recently announced another round of Emergency Management Performance Grants targeted to improve "all-hazards" planning and preparedness capabilities/activities, including the purchase of power generators. A 50 percent match is required, in the form of either cash (hard) or in-kind (soft) match monies. Please contact Steven Finnegan at (603) 223-3644 or Steven.Finnegan@hsem.nh.gov for information or an application. ©



SPOTLIGHT ON THE MASCOMA RIVER

Three Towns Work Together to Protect River

By Rachel Ruppel, GIS Analyst/Planner, Upper Valley Lake Sunapee Regional Planning Commission

The Mascoma River flows through southern Grafton County, connecting the community centers of Canaan, Enfield, and Lebanon, and providing drinking water to Lebanon, hydroelectric power, wildlife habitat, and opportunities for recreational activities. However, the river and its watershed face new threats to water quality, including invasive species, cyanobacteria blooms, and stormwater runoff. In 2008, citizens concerned about the river's future formed a tri-town committee to prepare a nomination for the Mascoma River to become a "designated river" under the New Hampshire Rivers Management and Protection Program (RMPP).

Shawn Donovan, member of the tri-town committee and Lebanon resident, explains the importance of the Mascoma River designation for the city of Lebanon's water supply. "Not since the passage of the Clean Water Act has there been an opportunity like this for communities and citizens in the Mascoma River watershed to collaborate on protecting the most important natural resource we have. Nomination of the Mascoma into the New Hampshire Rivers Management and Protection Program will ensure the protection of the city of Lebanon's water supply for generations to come."

RSA 483 established the RMPP in 1988 to protect nominated rivers for their outstanding natural and cultural resources. Designation involves a multi-step process. First, an interested organization develops a nomination that describes the river's values and characteristics, and demonstrates local support for the river's designation. A successful nomination requires review and approval from the DES Rivers Coordinator, the Rivers Management Advisory Committee, the DES Commissioner, the Legislature, and the Governor. The nomination goes into effect when the Governor signs the bill to amend RSA 483 to designate the nominated river into the RMPP.

The benefits of designating a river include increased public awareness of the river, the formation of a volunteer local advisory committee to serve as a regional voice for the river, the development and implementa-

tion of a river management plan, and reinforcement of state protections for water quality and quantity. The local committee plays a key role in discussing and addressing river-related issues across municipal boundaries. Dialogue by leaders across political boundaries concerning the long-term use of the river is extremely valuable, particularly when making decisions that may affect water quality. Decisions that affect water quality or flow should be evaluated on a watershed basis to



Mascoma, continued on page 3



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Thomas S. Burack, Commissioner
Michael J. Walls, Assistant Commissioner
Harry T. Stewart, Water Division Director
Sarah Pillsbury, DWGB Bureau Administrator

Editors
Pierce Rigrod Holly Green

To subscribe, contact Pierce Rigrod
at (603) 271-0688 or pierce.rigrod@des.nh.gov
www.des.nh.gov

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Drinking Water Funds Make a Big Impact on a Small Water System

Silver Bell Cooperative water system is an example of how good planning and small capital improvements can further protect public health and improve drinking water quality. Silver Bell Mobile Home Park comprises 21 single family residential units located off of Route 125 in Rochester, N.H. Until recently, this resident-owned cooperative operated a small public water system that experienced chronic contamination in its well. However, strategic capital improvements have improved drinking water quality for the park's residents.

The park was served by a shallow dug well (approximately 15 feet deep) located approximately 70 feet from Route 125. For the past seven years, the well regularly experienced positive total coliform results and elevated levels of radium. Due to its design and location, the well was vulnerable to contaminants from storm-water runoff and accidental spills from the state highway. Funds provided by the Drinking Water State Revolving Fund through the American Recovery and Reinvestment Act of 2009 (ARRA) allowed



the system to connect to a nearby water line owned by the city of Rochester, improving water quality for the residents of this community.

Fortunately, when Route 125 was reconstructed many years ago the city had the foresight to install a water stub across the highway for a future connection for the Silver Bell cooperative. This stub, which was six feet from the edge of the pavement, was less than 90 feet from the Silver Bell water system. Silver Bell applied for ARRA funding and was ranked first out of the 265 pre-applications. Projects were ranked in accordance with their impact on public health, water quality violations, and affordability.

The Silver Bell project was completed in three days and under budget at a cost of \$15,000. It is a good example of how water systems and users benefited from ARRA funding. Silver Bell Cooperative now has a more reliable source of drinking water and is relieved of the burden of owning and operating a small public water system. ©

Mascoma, *continued from page 2*

safeguard drinking water supplies and other important uses of the river.

To prepare the Mascoma River nomination, the tri-town committee has been assisted by the Upper Valley Lake Sunapee Regional Planning Commission through a DES Local Source Water Protection Grant. The committee conducted extensive public outreach, making over 20 presentations to municipal boards and local organizations and hosting several public forums and events. Based on this public input, the committee decided to nominate the lower section of the

river from Canaan center to West Lebanon.

The nomination has received public comment and is currently under review by the DES Rivers Coordinator and the Rivers Management Advisory Committee. If successful, the river designation is expected to occur within the 2011 legislative session. For more information on the RMPP and the Mascoma River nomination, visit www.des.nh.gov/organization/divisions/water/wmb/rivers/index.htm and scroll to Hot Topics, River Nominations. ©

Updated Monitoring, Compliance, Reporting and Public Notification Rules for Public Water Systems

On May 1, 2010, rules dealing with Drinking Water Quality Standards, Monitoring and Compliance, and Reporting were readopted. More recently, on June 30, 2010, rules relating to Public Notification by public water systems were also readopted. DWGB recommends that public water systems read these rules in their entirety, but this article notes the revisions that may be particularly relevant.

Monitoring, Compliance, and Reporting Rules

- Env-Dw 704 and 711 deal with inorganic chemical contaminants. A clarification was made to state that the fluoride standard applies to all community water systems and only non-transient, non-community water systems that serve schools or day care centers with children under the age of nine. Additionally, confirmation samples will no longer be required for inorganic contaminants when a system has a history of detections.
- Env-Dw 709 explains compliance for microbiology. Criteria were added to explain when and why a “boil water order” can be limited to a specific, hydraulically-isolated segment of a water system. Also, repeat samples are no longer required if the bacteria MCL is exceeded based on the results of the five additional routine samples. Next, any samples that are *E. coli* positive, whether routine or for general system evaluation, will be used to calculate compliance and a boil order will most likely be issued. In addition, if a system has seasonal fluctuations in population, an average population must be calculated in order to determine the number of bacteria



samples required. Finally, Groundwater Rule Triggered Monitoring requirements are clarified based on the new Groundwater Rule, which became effective December 1, 2009.

- Env-Dw 719 specifies the information that must be reported to DWGB, such as the phone number of the sampling agent and the date/time the sample was prepared and analyzed. A public water system should have an agreement with its accredited laboratory to clarify reporting responsibilities to ensure DWGB is getting the required information. Public water systems must ensure the lab has correct and complete information so that lab staff can provide it when reporting results to DWGB; otherwise DWGB is rejecting all data that is not complete, whether submitted electronically or via paper. Please download current analysis request forms with the most up-to-date information prior to collecting samples; use extra care when filling in the blanks. Forms can be found online at www2.des.state.nh.us/OneStop/Public_Water_Systems_Query.aspx.

Public Notification Rules (Public Notice and Consumer Confidence Reports)

- Env-Dw 801 defines situations in which public notice is required. This section clarifies consecutive system notification process, situations, and methods of distribution for which acute public notice is required, including how to lift boil orders, methods of standard public notice distribution, and situations for which standard public notices are required. Because the distribution methods were clarified, DWGB is currently revising all of the Public Notification templates. DWGB strongly encourages public water systems to use the new templates; they are easier to fill out and contain the option of new methods of delivery. Templates can be found online at www.des.nh.gov/organization/divisions/water/dwgb/forms/index.htm.
- Env-Dw 811 clarifies timing and certification of Consumer Confidence Report (CCR) distribution. CCRs still must be distributed to consum

Rules, continued on page 7

Boil Order Requirements: What Every Public Water System Should Know

Each year in New Hampshire several boil orders are issued. During 2010, there were seven boil orders issued as of August. Boil orders are issued for a number of reasons, but primarily due to the detection of *E. coli* bacteria in a water sample. The possible presence of microbiological pathogens in drinking water supplies is a significant concern in the protection of public health. *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes, which can cause short-term health effects such as diarrhea, cramps, nausea, headaches, or other symptoms.

Issuing a Boil Order

If a boil order is issued, the water system must immediately notify consumers that all water should be boiled for at least two minutes. Special precautions should be taken by restaurants or food manufacturing plants, hospitals or health care facilities, and child care facilities. Consideration should be given to arranging alternative supplies of water such as bulk water delivery or purchasing bottled water. Municipal systems should set up a call center and develop a script of talking points for dealing with customer calls as well as media requests.

The boil order will typically remain in effect until the following conditions are met:

- A minimum of two consecutive sets of samples show the absence of total coliform and *E. coli* bacteria.
- The source of the contamination has been identified and corrected.
- DES notifies the system that the boil order may be lifted.

Boil orders may be issued for the following reasons:

- Detection of *E. coli* in the distribution system or in a source sample.
- Failure to have sample results analyzed for *E. coli* after testing positive for total coliform.
- Distribution system failures, such as a main break, cross connection, or other events such as a power outage that causes system pressure to drop significantly for an extended period.
- Detection or suspicion of waterborne pathogens.
- Flooding or failure of water supply equipment

including at the pump house or wellhead.

- Failure of a significant treatment or disinfection process.
- Violation of a turbidity standard if the system failed to notify DES within 24 hours.

Notification Details

A public notice must be provided as soon as possible, but no later than 24 hours after the system learns of the situation requiring such notice. A water system must notify each customer receiving a bill and any others by a method that is calculated to reach all persons served by the system. If the system serves a consecutive system, they must deliver a copy to the owner or operator.

Notification must be done by at least one of the following methods:

- Broadcast media, such as radio and television.
- Publication in three consecutive issues of a daily newspaper.
- Door-to-door hand delivery.
- Reverse 911, provided that current phone numbers are known for all service connections, and a receipt mechanism confirms that notice was received within 24 hours of transmittal.
- NON-COMMUNITY SYSTEMS ONLY may post the notice in conspicuous locations throughout the system frequented by persons served by the system.



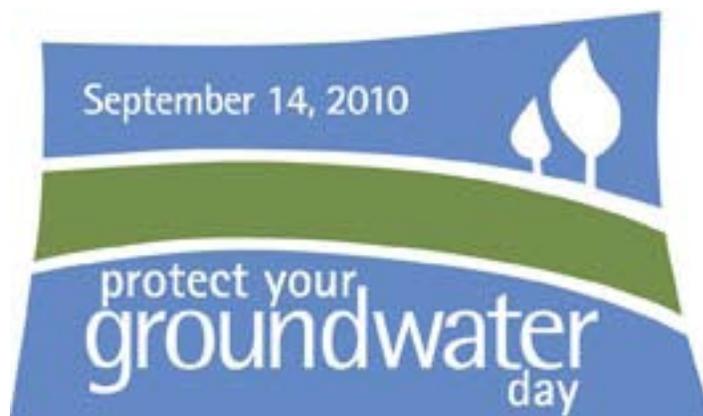
If other persons regularly served by the system would not normally be reached by the methods described above, such as in hospitals, schools, or apartments, the water system must deliver multiple copies for distribution by customers that provide the water

Boil, continued on page 7

September 14, 2010 was National Protect Your Groundwater Day

September 14, 2010, marked the first national Protect Your Groundwater Day to raise public awareness across the country about the importance of protecting groundwater resources. New Hampshire uses approximately 94 million gallons of groundwater per day, primarily as a source for domestic water supply for nearly 800,000 residents.

Initiated by the National Ground Water Association in 2010, Protect Your Groundwater Day is an outgrowth of the National Ground Water Awareness Week (March 6-12, 2011). Protect Your Groundwater Day offers towns, water districts, and others the opportunity to provide public education and outreach through local events or activities, demonstrate good resource stewardship, and convey key messages to residents that live in town or within a wellhead protection area or aquifer. This celebration provides an opportunity to take one day of the year to explore groundwater science with local schools, showcase efforts to provide clean drinking water and protect groundwater within the community, and develop relationships with residents, businesses, or other water



systems.

While the 2010 Protect Your Groundwater Day has passed, DES is available to assist water systems, communities, and partners to plan or organize events for Protect Your Groundwater Day 2011. If interested in establishing a local event in 2011 for either National Groundwater Protection Week or Protect Your Groundwater Day, contact DES at (603) 271-0688. Visit the National Groundwater Association's website at www.ngwa.org to learn more about Protect Your Groundwater Day and how it is being used to promote the protection of groundwater resources nationally. ©

Bulk Water Deliveries

As a result of this summer's dry weather, many systems needed emergency bulk water deliveries. This is a reminder that all bulk water deliveries must follow requirements listed in Env-Dw 304, Emergency Bulk Water for Public Water Systems. While DES does not encourage this method of supplying water, it may be the only viable alternative in some situations. When using bulk water, there are important considerations for protection of public health:

1. The water must be from an approved community water system source in a truck suitable for potable water.
2. A certified water system operator representing the system must be present at the time of delivery.
3. The operator must measure the free chlorine residual in the bulk water being delivered to ensure that a concentration between 0.2 mg/L and 4.0 mg/L is present.

4. The system must notify DES within two business days after bulk water is delivered by submitting the notification form that can be found on the fact sheets webpage at www.des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm and scroll to WD-DWGB-18-2, "Emergency Bulk Water for Public Water Systems," or search the web for "WD-DWGB-18-2."

The fact sheet also has a list of bulk water haulers. Community systems must also list all deliveries for a given year in their annual Consumer Confidence Report. If you have any questions, please contact Johnna McKenna at (603) 271-7017 or johnna.mckenna@des.nh.gov. ©



Approval for Alternate Sources During Emergencies

All community systems must have an emergency plan submitted to and reviewed by DES every six years. Within the plan, systems are required to list an alternative water source should their existing sources become unusable for any reason. Some systems list alternatives such as bottled water, bulk water, or the use of an inactive source.

While DES reviews and approves these plans every six years, the review focuses on whether all the items required by Env-Ws 360.15, Emergency Plans for Community Water Systems, were addressed. It is not an approval of the sources listed as alternate water sources. It is necessary for a community water system to receive approval from DES prior to using any unapproved sources. It is also very important to be sure that alternate sources listed in the plan can in fact be used during an emergency. It would be discouraging to discover that the system cannot receive bulk water because it does not own the correct tank type or the pump house is not accessible to bulk water trucks. Consequently, if the emergency plan lists bulk water delivery or other options that are not viable, the plan must be revised and resubmitted to DES.

Information on emergency approvals for ground-water sources can be found on the fact sheets webpage at www.des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm and scroll to WD-DWGB-18-4, "Emergency Water Supply Wells for Public Water Systems," or search the web for "WD-DWGB-18-4." ☺

NHWWA Trade Show and Expo

The New Hampshire Water Works Association is holding its 2010 Drinking Water Exposition and Trade Show on Wednesday, October 20 at the Grappone Conference Center in Concord. The event is sponsored by NHWWA and supported with funding by DES.

For more information, email NHWWA at nhwwa@worldpath.net or Patricia Beavers, Expo Coordinator, at beaves@sover.net. Also, check their website at www.nhwwa.org.

Rules, *continued from page 4*

- ers by July 1 of every year. Certification of CCR distribution was formerly due to DES by October 1. The rules now state that CCR certification is due 10 days after the CCR has been distributed to consumers, but no later than July 10.

Full versions of these updated rules are available online at www.des.nh.gov/organization/commissioner/legal/rulemaking/index.htm#adrinking:

- Env-Dw 701-706, Drinking Water Quality Standards.
- Env-Dw 707-713, Laboratory Analytical Methods, Monitoring, and Compliance.
- Env-Dw 719, Reporting Monitoring Data.
- Env-Dw 800, Public Notification by Public Water Systems.

For information about the remaining rules and compliance assistance, contact Leah McKenna at (603) 271-0655 or leah.mckenna@des.nh.gov. For information about the CCR rule and compliance assistance, contact Richard Thayer at (603) 271-2950 or richard.thayer@des.nh.gov. ☺

Boil, *continued from page 5*

to others, post on the internet or email broadcast to all persons served by the system, and/or deliver one or more copies to community organizations. The same methods should be used to notify consumers once the boil order has been lifted.

Final Thoughts

Public water systems should maintain emergency procedures in the event that a boil order must be issued. An emergency plan should identify key personnel to be contacted and list resources for responding to the boil order. DES staff is available to conduct site visits to assist in identifying a contamination problem and to review steps needed to lift the boil order. For information about what water can and can't be used for, go to the fact sheets webpage at www.des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm and scroll to WD-DWGB-4-12, "Frequently Asked Questions About Boil Orders," or search the web for "WD-DWGB-4-12."

For general questions regarding boil orders, contact DWGB staff at (603) 271-0672. ☺

Public Works Mutual Aid Program Now Available to All Community Water Systems

The New Hampshire Public Works Mutual Aid program is a network of communities that assist one another during emergencies. So far, this includes access to over 130 members with trucks, personnel, water operators, and many more resources statewide. This successful program has aided communities many times during recent events such as floods, tornados, and ice storms. The mutual aid program is now available to all community water systems. Senate Bill 378 passed by the legislature this spring allows privately owned public water systems to become members of the program.

In an effort to support and boost membership to the mutual aid program, DES, with funding from EPA, is sponsoring the cost of next year's 2011 membership (\$25 value) for any new community water system member. The new member must be a community public water system or be a municipality that has a public water system. In addition, the "Refer-A-Friend Program" will cover the cost of next year's member-

ship to any existing member that assists a new community water system member with learning about the program and signing up.

To become a new member and benefit from this program contact Johnna McKenna at (603) 271-7017 or johnna.mckenna@des.nh.gov for the membership form. The form and a signed mutual aid program agreement must be submitted to DES by December 31, 2010. The program is for a limited time and is first come, first served until funding has been exhausted.

Information about the program along with the agreement can be found on the web at www.t2.unh.edu/ma. ©



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