



THE SOURCE



NEWSLETTER OF THE NHDES DRINKING WATER SOURCE PROTECTION PROGRAM
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Forest Service Study Finds Salmon Falls Watershed At Risk of Losing Important Forests

A 2009 U.S. Forest Service study ranked the Salmon Falls watershed at the top of the list of watersheds in the Northeast, covering 20 states, at risk of losing important private forest land vital to providing clean surface water as a source of drinking water. Field research and past experience indicate that replacing forests with houses results in a decline in the surface water and groundwater quality of associated watersheds and increases the cost of treating drinking water. Somersworth, N.H., and Berwick, Maine, both use the Salmon Falls River as a source of drinking water (see related article on page 2). The study underscores the need to act, particularly in the Salmon Falls watershed, to protect remaining important private forest lands that help to maintain pristine recharge to reservoirs, lakes or rivers used as sources of drinking water.

The purpose of the Forest Service's work was to illustrate the connection between forests, water and people and demonstrate the importance of private forests to water quality and drinking water. To measure the importance of private forest lands to surface water supplies, the Forest Service developed four "watershed condition" indices using a GIS-based (digital map data) process to objectively compare watersheds according to physical (such as percent of riparian forest cover), biological and housing density characteristics. The four watershed condition indices measure the following char-

acteristics: 1) ability to produce clean drinking water; 2) importance for drinking water supply; 3) dependence on unprotected private forest land for drinking water; and 4) threat of forest conversion/need for management. The threat of forest conversion was based upon projected changes in housing densities over the next 20 years. The watershed condition indices were used to assign points and generate a composite score that determined each watershed's rank.

Watersheds that ranked high in terms of risk generally have a very high ability to produce water, a large number of water consumers, a large proportion of private forest land available for development and a high rate of forest conversion projected through 2030. Watersheds in the eastern portion of the study area, which includes

the Salmon Falls watershed, scored high because privately-owned forested lands available for development are more concentrated and are in areas projected to have the most rapid growth.

Preserving important forest lands that provide clean water to reservoirs, lakes or rivers should be a high priority particularly in areas facing encroaching development and further forest conversion over the next several decades.

The final report, titled "Forests, Water and People: Drinking water supply and forest lands in the Northeast and Midwest United States," is available online from the U.S. Forest Service at http://na.fs.fed.us/pubs/misc/watersupply/forests_water_people_watersupply.pdf. ©

The Source Editors Request Your Feedback

Help the DES Drinking Water and Groundwater Bureau save paper ... and money! We are asking for your feedback in two areas:

- **Do you still want to receive our newsletters?** If so, send us an email (see below). We mail or email four issues per year: two issues of "The Source" and two issues of "Supply Lines with The Source."
- **Do you prefer to receive an electronic copy by email?** If you receive a print copy but would prefer an electronic copy, please email us with the request. Sending more electronic issues will cut down on the paper that is used for printing and will also reduce costs.

All comments and requests can be emailed to alicia.carlson@des.nh.gov.



Protecting a Shared Water Supply Resource: the Salmon Falls Watershed

Source water protection for surface waters is often more complicated than it is for groundwater sources, since water supply watersheds are typically larger than wellhead protection areas and extend into neighboring communities. When the watershed extends into two states, the number of stakeholder groups can double, along with the complexity of planning and implementing source water protection.

The Salmon Falls River is a water supply source for both Somersworth, N.H., and Berwick, Maine. The watershed covers 250 square miles. Groundwater-based systems in the New Hampshire portion of the watershed include Rollinsford, Sanbornville, Milton and eight other community water systems.

The Piscataqua Region Estuaries Partnership (PREP), with the support

of DES, the Maine state drinking water program, and the U.S. Environmental Protection Agency's New England regional office, has brought together all of the stakeholder groups mentioned above plus many more as the Salmon Falls Watershed Collaborative.

A recent study conducted by PREP found that the majority of watershed towns lacked basic regulatory and planning mechanisms for source water protection. Also, towns within the Salmon Falls watershed on average have much lower percentages of protected land than towns within other coastal watersheds in the area (see related article on page 1). On the positive side, some exemplary water protection initiatives are already underway in the Salmon Falls watershed.

As a result of both the challenges and the opportunities in the Salmon

Falls watershed, the national Source Water Collaborative selected the Salmon Falls watershed as one of two demonstration sites for a collaborative approach to source water protection. During a day-long workshop in late October, 75 stakeholders gathered in South Berwick, Maine, to review data regarding water quality and land use in the Salmon Falls watershed, to consider protection strategies and to identify high-priority initiatives for future collaboration. Among the high priorities: low-impact development training for local officials. The next steps are to poll the workshop participants and to identify and implement action items for the coming year.

For more information, visit www.prep.unh.edu/sfwc.htm or contact Paul Susca at (603) 271-7061 or paul.susca@des.nh.gov. ©

Attend the Water and Watershed Conference

The 2011 N.H. Water and Watershed Conference, "From Our Headwaters to the Sea – Living in a Changing Water World," will be held on Friday and Saturday, March 25 and 26 from 9:00 a.m. to 4:00 p.m. The conference will take place at the Hartman Union Building at Plymouth State University located on High Street in Plymouth.

The purpose of the conference is to combine talent, resources and audiences into a unique two-day event designed to meet the information and networking needs of a wide audience. This audience includes: lake, river and watershed groups; environmental organizations; volunteer monitors; municipal board and staff members; elected officials; local and regional planners; policy makers; scientists; educators; consultants; and students.

The focus of this year's event is on effective strategies at the local, regional, state and federal levels that address the changing environmental and societal conditions and their effects on New Hampshire's aquatic environment. For more information, visit http://des.nh.gov/organization/divisions/water/wmb/rivers/watershed_conference/index.htm. ©

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The Impacts of Floods on Water Systems: Survey Results are In

Over the past ten years several floods across the state have resulted in declared disasters and impacted both private and public property. Water system infrastructure and sources are uniquely susceptible to flood impacts due to the fact that they are commonly located near rivers and streams that swell with flood water during an event. The potential for flood-related impacts may increase in the future as a result of expected long-term changes in climate and weather patterns including increases in the number of high-intensity rainfall events.

Although it is commonly perceived that flood-related costs to a water system are primarily due to additional collection and analysis of bacteria samples, this is not the case for water systems in New Hampshire. The possible hazards that a flood poses to a water system are diverse, and range from direct impacts, such as inundation or submergence of water supplies, pump houses and other key facilities by flood waters, to more indirect impacts, such as prolonged power outages, stranding of critical water system components and exposure of system piping due to washout of road beds or stream banks. Potential damage from these events could therefore result in costs to the water system that far exceed the costs of any additional bacteria samples collected to continually ensure safe drinking water.

In light of more recent flood-related declared disasters, DES conducted a survey of impacts experienced by New Hampshire water systems over the last five years. The intent of the survey was to gather information from water systems about flood-related impacts, potential causes of those impacts and costs to repair damage from the flood events. The results of the survey will help target available DES resources and develop a program to assist flood-impacted systems, as well as to inform the EPA Climate Change Strategy

workgroup to establish priorities in identifying at-risk water systems that could be negatively impacted by climate change.

A total of 220 water systems responded to DES's flood survey, representing approximately 30 percent of the community water systems in the state. A summary of the survey results follows:

- Twenty-four percent of respondents (54 systems) identified themselves as at high or moderate risk of being susceptible to flood impacts.
- Four percent of respondents (eight systems) have groundwater wells that were inundated or submerged by flood water.
- Eleven percent of respondents (24 systems) have experienced damage to sources or infrastructure during a flood.
- \$200 to \$200,000 is the range of expenditures made by those 24 water systems to rectify damage due to a flood (median expenditure was \$10,000, average expenditure was \$24,000).

- Water systems identified replacement and/or repair of electrical controls, pump motor bearings, compressors and sump pumps as the most common direct impacts that resulted in damage during a flood.
- Repair and re-grading of roads and stream banks to cover exposed distribution piping were the most common indirect impacts from a flood.

Flood Preparedness/Response

There are some steps a water system can take to avoid damage related to floods or for responding to an unpredictable event.

Perform a flood vulnerability assessment for the water system. The Federal Emergency Management Agency (FEMA) provides flood insurance rate maps that depict the limits of the 100- and 500-year flood zones at the location of many water systems. FEMA's map service center can be accessed at www.fema.gov to determine whether any of the water system's components is

Floods, *continued on page 4*

Stormwater Infiltration Structures Must Be Registered with DES

Attention, planning boards and planning/zoning administrators! DES rules (Env-Wq 404) require many stormwater infiltration structures to be registered with DES's Groundwater Discharge Permitting Program even if they are associated with a small project that does not need an Alteration of Terrain permit. Examples include leaching (bottomless) catch basins in parking areas and subsurface infiltration.

Studies have shown that the infiltration of stormwater into the ground, while beneficial for water resources in many ways, can potentially contaminate groundwater, depending on land uses, soil characteristics, depth to the water table and design factors. Projects that involve infiltration of stormwater via subsurface leaching or distribution structures need a completed groundwater discharge registration form under the rule cited above if they fall under the federal Underground Injection Control program, which is administered in New Hampshire by DES. Projects that need a DES Alteration of Terrain permit are already being reviewed for compliance with this requirement and must meet various siting and design requirements to prevent groundwater contamination.

For more information, contact Mitch Locker at (603) 271-2858 or mitchell.locker@des.nh.gov. ©

Floods, *continued from page 3*

within a mapped flood zone.

If no flood insurance maps are available from FEMA, check with the local community offices. FEMA provides guidance for municipalities to develop their own base flood elevations, largely for flood insurance purposes related to land development, and many communities have completed their own evaluations. If flood zone mapping is not available from either local or federal sources, contact either the local health office or long-time residents of the water system. Ask them about their historic knowledge of reports or observations of times when the water system or the surrounding area has been impacted by flood or high water.

If the assessment of available information indicates that the water system has been or may be susceptible to flood damage, develop a long-term plan to either move vulnerable water system components out of the flood zone or raise them above the base flood elevation. Such an evaluation and assessment may also serve to support a grant application to abate flood damage prior to a declared disaster (see below).

Keep the Water System Emergency Plan up-to-date. The emergency plan for the water system establishes a communications plan and contacts in the event that a disaster occurs to make consumers and DES aware that the water system may be impaired. In addition, the plan provides a map of the water system and its components, an alternative water supply plan and appropriately assigns the system's staff responsibilities and tasks in an effort to minimize the impact of water system impairment to the consumers. An emergency plan contains vital information for maintaining a safe and adequate water supply in the event of a flood that impairs the ability of the water system to fully function.

Available Resources

Federal and state grant support may be available for some water systems

to limit potential flood damage prior to the occurrence of an event or repair damage that was caused during a state or federally declared disaster. The two general programs, managed by N.H. Homeland Security and Emergency Management, are summarized below:

Pre-Disaster Mitigation Program (PDM)

– The PDM is an annual pre-disaster grant program for water systems who have determined that their system has a high vulnerability to flooding or have experienced damage from multiple flooding events in the past. The purpose is to reduce the overall risk to the public and structures from future hazards, while also reducing reliance on federal funding from future major disaster declarations. This program requires a letter of intent by July 1 and an application by November 1. Grants cover 75 percent of eligible project costs and are available to municipal entities only. Applications are processed through eGrants (a FEMA software program) and must include a cost-benefit analysis. Eligible projects include property acquisition, structure demolition or relocation, structure elevation, dry flood-proofing, structural/non-structural retro-fittings of existing buildings and facilities, infrastructure retro-fit, soil stabilization, minor localized flood reduction and hazard mitigation planning. Workshops are held every fall to assist communities with the application process. Grants cannot pay for work already completed.

Hazard Mitigation Grant Program (HMGP)

– For water systems that have experienced damage to their system due to a declared disaster, the goal of the HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. HMGP is tied specifically to a declared disaster with an application deadline 12 months after the date of a disaster declaration. The grant provides up to 75 percent of the total project cost. Program funding

is dependent on the amount of federal assistance allocated for disaster recovery. Eligible applicants include local governments, village districts and some private non-profit organizations. Applications are processed through NEMIS (a FEMA grant software program). Eligible projects include property acquisition, structure demolition or relocation, structure elevation, dry flood-proofing, structural/non-structural retro-fittings of existing buildings and facilities, infrastructure retro-fit, soil stabilization, minor localized flood reduction and hazard mitigation planning.

For additional information on these grant programs, visit the FEMA website at <http://www.fema.gov/government/grant/hma/index.shtm> or contact Lance Harbour at N.H. Homeland Security and Emergency Management at (603) 223-3633 or lance.harbour@hsem.nh.gov.

Coming Soon: the 2011 Source Water Protection Workshop

Mark your calendars for DES's Drinking Water Source Protection Workshop on Tuesday, May 10, 2011, from 9 a.m. to 4 p.m. at the Grapone Conference Center in Concord.

The event will feature experts from across New Hampshire discussing recent studies on water quality, watershed plans, final results of the Groundwater Commission and projects focused on minimizing the impacts of land uses.

The American Ground Water Trust is partnering with DES to organize the conference. The workshop's agenda and registration will be at the Trust's website: www.agwt.org. The cost will be \$30 and will offer N.H. Water Operator certification credits. For more information, contact Pierce Rigrod at (603) 271-0688 or pierce.rigrod@des.nh.gov. ©