> *Water is the most critical resource issue of our lifetime and our children's lifetime. The health of our waters is the principal measure of how we live on the land.*
>
> LUNA LEOPOLD

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It's Time to Take Drinking Water Seriously!

If you are a municipal official in a New England community, this booklet is for you. This is your call to action for water supply protection. Chances are your community is already on the case. Chances are you are already up to speed on this subject. But, whether you have just gotten on board in your community or you have been involved for years, chances are this booklet has some useful information for you. If you simply need action tips for a specific water supply threat in your community, go straight to the color-coded directory below. If you could use some background information, please read on.

Why the urgency?

~Because safe drinking water is central to our health, well-being, and economic viability. ~Because while public water systems have primary responsibility for water supply protection, communities are essential players in this effort. ~Because our water supplies are limited. ~Because water supply pollutants are widespread and diverse.

Why municipal officials?

Protection efforts need to involve selectmen, municipal administrators, planning and zoning boards, wetlands and conservation commissions, departments of public works, boards of health, schools, and other entities. All of you, at some time or other, make decisions that may affect the quality of your community's water supplies and should, therefore, take drinking water protection into account. Municipalities need to: ~Be cognizant of potential threats and adopt appropriate protective policies and measures. ~Partner with the state, the business community, and their water suppliers to ensure water supply protection.

Check it Out...

This document is directed primarily to municipal officials and those who volunteer in their communities. It provides tools you can use to take action in your community to protect drinking water sources in your water supply area, your watershed area, your community, and your backyard.

New England state Source Water Assessments revealed five key areas of vulnerability: inadequate local regulations and ordinances, underground storage tanks, on-site sewage disposal systems, hazardous materials storage, and stormwater runoff. This manual focuses on these critical areas. So check it out. Find out:

Special Focus Chapters

Readily available freshwater from surface and groundwater sources represents less than 1 percent of all the water in the world—and it is almost all the same water that was on the earth from day one.

Your Challenge, Should You Choose to Accept It

Today, most of us can turn on the tap whenever we want and enjoy clean, potable water—which is not the case in many parts of the world—but what about tomorrow? Increasing populations and associated human activities tax the quality and quantity of our water supplies. Federal and state drinking water requirements are becoming increasingly more stringent to address pollutants, such as mercury, M*t*BE, and microbial organisms (e.g., *E. coli*).

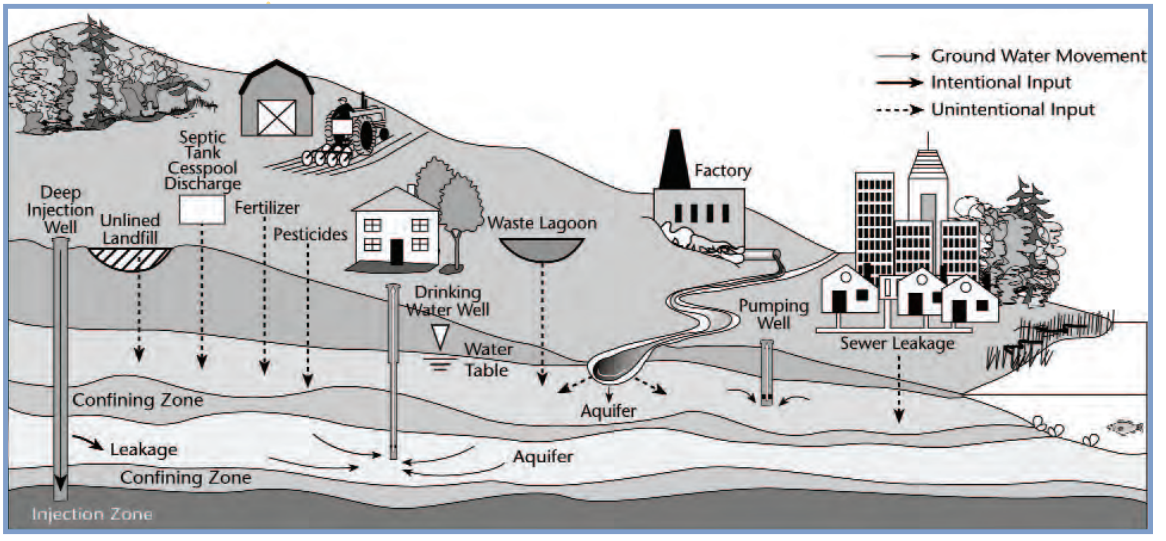
? Nonpoint Source Pollution (NPS)

Pollution that occurs when water runoff from rainfall or snowmelt moves over or into the ground, picking up pollutants and carrying them into streams, lakes, wetlands, and groundwater.

The U.S. Environmental Protection Agency (U.S. EPA) says the leading cause of water quality degradation is nonpoint source pollution (NPS), which includes sources such as farms, septic systems, construction sites, roadways, parking lots, and fuel storage tanks.

Can we afford to deplete, divert, and pollute our fresh water with little thought for tomorrow? No way! So, let's make it our collective business to protect our drinking water sources—for today and tomorrow.

There is a price to be paid for polluted drinking water. Communities—from small rural villages to major metropolitan areas—depend on lakes, reservoirs, rivers, and groundwater for their sources of drinking water. Wherever your tap water comes from, all drinking water sources are vulnerable to an array of contaminants associated with an infinite variety of human activities. If existing or new sources of pollution render the water unsafe to drink, a community will have to choose between building a new or expanded treatment system or finding a new drinking water source. Either option can be very expensive, and these costs are often passed on to consumers.



Source: *National Water Quality Inventory: 1998 Report To Congress – Ground Water and Drinking Water Chapters,* U.S. EPA.

Our challenge is to pay closer attention to how our activities impact our drinking water protection areas and to take preventative steps. The long-term quality of our drinking water depends on the combined actions of all of us. We all share responsibility for ensuring that our children and future generations—indeed, all living creatures—have access to safe and adequate drinking water.

Your Source Water Assessment

Recognizing the importance of meeting this challenge, Congress called for the establishment of a Source Water Assessment Program (SWAP) as part of the Safe Drinking Water Act Amendments of 1996. The keystone of this program is a requirement for states to assess the susceptibility to pollution for source water at all public water systems and to provide the public with a summary of these findings by 2003.

Source Water

Untreated water from streams, lakes, reservoirs, or groundwater that is used to supply drinking water.

FYI

How Much Is Groundwater Worth?

The University of Rhode Island's (URI's) Nonpoint Education for Municipal Officials (NEMO) program used data from the state's Source Water Assessments to develop a rough estimate of the "retail" value of groundwater underlying a wellhead or groundwater recharge area. Although the report did not include monetary values associated with fisheries, healthy aquatic habitats, and other uses, it estimated the volume of water recharged to the area annually and the price consumers pay for public water, given actual water rates.

The Value of a Major Community Wellhead Protection Area

The South Kingstown, Rhode Island wellhead protection area covers 945 acres. The average annual precipitation for the area is 44 inches. About half of that amount, 21 inches, is lost to evaporation or used by plants, leaving 23 inches of precipitation available to either runoff or seep into the ground. Calculations indicate that average annual runoff would be about 6.1 inches/year*, leaving 16.9 inches as the amount available to seep into the ground and recharge groundwater. This amount, equivalent to 434 million gallons/year, is theoretically available for water supply and baseflow to streams.

The municipal water rate for this supply is $130 for 5,000 cubic feet (rates based on 2002 and vary slightly for larger amounts). Based on 7.48 gallons per cubic feet, 434 million gallons/year is equivalent to 57,972,915 cubic feet. At a rate of $130 per 5,000 cubic feet, the current annual value of this resource is $1,507,296. Any of this water that is polluted or lost to runoff is a lost asset.

The Value of a Future Water Supply Area

South Kingstown's groundwater protection overlay district includes 7,185 acres in the still-rural northwest corner of the town currently without major public wells. This sole-source aquifer provides a source of supply for private wells and serves as a potential future site for public supply wells should the need arise. With an average annual precipitation of 44 inches, and with half of this lost to evaporation and plant uptake, about 23 inches is available to either runoff or seep into the ground. In this area, the average annual runoff is estimated to be 8.5 inches, leaving 14.5 inches, or 2.83 billion gallons/year available for water supply and baseflow to streams. This volume is equivalent to 378,182,475 cubic feet based on 7.48 gallons per cubic feet. At a rate of $130 per 5,000 cubic feet, the current annual value of this resource is $9,832,744.

Recharge Area

The watershed area that contributes water to a groundwater supply well.

Recharge in Developed vs. Forested Areas

In groundwater recharge areas where more intense development is planned, controlling runoff and maintaining infiltration is important to avoid a more significant loss of recharge volumes. For example, the highly developed URI/Kingston wellhead protection area covers 656 acres of campus, and Kingston village and has an estimated groundwater recharge volume of 152 million gallons/year under current development. Under an idealized situation with the entire recharge area forested, the groundwater recharge volume is estimated to be 377 million gallons/year. This represents a potential loss of 225 million gallons per year to surface runoff.

*Source Water Assessment Hydrologic and Nutrient Loading Assumptions used to estimate average annual runoff are available in the appendix to SWAP reports for major community supplies at *www.uri.edu/ce/wq/program/html/SWAP/reports.html.* Full technical assumptions are also available at *www.uri.edu/ce/wq/mtp/html/manage.html.*

These Source Water Assessments are designed to encourage and help water suppliers, local officials, and residents to take steps to keep their water supplies safe. Source Water Assessment reports contain detailed information on potential threats to municipal drinking water supplies. (See Chapter 2.)

Assessments are required for all public water systems. These systems include schools, restaurants, and other public facilities that have wells or surface water supplies. They do not include drinking water systems with fewer than 15 service connections or that regularly serve fewer than 25 individuals, as these are not considered to be public water systems. It should be noted, however, that a community's responsibility for protecting drinking water sources extends beyond designated source water protection areas for public supplies and includes groundwater used for private wells.

FYI

What Substances Impact Water Quality?

Pathogens – bacteria, viruses, parasites, and other microbes

Nutrients – nitrate-nitrogen, phosphorus

Particulates – microorganisms, suspended sediments

Heavy Metals – antimony, cadmium, chromium, copper, lead, mercury, nickel, selenium

Hazardous Chemicals and Products – gasoline, oil, petroleum products, pesticides, herbicides, solvents, paint thinner and other cleaning products

You're Poised for Action

Now that the Source Water Assessment reports have been completed, what next? Well, that's what this document is all about. Now that your community has some idea about the potential threats to its drinking water, you are poised to work in concert with public water suppliers, watershed organizations, community groups, businesses, and homeowners to develop and implement source protection strategies.