



Massachusetts Department of Environmental Protection  
Source Water Assessment and Protection (SWAP) Report  
for  
**Chelmsford Water District**

### What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

### Susceptibility and Water Quality

Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area.

A source's susceptibility to contamination does *not* imply poor water quality.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, disinfecting, filtering, or treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Actual water quality is best reflected by the results of regular water tests. To learn more about your water quality, refer to your water supplier's annual Consumer Confidence Reports.

**Table 1: Public Water System Information**

<i>PWS Name</i>	Chelmsford Water District
<i>PWS Address</i>	20 Watershed Lane
<i>City/Town</i>	Chelmsford
<i>PWS ID Number</i>	3056000
<i>Local Contact</i>	Robert Doak
<i>Phone Number</i>	(978)256-2931

### Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including storm runoff, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

#### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures.

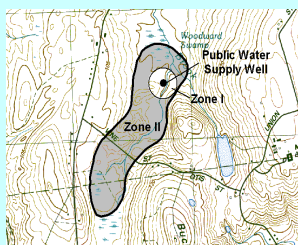
Refer to Table 3 for Recommendations to address potential sources of contamination. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

#### This report includes the following sections:

1. Description of the Water System
2. Land Uses within Protection Areas
3. Source Water Protection
4. Additional Resources Available for Source Protection
5. Appendices

## What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and a Zone II protection area.



## Glossary

**Aquifer:** An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

**Hydrogeologic Barrier:** An underground layer of impermeable material (i.e. clay) that resists penetration by water.

**Recharge Area:** The surface area that contributes water to a well.

**Zone I:** The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. This area should be owned or controlled by the water supplier and limited to water supply activities.

**Zone II:** The primary recharge area for the aquifer. This area is defined by hydrogeologic studies that must be approved by DEP. Refer to the attached map to determine the land within your Zone II.

## Section 1: Description of the Water System

### Zone II #: 283

*Susceptibility:* High

<i>Well Names</i>	<i>Source IDs</i>
Canal St. GP Well #1 (emergency source)	3056000-18G
Canal St. GP Well #2 (emergency source)	3056000-19G
Mill Rd. GP Well #1	3056000-05G
Mill Rd. GP Well #2	3056000-16G
Mill Rd. GP Well #3	3056000-15G
Riverneck Rd. GP Well #1	3056000-09G
Riverneck Rd. GP Well #2	3056000-11G
Smith St. GP Well #1	3056000-07G
Smith St. GP Well #2	3056000-14G
Turnpike Rd. GP Well #1	3056000-02G

### Zone II #: 284

*Susceptibility:* High

<i>Well Names</i>	<i>Source IDs</i>
Crooked Spring GP Well #1	3056000-06G
Crooked Spring GP Well #2	3056000-08G
Jordan Road GP Well	3056000-03G
Meadowbrook Rd GP Well #1	3056000-12G
Meadowbrook Rd GP Well #2	3056000-10G

The Chelmsford Water District (Chelmsford) is supplied by fifteen (15) wells that draw water from various locations throughout Chelmsford. The fifteen (15) wells are located in two separate Zone IIs (refer to attached Source Water Assessment Program maps for individual well locations). Each well has a Zone I radius of 400 feet. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers (i.e. clay) that can prevent contaminant migration. Please refer to the attached map of the Zone II.

All fifteen (15) of Chelmsford's wells have potassium hydroxide added to adjust the pH for corrosion control. Mill Road Wells 1, 2, and 3, Turnpike Road Well, and Meadowbrook Wells 1 and 2, have sodium hypochlorite added for disinfection, and phosphate added as a sequestering agent for iron and manganese. The Jordan Road Well has sodium hypochlorite added for disinfection. Canal Street Wells 1 and 2 have not been used since the mid-1980's, and currently serve as emergency sources. Both wells are expected to be returned to service in the near future.

For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Drinking water monitoring reporting data is also available on the web at <http://www.epa.gov/safewater/ccr1.html>.

## Section 2: Land Uses in the Protection Areas

Both Zone IIs for Chelmsford include a mixture of forested, residential, commercial, industrial land uses (refer to attached map for details). Land uses and activities that are potential sources of contamination are listed in Table 2, with further detail provided in the Table of Regulated Facilities and Table of Underground Storage Tanks in Appendix B.

### Key issues include:

1. Transportation Corridor
2. Railroad Right Of Way
3. Local Businesses
4. Stormwater Catch Basins
5. Residential Land Uses and Activities
6. Oil or Hazardous Material Contamination Sites
7. Comprehensive Wellhead Protection Planning

The overall ranking of susceptibility to contamination for Chelmsford is high, based on the presence of at least one high threat land use within the Zone II, as seen in Table 2.

**1. Transportation Corridor** - Routes 3 runs through Zone II #284, and Route 3 and 495 run through Zone II #283. Both routes are in close proximity to some of Chelmsford's wells. Roadway construction, maintenance, and typical highway use can all be potential sources of contamination. Accidents can lead to spills of gasoline and other potentially dangerous transported chemicals. De-icing salt washes off into storm drains or onto adjacent ground. In addition, roadways are frequent sites for illegal dumping of hazardous or other potentially harmful wastes.

### Transportation Corridor - Recommendations:

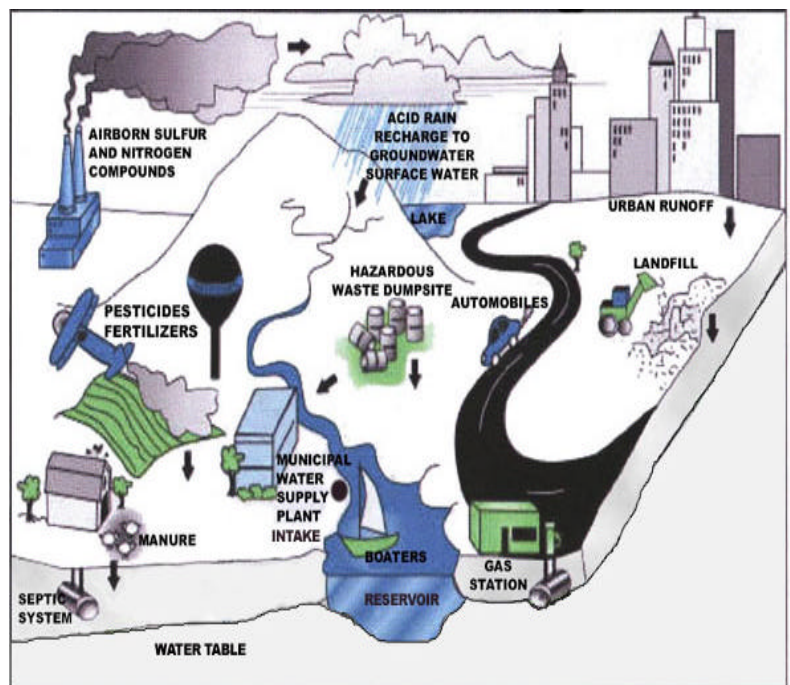
- ✓ **Low Salt Areas** - Join in efforts with the other water districts to submit a formal request to MA Highway Department and the Town of Chelmsford in establishing Low Salt Areas along Route 3 and local roads. Encourage both organizations to educate employees and private contractors of the restrictions in designated Low Salt Areas.
- ✓ **Design and Best Management Practices** - Continue working with Massachusetts Highway Department and its contractors to design a stormwater drainage system along Route 3, north and south bound lanes, that discharge stormwater outside of the Zone II from Drum Hill Rotary to a point downstream of the Chelmsford Center Water District.
- ✓ **Planning and Developing** - Notify town officials of EPA's Intermodal Surface Transportation Efficiency Act. The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 contains provision for the planning and developing of highway systems and transportation enhancement activities, including the mitigation of water pollution due to highway runoff.

### Benefits of Source Protection

Source Protection helps protect public health and is also good for fiscal fitness:

- Protects drinking water quality at the source
- Reduces monitoring costs through the DEP Waiver Program
- Treatment can be reduced or avoided entirely, saving treatment costs
- Prevents costly contamination clean-up
- Preventing contamination saves costs on water purchases, and expensive new source development

Contact your regional DEP office for more information on Source Protection and the Waiver Program.



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Through ISTEA, states are able to use a portion of their federal funding allotment for runoff pollution control devices and other BMPs to prevent polluted runoff from reaching their lakes, rivers, and bays.

**2. Railroad Right-Of-Way** – Rail corridors serving passenger and/or freight trains are potential contaminant sources due to chemicals released during normal use, track maintenance, and accidents. Over-application or improper handling of herbicides during railroad right-of-way maintenance is a potential source of contamination. Leaks or spills of transported chemicals or train maintenance chemicals are also potential sources of contamination to the water supply.

**Railroad Right-of-Way - Recommendations:**

- ✓ **Best Management Practices** - Work with local officials during their review of the railroad right-of-way Yearly Operating Plan to ensure Best Management Practices are implemented with regard to vegetation control in the Zone II, and that pesticides are not used in the Zone I, in accordance with 333 CMR 11.00: Rights-of-Way Management.
- ✓ **Emergency Response Plan** - Work with your local fire department to review emergency response plans. Request that emergency response teams practice containment of potential contaminants from train accidents.

**3. Local Businesses** – Because many small businesses and industries use hazardous materials, produce hazardous waste products, and often store large quantities of petroleum products, there is the potential for degrading water quality. Educating the business community about drinking water protection, and encouraging partnerships between businesses, water suppliers, and communities will enhance successful public drinking water protection practices.

**Local Businesses - Recommendations:**

- ✓ **Hazardous Materials Program Best Management Practices** - Support the development and implementation of a hazardous materials program that includes a Bylaw or Health Regulation. Such a program educates businesses on hazardous material management requirements, explicitly informs the business community what is expected of them, and decreases the potential future liability businesses may be unknowingly creating for themselves. A local program lets the town serve as a consultant, helping businesses protect themselves. See DEP's website for additional information on developing a program for hazardous materials management at <http://www.state.ma.us/dep/brp/dws/files/hazmat.doc>.
- ✓ **Inspection Program** – Coordinate efforts with local officials and the other water districts in the development and implementation of an Inspection Program which is usually conducted by the local Board of Health to prevent hazardous substances from entering water supplies. Inspections target facilities that generate, use, store, or disposal of hazardous/toxic materials. Programs can also include floor drain inspections and underground storage tanks. Local inspection programs often provide educational material and technical assistance on Best Management Practices. Building Inspectors are often involved in local inspection programs.
- ✓ **Hazardous Materials Best Management Practices** - Work with local businesses to encourage training on proper hazardous material use, disposal, and emergency response. Refer to the attached list of resources for more information on hazardous material BMPs.



**What are "BMPs?"**

Best Management Practices are structural (i.e. oil & grease trap catch basins), nonstructural (i.e. hazardous waste collection days) or managerial measures that are used to protect and improve surface water and groundwater quality.

- ✓ **Storage Tanks** - Support your local fire department in upgrading all above and below ground oil/hazardous material storage tanks in order to meet current construction standards. Funding for replacing underground storage tanks is available through the MA Department of Revenue. For more information, refer to [http://www.dor.state.ma.us/ust/ust\\_home.htm](http://www.dor.state.ma.us/ust/ust_home.htm)
- ✓ **Register Hazardous Waste Generators** - Work with local businesses to register those facilities that are unregistered generators of hazardous waste or waste oil.
- ✓ **Monitor Land Uses** - Work with the Selectmen, Board of Health and Planning Board to monitor land uses within and proximal to the Zone II. Refer to the Wellhead Protection Plan guidance and model bylaws at <http://www.state.ma.us/dep/brp/dws/files/whplan.doc> for types of activities that should be prohibited and managed in the vicinity of public or private water supplies.

### Potential Source of Contamination vs. Actual Contamination

The activities listed in Table 2 are those that typically use, produce, or store contaminants of concern, which, if managed improperly, are potential sources of contamination (PSC).

It is important to understand that a release may never occur from the potential source of contamination provided facilities are using best management practices (BMPs). If BMPs are in place, the actual risk may be lower than the threat ranking identified in Table 2. Many potential sources of contamination are regulated at the federal, state and/or local levels, to further reduce the risk.

**Table 2: Land Use in the Protection Areas (Zones I and II)**

For more information, refer to Appendix 2: Regulated Facilities within the Water Supply Protection Area

Activities	Zone II # 283	Zone II # 284	Threat*	Potential Source of Contamination*
<b>Agricultural</b>				
Fertilizer Storage or Use	1	-	M	Fertilizers: leaks, spills, improper handling, or over-application
Manure Storage or Spreading	2	-	H	Manure (microbial contaminants): improper handling
Nurseries	1	1	M	Fertilizers, pesticides, and other chemicals: leaks, spills, improper handling or over application
<b>Commercial</b>				
Body Shops	1	-	H	Vehicle paints, solvents, and primer products: improper management
Car/Truck/Bus Washes	2	-	L	Vehicle wash water, soaps, oils, greases, metals, and salts: improper management
Gas Stations	9	1	H	Automotive fluids and fuels: spills, leaks, or improper handling or storage
Service Stations/ Auto Repair Shops	2	3	H	Automotive fluids, and solvents: spills, leaks, or improper handling
Bus and Truck Terminals	3	-	H	Fuels and maintenance chemicals: spills, leaks, or improper handling
Cemeteries	2	1	M	Pesticides: improper handling or over-application of, leaks or spills, and historic embalming fluids
Dry Cleaners	2	-	H	Solvents and wastes: spills, leaks, or improper handling
Golf Courses	-	1	M	Fertilizers, pesticides, petroleum products and other chemicals: over-application or improper handling, spills, or leaks
Junk Yards and Salvage Yards	1	-	H	Automotive chemicals, wastes, and batteries: spills, leaks, or improper handling
Laundromats	1	-	L	Wash water: improper management
Medical Facilities	1	-	M	Biological, chemical, and radioactive wastes: spills, leaks, or improper handling or storage
Nursing Homes	-	2	L	Medical waste, cleaning compounds: microbial contaminants; improper handling, storage and disposal
Photo Processors	2	-	H	Photographic chemicals: spills, leaks, or improper handling or storage
Printer And Blueprint Shops	1	1	M	Printing inks and chemicals: spills, leaks, or improper handling or storage
Railroad Tracks And Yards	-	1	H	Herbicides, transported chemicals and maintenance chemicals; fuel storage: over-application or improper handling, leaks or spills



Activities	Zone II # 283	Zone II # 284	Threat*	Potential Source of Contamination*
Repair Shops (Engine, Appliances, Etc.)	1	-	H	Engine fluids, lubricants, and solvents: spills, leaks, or improper handling or storage
Sand And Gravel Mining/Washing	-	1	M	Heavy equipment, fuel storage, clandestine dumping: spills or leaks
<b>Industrial</b>				
Asphalt, Coal Tar, And Concrete Plants	1	-	M	Hazardous chemicals and wastes: spills, leaks, or improper handling or storage
Chemical Manufacture Or Storage	2	1	H	Chemicals and process wastes: spills, leaks, or improper handling or storage
Electronics/Electrical Manufacturers	Numerous	-	H	Chemicals and process wastes: spills, leaks, or improper handling or storage
Electroplaters	1	-	H	Solvents and other chemicals: spills, leaks, or improper handling or storage
Foundries Or Metal Fabricators	1	-	H	Solvents and other chemicals: spills, leaks, or improper handling or storage
Fuel Oil Distributors	2	-	H	Fuel oil: spills, leaks, or improper handling or storage
Hazardous Materials Storage	-	1	H	Hazardous materials: spills, leaks, or improper handling or storage
Industry/Industrial Parks	2	-	H	Industrial chemicals and metals: spills, leaks, or improper handling or storage
Machine/Metalworking Shops	7	-	H	Solvents and metal tailings: spills, leaks, or improper handling
<b>Residential</b>				
Fuel Oil Storage (at residences)	Numerous	Numerous	M	Fuel oil: spills, leaks, or improper handling
Lawn Care/Gardening	Numerous	Numerous	M	Pesticides: over-application or improper storage and disposal
Septic Systems / Cesspools	-	Numerous	M	Household hazardous waste: improper disposal, and microbial contaminants
<b>Miscellaneous</b>				
Aboveground Storage Tanks	8±	3	M	Materials stored in tanks: spills, leaks, or improper handling
Aquatic Wildlife and Pet Waste	Numerous	Numerous	L	Microbial contaminants
Clandestine (Illegal) Dumping	-	1	H	Construction debris, household refuse: hazardous materials or wastes
Combined Sewer Overflows	-	1	L	Industrial wastewater, road run-off: microbial and non-microbial contaminants, and improper disposal of hazardous wastes
Large Quantity Hazardous Waste Generators	2	-	H	Hazardous materials and waste: spills, leaks, or improper handling or storage
NPDES Locations	1	-	L	Hazardous material and wastes: improper disposal
Oil or Hazardous Material Sites	16	4	----	Oil or hazardous materials and waste: spills, leaks, or improper handling or storage
Pipeline (Oil or Sewer)	5	-	M	Oil or sewage: spills or leaks

Activities	Zone II # 283	Zone II # 284	Threat*	Potential Source of Contamination
Road And Maintenance Depots	-	2	M	Asphalt materials and other chemicals, aboveground and underground storage tanks with gasoline and diesel storage: spills, leaks, or improper handling of deicing materials
Salt or Deicing Material Storage	-	3	M	Deicing materials: improper handling and storage, run-off
Schools, Colleges, and Universities	2	1	M	Fuel oil, laboratory, art, photographic, machine shop, cleaning and other chemicals; over- application or improper management of fertilizers and pesticides on athletic fields; parking areas; spills, leaks, or improper handling
Small Quantity Hazardous Waste Generators	12	1	M	Spills, leaks, or improper handling or storage of hazardous materials and waste
Stormwater Drains/ Retention Basins	Numerous/1	Numerous	L	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns
Transmission Line Rights-of-Way-Type: <u>electric</u>	2	1	L	Construction and corridor maintenance, over-application or improper handling of pesticides
Transportation Corridors	2	1	M	Fuels and other hazardous materials: accidental leaks or spills, over-application or improper handling of pesticides
Underground Storage Tanks	35±	9	H	Petroleum products, potassium hydroxide (KOH) (water treatment chemical tanks are fiberglass and are in cement vaults); spills, leaks, or improper
Utility Substation Transformers	-	1	L	Fuels and other hazardous materials: spills, leaks, or improper handling
Very Small Quantity Hazardous Waste Genera-	13	-	L	Hazardous materials and waste: spills, leaks, or improper handling or storage
Wastewater Treatment Plant/Collection Facility/	3	2	M	Treatment chemicals or equipment maintenance materials: improper handling or storage; wastewater: improper management
Water Treatment Sludge Lagoon	1	1	M	Sludge and wastewater: improper management
<p>Water Supply Protection Area % that is Sewered = 65%</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. When specific potential contaminants are not known, typical potential contaminants or activities for that type of land use are listed. Facilities within the watershed may not contain all of these potential contaminant sources, may contain other potential contaminant sources, or may use Best Management Practices to prevent contaminants from reaching drinking water supplies.</li> <li>2. For more information on regulated facilities, refer to Appendix 3: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.</li> <li>3. For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix B: Tier Classified Oil and/or Hazardous Material Sites.</li> </ol> <p>* <b>THREAT RANKING</b> - The rankings (high, moderate or low) represent the relative threat of each land use compared to other PSCs. The ranking of a particular PSC is based on a number of factors, including: the type and quantity of chemicals typically used or generated by the PSC; the characteristics of the contaminants (such as toxicity, environmental fate and transport); and the behavior and mobility of the pollutants in soils and groundwater.</p>				

- ✓ **Lawn care and Landscaping** - Encourage local businesses to incorporate Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides. For more information, refer to [http://www.massdfa.org/pesticides/publications/IPM\\_kit\\_for\\_bldg\\_mgrs.pdf](http://www.massdfa.org/pesticides/publications/IPM_kit_for_bldg_mgrs.pdf)
- ✓ **Office of Technical Assistance** - For additional help regarding environmental requirements and toxic use reduction approaches to compliance contact the Office of Technical Assistance (OTA) for Toxic Use Reduction. The OTA is a nonregulatory agency within the Commonwealth's Executive Office of Environmental Affairs. OTA provides free, confidential assistance on toxic use reduction opportunities. <http://www.state.ma.us/ota/>

**4. Stormwater Catch Basins** – Catch basins transport stormwater from roadways and adjacent properties to the ground. As flowing stormwater travels, it picks up debris and contaminants from streets, parking areas and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents.

#### **Stormwater Catch Basins – Recommendations:**

- ✓ **Inspect, Maintain, and Clean** - Work with the Town and State to have catch basins inspected, maintained, and cleaned on a regular schedule. Additionally, street and parking lot sweeping reduces the amount of potential contaminants in runoff. Note: Catch basin cleanings are classified as solid waste by DEP and must be handled and disposed in accordance with all regulations, policies, and guidance. In the absence of written approval from DEP, catch basin cleanings must be taken to a facility permitted by DEP to accept solid waste. For information on DEP's Nonpoint Competitive Grants Program Upcoming Funding Opportunity refer to: <http://www.state.ma.us/dep/brp/mf/mfpubs.htm#wpa>.
- ✓ **Best Management Practices** - Work with the Town to develop Best Management Practices that are the most effective, practical means of preventing or reducing pollution from nonpoint sources. Information is available at <http://www.epa.gov/OWOW/NPS/roads.html>.

- ✓ **Local Controls** - Encourage local officials to develop a local stormwater ordinance. For more information see <http://www.epa.gov/owow/nps/ordinance/stormwater.htm>.
- ✓ **Storm Drain Stenciling Program** - Work with local watershed groups to institute a Storm Drain Stenciling Program. For more information on how to develop a storm drain stenciling program go to <http://www.earthwater-stencils.com>
- ✓ **Stormwater Planning** - Encourage local officials to become familiar with and begin to implement a stormwater management program to meet DEP's Phase II Storm Water Regulations. For additional information, refer to the Stormwater Management Information at <http://www.state.ma.us/dep/brp/ww/wwpubs.htm#storm>.

**5. Residential Land Uses and Activities** - If managed improperly, household hazardous waste, septic systems, lawn care, and pet waste can all contribute to groundwater contamination. Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. If a septic system fails or is not properly maintained, it could be a potential source of microbial contamination. Fertilizers and pesticides contain hazardous chemicals that can travel through the soil and contaminate ground water if over-applied. Pet waste may contain bacteria, parasites, or viruses that are a health risk. Water supplies may also be threatened from improper use in disposal of chemical products used in homes or businesses. Steps to educate residents and businesses on proper disposal of these materials is the best defense from pollution.

#### **Residential Recommendations - Household Hazardous Waste:**

- ✓ **Proper Disposal** - Educate residents on the problem of disposing of hazardous materials in landfills, septic systems, wastewater treatment plants, storm drains, and on the ground. Encourage residents to use the Town of Chelmsford's Household Hazardous Waste Collection center. The Town of Chelmsford conducts a spring and fall household hazardous waste collection day at the Chelmsford Town Hall.
- ✓ **Alternative Products** - Provide residents with information on options that are available to substitute less hazardous substances for many products used in the home.

#### **Top 5 Reasons to Develop a Local Wellhead Protection Plan**

- ❶ Reduces Risk to Human Health
- ❷ Cost Effective! Reduces or Eliminates Costs Associated With:
  - ♦ Increased groundwater monitoring and treatment
  - ♦ Water supply clean up and remediation
  - ♦ Replacing a water supply
  - ♦ Purchasing water
- ❸ Supports municipal bylaws, making them less likely to be challenged
- ❹ Ensures clean drinking water supplies for future generations
- ❺ Enhances real estate values – clean drinking water is a local amenity. A community known for its great drinking water in a place people want to live and businesses want to locate.



#### **Residential Recommendations - Septic systems:**

- ✓ **System Care** - Educate residents on private septic systems about using cleaning compounds that are safe for the septic system, on proper disposal practices, i.e. only sanitary waste in the septic system. Information on septic systems can be found at Massachusetts Department of Environmental Protection's website <http://www.state.ma.us/dep/brp/files/yoursyst.htm>.
- ✓ **Proper Disposal** - Residents should dispose of used oil, antifreeze, paints, and other household chemicals properly - not in septic systems.

#### **Residential Recommendations - Lawn Care and Landscaping:**

- ✓ **Environmentally Sound Lawn Care** - Provide educational materials to residents about the proper application of pesticides or fertilizers. Landscape with native grasses, native flowering plants and trees and shrubs. Once established native plants require less water and may not require fertilizer, herbicides or pesticides use. Encourage the use of native plants and landscaping by establishing a demonstration area at a town facility. Information on environmentally sound lawn care practices can be obtained from the Massachusetts Department of Food and Agriculture Pesticide Bureau's website at <http://www.massdfa.org>.

#### **Residential Recommendations - Heating Oil Tanks:**

- ✓ **Underground Storage Tanks** - Target homeowners with underground storage tanks in Zone II for education and outreach.
- ✓ **Aboveground Storage Tanks** - Provide educational materials to residents regarding the proper storage of liquid petroleum products in aboveground storage tanks. The Department requires all Wellhead protection zoning and non zoning controls to prohibit the siting of liquid petroleum products storage in Zone II unless such storage is aboveground, on an impervious surface and either in a container or in an aboveground tank within a building, or in an area that has a containment system designed and operated to hold either 10 percent of the total possible storage capacity of all containers, or 110% of the largest container storage capacity whichever is greater. Consult with the local fire department for any additional local code requirements regarding aboveground storage tanks. A fact sheet on basement or outside oil tank can be obtained from the Barnstable County Department of Health And Environment at <http://www.CapeCod.net/bcdhe/oil/oil.htm>.

**6. Presence of Oil or Hazardous Material Contamination Sites** – The Zone II contains DEP Tier Classified Oil and/or Hazardous Material Release Sites indicated on the map as Release Tracking Numbers 2-00160, 2-10019, 3-02098, 3-00049, 3-0001205, 3-0004757, 3-0000834, 3-0014625, 3-0012751, 3-0000565, 3-0001582, 3-0002739, 3-0002747, 3-0012928, 3-0000290, 3-0013453, 3-0016586, 3-0016587, 3-0014545, and 3-0016588. Refer to the attached map and Appendix 3 for more information.

#### **Additional Documents:**

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws) including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

#### **Oil or Hazardous Material Contamination Sites – Recommendation:**

- ✓ Monitor progress on any ongoing remedial action conducted for the known oil or contamination sites.

**7. Comprehensive Wellhead Protection Planning** - Protection planning prevents drinking water contamination by managing the land area that supplies water to a well. A Wellhead Protection Plan coordinates community efforts, identifies protection strategies, establishes a timeframe for implementation, and provides a forum for public participation. There are numerous resources available to help communities in developing a plan for protecting drinking water supply wells.

#### **Protection Planning Recommendations:**

- ✓ **Prevent New Development in the Zone II** - The Chelmsford Water District should continue to purchase potentially developable land located within the existing wellhead protection areas and areas for use as future well sites.
- ✓ **Develop A Land Acquisition Plan** - Land acquisition projects protect water supplies by limiting the land development potential. Acquisitions can be accomplished by water systems through conservation restrictions, land banking, land purchases and land donations. Sample conservation restrictions are available at: <http://www.state.ma.us/dep/brp/dws/>. Future development of Zone II is a major concern. The Department recommends that the water district acquire Zone II land closest to the Zone I or land is subject high-risk development (refer to Developing a local Wellhead Protection Plan).

- ✓ **Local Controls** - Coordinate efforts with local officials in Billerica, Lowell and Westford to compare existing controls with current MA Wellhead Protection Regulations 310 CMR 22.21(2). For more information on DEP land use controls see <http://www.state.ma.us/dep/brp/dws/>.
- ✓ **Inspection Program** - Develop and implement an Inspection Program for facilities that generate, use, store, or dispose of hazardous/toxic materials. Local Board of Health and Building Inspectors working on inspections often include floor drain and underground storage tanks. Local inspection programs can provide valuable technical assistance on Best Management Practices.
- ✓ **Develop a Wellhead Protection Plan** – Establish a local team, and refer them to <http://www.state.ma.us/dep/brp/dws/> for a copy of DEP’s guidance, “Developing a Local Wellhead Protection Plan”.

Other land uses and activities that may be potential contaminant sources include auto body shops, gas stations, and schools. Refer to Table 2 and Appendix 2 for more information about these land uses.

Identifying potential contaminant sources is an important initial step in protecting your drinking water sources. Further local investigation will provide more in-depth information and may identify new land uses and activities that are potential sources of contamination.

Once potential contaminant sources are identified, specific recommendations like those below should be used to better protect the Chelmsford wells.

### Section 3: Source Water Protection

Implementing source protection measures and Best Management Practices (BMPs) will reduce the Chelmsford Water District System’s susceptibility to contamination. Additional source protection recommendations are listed in Table 3 and the Key Issues above.

Chelmsford Water District is commended for taking an active role in promoting source protection measures in the Water Supply Protection Areas through:

- Providing outreach information through the “Chelmsford Water District Consumer Outreach Program”
- Purchasing land for the purpose of wellhead protection and new source development
- Coordinating efforts with the Planning Board for approval of projects in the Aquifer Protection District

Appendix 1 includes specific recommendations for each of the following:

#### ➤ **Partner with Local Businesses:**

Since many small businesses and industries use hazardous materials and produce hazardous waste products, it is essential to educate the business community about drinking water protection. Encouraging partnerships between businesses, water suppliers, and communities will enhance successful public drinking water protection practices.

#### **For More Information**

Contact Anita Wolovick in DEP’s Wilmington Office at (978) 661-7768 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, town boards, and the local media.

#### ➤ **Provide Outreach to the Community:**

Public education and community outreach ensure the long-term protection of drinking water supplies. Awareness often generates community cooperation and support. Residents and business owners are more likely to change their behavior if they know where the wellhead protection recharge area is located; what types of land uses and activities pose threats; and how their efforts can enhance protection.

#### ➤ **Plan for the Future:**

One of the most effective means of protecting water supplies is planning, such as the adoption of local controls to protect watersheds and ground water. These controls may include health regulations, general ordinances, and zoning bylaws that prohibit potential sources of contamination from wellhead protection areas.

Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures. These recommendations are only part of your ongoing local drinking water source protection.

## Section 4: Additional Resources Available for Source Protection

DEP staff, informational documents, and resources are available to help you build on this SWAP report as you continue to improve drinking water protection in your community.

The assessment and protection recommendations in this SWAP report are provided as a tool to spur community discussion, support ongoing source protection efforts, and help set local drinking water protection priorities.

The Chelmsford Water District should supplement this SWAP report with local information on potential sources of contamination and land uses. To aid in the protection of the wells, local information should be maintained and updated periodically to reflect land use changes in the Zone II. Use this information to set priorities, target inspections, focus education efforts, and to develop a long-term drinking water source protection plan.

### Funding Resources:

The Department's Wellhead Protection Grant Program and Source Protection Grant Program provide funds to assist public water suppliers in addressing Water Supply Source Protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the Grant Program. For additional information, please refer to the program fact sheet from this year. Please note: each spring DEP posts a new Request for Response for the Grant program (RFR).

Other grants and loans are available through the Drinking Water State Revolving Loan Fund, the Clean Water State Revolving Fund, and other sources. For more information on grants and loans, visit the Bureau of Resource Protection's Municipal Services web site at: <http://www.state.ma.us/dep/brp/mf/mfpubs.htm>.

### For More Information

Contact Anita Wolovick in DEP's Wilmington Office at (978) 661-7768 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, town boards, and the local media.

## Section 5: Appendices

1. Protection Recommendations
2. Regulated Facilities within the Water Supply Protection Area
3. Table of Tier Classified Oil and/or Hazardous Material Sites within the Water Supply Protection Areas
4. Additional Documents on Source Protection in Chelmsford

**Table 3: Current Protection and Recommendations**

Protection Measures	Status	Recommendations
<b>Zone I</b>		
Does the Public Water Supplier (PWS) own or control the entire Zone I?	<b>YES</b>	Follow Best Management Practices (BMP's) that focus on good housekeeping, spill prevention, and operational practices to reduce the use and release of hazardous materials.
Is the Zone I posted with "Public Drinking Water Supply" Signs?	<b>YES</b>	Additional economical signs are available from the Northeast Rural Water Association (802) 660-4988.
Is Zone I regularly inspected?	<b>YES</b>	Continue daily inspections of drinking water protection areas.
Are water supply-related activities the only activities within the Zone I?	<b>YES</b>	Continue monitoring non-water supply activities in Zone Is.
<b>Municipal Controls</b> (Zoning Bylaws, Health Regulations, and General Bylaws)		
Does the municipality have Wellhead Protection Controls that meet 310 CMR 22.21 (2)?	<b>YES</b>	The Town "Aquifer Protection District" bylaw meets DEP's best efforts for wellhead protection. Refer to <a href="http://www.state.ma.us/dep/brp/dws/">www.state.ma.us/dep/brp/dws/</a> for model bylaws and health regulations, and current regulations.
Do neighboring communities protect the Zone II areas extending into their communities?	<b>YES</b>	The Town of Westford has included Chelmsford's Zone II in their source protection bylaw. Request that municipal officials in Lowell and Billerica develop land use restrictions that meet 310 CMR 22.21(2).
<b>Planning</b>		
Does the PWS have a Wellhead Protection Plan?	<b>NO</b>	Develop a wellhead protection plan. Follow "Developing a Local Wellhead Protection Plan" available at: <a href="http://www.state.ma.us/dep/brp/dws/">www.state.ma.us/dep/brp/dws/</a> .
Does the PWS have a formal "Emergency Response Plan" to deal with spills or other emergencies?	<b>YES</b>	Augment plan by developing a joint emergency response plan with fire department, Board of Health, DPW, and local and state emergency officials. Coordinate emergency response drills with local teams.
Does the municipality have a wellhead protection committee?	<b>NO</b>	Establish committee; include representatives from citizens' groups, neighboring communities, and the business community.
Does the Board of Health conduct inspections of commercial and industrial activities?	<b>YES</b>	Currently, the Board of Health and the Chelmsford Fire Department requires all commercial and industrial buildings to have a list of all hazardous materials and MSDS sheets on file with them, and to conduct inspections. The town is encouraged to continue this program, and to include municipal facilities. For more guidance see "Hazardous Materials Management: A Community's Guide" at <a href="http://www.state.ma.us/dep/brp/dws/files/hazmat.doc">www.state.ma.us/dep/brp/dws/files/hazmat.doc</a> .
Does the PWS provide wellhead protection education?	<b>YES</b>	Aim additional efforts at commercial, industrial and municipal uses within the Zone II.