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

Shelburne Falls Fire District

What is SWAP?

The Source Water Assessment Protection (SWAP) program, 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 susceptibili ty 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 C onsumer Confidence Reports.

Table 1: Public Water System Information

PWS Name	Shelburne Falls Fire District
PWS Address	9 Williams Street
City/Town	Shelburne
PWS ID Number	1268000
Local Contact	Mr. Harold Wheeler
Phone Number	413-625-6392

Introduction

We are all concerned about the quality of the water we drink. Drinking water supplies 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.

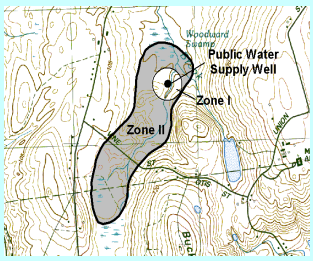
Refer to Table 3 for Recommendations to address potential sources of contamination. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes the following sections:

1. Description of the Water System
2. Land Uses within Protection Areas
3. Source Water Protection Conclusions and Recommendations
4. 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

System Susceptibility ***High***

Zone II #: 232 ***Susceptibility:*** High

Well Names	***Source IDs***
New Well #1	1268000-03G
Well #2	1268000-02G

The town of Shelburne is a small community in the Berkshire foothills of northwestern Massachusetts. Shelburne, settled in the early-1700's as part of Deerfield, was established as a town in the mid-1700's, and initially developed as a farming and later, an industrial community along the Deerfield River. The developed section of town is located within the Shelburne Falls section of town on the western border delineated by the Deerfield River. The community is currently primarily a residential agricultural community with an emphasis on artisans, and natural and cultural attractions. The Shelburne Falls Fire District provides water for the Shelburne Falls area of town. The District maintains two groundwater supplies, New Well #1 (03G) and Well #2 (02G); 03G was developed as a replacement well to the original Well #1 that was abandoned as a source of water. The District also maintains the Fox Brook Reservoir as an emergency water source. The emergency and abandoned water sources will not be discussed further in this report.

New Well #1 and Well #2 are located approximately 220 feet apart, within the same, relatively narrow, unconfined, sand and gravel aquifer that lies within the North River valley in Colrain, the Town north of Shelburne. New Well #1 is located approximately 130 feet from the river and Well #2 is located downgradient of Well #1 and approximately 120 feet from the river. The wells are both used as primary wells and function alternately. Both wells are 18 x 24-inch diameter, gravel packed wells, have 10 foot long, 200 slot screens; New Well #1 is 55 feet deep while Well #2 is 45 feet deep. New Well #1 and Well #2 are located within the same hydrogeologic regime, and share the same Zone II contribution area.

The aquifer is a glacially deepened, bedrock valley that was filled in with sand and gravel deposited during the recession (melting) of the glaciers some 12-18,000 years ago. Streams and rivers have reworked and eroded the glacial deposits and recent streams have deposited additional alluvial material. Boring logs and maps in the North River valley indicate medium to course sand and gravel deposits up to approximately 82 feet in depth. There is no evidence of a confining, protective clay layer in the North River aquifer in the vicinity of New Well #1 and Well #2. Due to the proximity of wells to the river, under pumping conditions, the wells withdraw water from the aquifer west of the river and water is likely induced to flow from the river into the aquifer.

The bedrock in the area is a complex series of folded metamorphic rocks with igneous intrusions. The bedrock in the Zone II area is associated with the lower Conway formation and the equivalent of Goshen Schist. The bedrock is mapped as a quartz mica schist and marble, equivalent to the Goshen Schist, and a quartzite conspicuous amphibolite.

Each well has a Zone I protective radius of 400 feet immediately around the wellhead. The Zone II was delineated by consultants for the Water Department utilizing geologic mapping, and analytical and numerical modeling. Data for the analysis was gathered from extended duration pumping tests and boring logs. The North River aquifer is considered to be highly vulnerable to contamination due to the absence of a hydrogeologic barrier (i.e. clay) that can prevent contaminant migration from activities on the land surface. Please refer to the attached map to view the boundaries of the Zone II and consult the Consumer Confidence report for current water quality data.

Sodium hydroxide is added to the water from the wells to raise the pH for corrosion control and a chlorinator is available and used as is necessary. For current information on water quality 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.

Section 2: Land Uses in the Protection Areas

The land uses within the Zone II for the Shelburne Falls Fire District wells are a mixture of forest, cropland, residential, industrial and commercial 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 Land Uses and Protection Issues include:

1. Non-conforming Zone I
2. Residential land uses
3. Hazardous materials storage and use
4. Confirmed hazardous waste release sites
5. Wastewater treatment plant
6. Transportation corridors and Utility right-of-way
7. Agricultural activities
8. Comprehensive wellhead protection planning

The overall ranking of susceptibility to contamination for the system is high, based on the presence of at least one high threat land use within the water supply protection areas, as seen in Table 2.

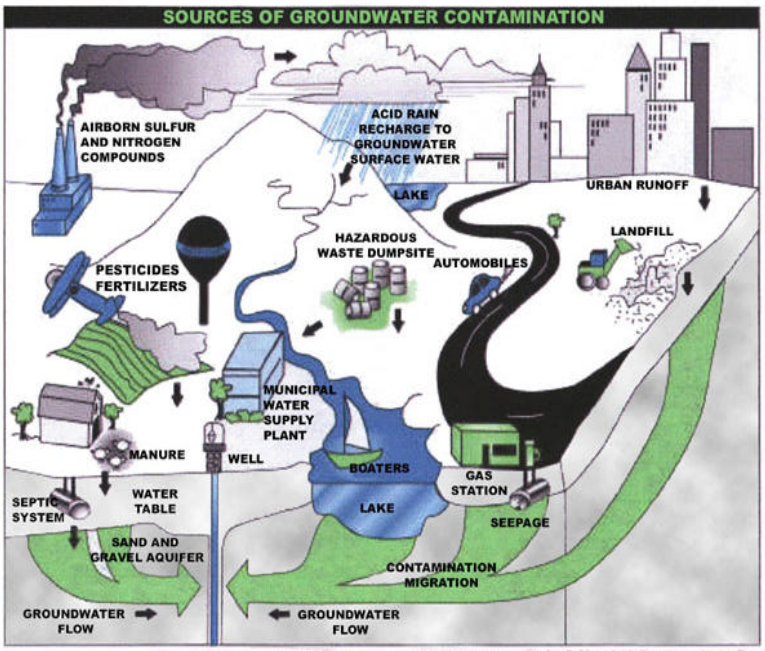
1. Non-conforming Zone Is – The Zone I for each of the wells is a 400 foot radius around the wellhead. Currently, the Massachusetts drinking water regulation (310 CMR 22.00 Drinking Water) requires public water suppliers to own the Zone I, or control the Zone I through a conservation restriction, Memorandum of Understanding or other legal mechanism as approved by the DEP. The public water supplier does not own or control the entire Zone I for either of

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.



the wells. Only activities directly related to the water supply, or other no-threatening activities, as determined by the DEP, are allowed within the Zone I. However, numerous water sources were developed prior to the 400-foot Zone I requirement and are therefore grandfathered. The Department encourages grandfathered systems to acquire ownership or some alternate method of control of the Zone I land use activities. The Shelburne Falls Fire District has actively pursued methods of protecting and/or acquiring the Zone I land and the Department has approved the Zone I for Well #3 with the farm field west of the North River.

Zone I Recommendations:

- ✓ Keep any new non-water supply activities out of the Zone I.
- ✓ Continue your current efforts to purchase land and/or negotiate a conservation restriction for land within the Zone I. Continue monitoring activities conducted in Zone I
- ✓ Agreement Options - For any potential future water supply development or additional land acquisition in the Zone I or Zone II, consider a Memorandum of Understanding and Right of First Refusal.

A Memorandum of Understanding (MOU) is an agreement between the landowner and public water supplier in which the landowner agrees not to engage in specific threatening activities. The MOU should be specific to the land use or activity. For example, if the land is residential with a septic system, the owner could agree to not place chemicals, petroleum products, or other hazardous or toxic substances, including septic system cleaners, into the septic system, and agree that the system will be pumped at a specific frequency. As another example, the portions of fields within the Zone I would not have manure, fertilizers or pesticides spread on them. Understanding how an activity threatens drinking water quality is an important component of developing an effective MOU.

A Right of First Refusal is a legal document that gives the water supplier the first chance to purchase land when it becomes available. Please refer to the example of the Right of First Refusal documents attached in the Appendices.

The Department commends the District for its proactive efforts to acquire control of the Zone I property and recommends continued efforts in establishing a program for planning to acquire ownership or control of property within the areas critical to protecting water quality. This recommendation is not only for the existing sources but also should be considered for future development of sources if they are needed. Although a land taking by eminent domain is not appropriate for the current situation, it may be considered for future well development as necessary.

2. Residential Land Uses – Approximately 20% of the Zone II land area consists of residential areas. Some areas of the Zone II are connected to municipal sewer, other portions utilize on-site septic systems. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper disposal of

What are "BMPs?"

Best Management Practices (BMPs) are measures that are used to protect and improve surface water and groundwater quality. BMPs can be structural, such as oil & grease trap catch basins, nonstructural, such as hazardous waste collection days or managerial, such as employee training on proper disposal procedures.

For More Information

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, board of health, and the town.

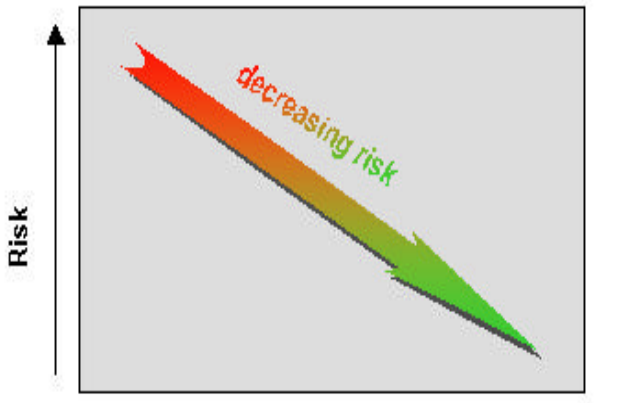


Figure 2: Risk of contamination decreases as source protection increases. This is true for public water systems of any susceptibility ranking, whether High, Moderate, or Low.

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

For more information, refer to Appendix B: Regulated Facilities within the Water Supply Protection Areas

Activities	Quantity	Threat*	Potential Source of Contamination
Agriculture			
Fertilizer/Pesticide Storage or use - Crops	5	M	Fertilizers, pesticides, manure and land application of sludge: leaks, spills, improper handling, or over-application. Farms also often utilize petroleum products and hazardous materials and waste.
Non-commercial livestock (manure spreading)	2	M	Manure (microbial contaminants): improper handling. Petroleum products for equipment used on site.
Residential			
Fuel Oil Storage (at residences)	Numerous	M	Fuel oil: spills, leaks, or improper handling
Lawn Care / Gardening	Numerous	M	Pesticides and fertilizers: over-application or improper storage and disposal
Septic Systems / Cesspools (Some areas are on sewer)	Numerous	M	Hazardous chemicals: microbial contaminants, and improper disposal
Miscellaneous			
Aboveground Storage Tanks	1	M	Materials stored in tanks: spills, leaks, or improper handling
Stormwater Drains/ Retention Basins	1	L	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns
Utility Rights-of-Way	3	M	Corridor maintenance pesticides: over-application or improper handling; construction
NPDES Discharges	2	M	Heavy equipment, fuel storage, clandestine dumping: spills or leaks
Underground Storage tanks	2	H	Materials stored in tanks: spills, leaks, or improper handling
Auto Repair Shop	1	H	Automotive fluids, vehicle paints and solvents: spills, leaks, or improper handling
Cemeteries	1	L	Over-application of pesticides: leaks, spills, improper handling; historic embalming fluids

Activities	Quantity	Threat*	Potential Source of Contamination
Miscellaneous			
Transportation Corridors	Several	M	Fuels and other hazardous materials: accidental leaks or spills; pesticides: over-application or improper handling
Gas Stations/ Service Stations	1	H	Automotive fluids and fuels: spills, leaks, or improper handling or storage
Transformers	Several	L	MODF and possibly PCBs: spills, leaks, or improper handling. Contact the electric company to ensure no PCBs are within the transformers.
Industrial Lagoons and Pits	1	M	Remediation is currently on-going
RCRA TSDF Facilities	1	H	Hazardous wastes: spills, leaks, or improper handling or storage
Industry/Industrial Facilities	3	H	Industrial chemicals and metals: spills, leaks, or improper handling or storage
Hazardous Materials Storage	3	M/H	Hazardous materials: spills, leaks, or improper handling or storage
Wastewater Treatment Plant	1	L/M	Treatment chemicals or equipment maintenance materials: improper handling or storage; wastewater: improper management
Wood products manufacture (roof trusses)	1	L	Potential petroleum, products from vehicles and equipment

Table 2 Notes:

1. When specific potential contaminants are not known, typical potential contaminants or activities for that type of land use are listed. Facilities within the protection areas 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.
2. For more information on regulated facilities, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
3. For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix C: Tier Classified Oil and/or Hazardous Material Sites.

*** THREAT RANKING -** 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.

household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems lead to the ground. If septic systems fail or are not properly maintained they can be a potential source of microbial contamination.

- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (UST and AST) can

be potential sources of contamination due to leaks or spills of the fuel oil they store.

- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents.

Residential Land Use Recommendations:

✓ Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in Appendix A and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.

✓ Work with Colrain planners to control new residential developments in the water supply protection areas.

✓ Promote BMPs for stormwater management and pollution controls.

3. Hazardous Materials Storage and Use – Six percent of the land area within the Zone II is commercial, industrial or waste disposal land use. An industrial complex is located at the former AF&F facility, the Wastewater Treatment Plant is located on the west side of the North River and a roof truss manufacturer is located at the northern (upgradient end) of the Zone II. Many small businesses and industries use hazardous materials, produce hazardous waste products, and/or store large quantities of hazardous materials in UST/ AST. As you are keenly aware, hazardous materials that are improperly stored, used, or disposed, become potential sources of contamination. Hazardous materials should never be disposed of to a septic system or floor drain or allowed to spill directly to the ground.

Hazardous Materials Storage and Use Recommendations:

✓ Continue current efforts to educate and work with local businesses on best management practices for protecting water supplies. Distribute the fact sheet "Businesses Protect Drinking Water" available in Appendix A and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMP's for common business issues.

✓ Work with local businesses to ensure that the District is included in their emergency response plans for notification of any release that may impact the groundwater or surface water of the North River. This should include any releases that may result in a pass-through of the wastewater treatment plant or a direct spill to the river. Partnerships between businesses, water suppliers, and communities enhance successful public drinking water protection practices.

✓ Educate and assist the community on promulgation of a hazardous materials handling and floordrain regulation and inspection program. Refer to the brochures regarding "Industrial Floor Drains" and Hazardous Waste Handling for more information.

4. 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 1-0011974 and 1-0013555. Refer to the attached map and Appendix B for more information.

Oil or Hazardous Material Contamination Sites Recommendation:

✓ Continue to participate in the monitoring of progress of the ongoing

What is a Zone III?

A Zone III (the secondary recharge area) is the land beyond the Zone II from which surface and ground water drain to the Zone II and is often coincident with a watershed boundary.

The Zone III is defined as a secondary recharge area for one or both of the following reasons:

1. The low permeability of underground water bearing materials in this area significantly reduces the rate of groundwater and potential contaminant flow into the Zone II.
2. The groundwater in this area discharges to a surface water feature such as a river, rather than discharging directly into the aquifer.

The land uses within the Zone III are assessed only for sources that are shown to be groundwater under the direct influence of surface water.

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.

Additional Documents:

To help with source protection efforts, more information is available by request or online at mass.gov/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

remedial action conducted at the confirmed release sites.

5. Transportation Corridors and Utility Right-of-Way - State highways and local roads are common throughout the Zone II. 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. Roadways are frequent sites for illegal dumping of hazardous or other potentially harmful wastes. De-icing material, automotive chemicals and other debris on roads are picked up by stormwater and wash into catch basins. The stormwater drainage along Rt. 112 within the Zone II discharges to the North River.

There are numerous unpaved ways as well as legal (authorized) and illegal (unauthorized) trails throughout the Zone II watersheds. Unmanaged access may result in vandalism and illegal dumping.

Power transmissions lines run through the Zone II. Vegetation control measures have the potential to introduce contaminants into resource protection areas. Pesticides or petroleum products used for mechanical methods of vegetation control may pose a threat to water supplies.

Transportation Corridor and Utility Rights-of-Way Recommendations:

- ✓ Identify stormwater drains and the drainage system along transportation corridors. Wherever possible, ensure that drains discharge stormwater outside of the Zone II. If storm drainage maps are available, review the maps with emergency response teams. If maps aren't yet available, work with town officials to investigate mapping options such as the upcoming Phase II Stormwater Rule requiring some communities to complete stormwater mapping.
- ✓ Contact the Town and State to ensure catch basins are inspected, maintained, and cleaned on a regular schedule. Street sweeping reduces the amount of potential contaminants in runoff.
- ✓ Continue working with local emergency response teams to ensure that any spills within the Zone II can be effectively contained.
- ✓ Work with local officials during their review of the utility right-of-way Yearly Operating Plans to ensure that water supplies are protected during vegetation control. Ensure that the utility is utilizing accurate maps for their YOP.
- ✓ If your on-going work identifies specific trails, roads or ways as venues of trespassing, continue to evaluate all options for access management.

6. Wastewater Treatment Plant – The Zone II contains the Colrain Wastewater Treatment Plant that discharges upgradient of the wells into the North River. The former AF&F facility also has industrial lagoons that are in the process of being closed and remediated. Activities associated with wastewater treatment involve storage and use of hazardous materials such as chlorine and fuel oil. Municipal wastewater contains contaminants including bacteria, viruses, metals and volatile chemicals. Industrial wastewater contains a variety of chemicals that are specific to the type of operations conducted at the facility. The discharges from the wastewater treatment plant are regulated by the EPA and include specific limits on the amounts of specific contaminants they are allowed to discharge. Accidental pass-through, spills, leaks or mismanagement of wastewater, hazardous materials and storm water at the plant are potential sources of contamination.

Wastewater Treatment Plant Recommendations:

- ✓ Communicate with the wastewater treatment facility to be sure it is operated and maintained according to Department requirements.
- ✓ Communicate with the wastewater treatment facility to request stormwater drains and the drainage system around the wastewater treatment plant are mapped in the event of a spill or a release.
- ✓ Communicate with the wastewater treatment facility to be sure that best management practices are used for proper handling of materials and in

containing spills and leaks.

- ✓ Communicate with the wastewater treatment facility to be sure emergency planning includes notification of Shelburne Falls Water District in the event a release to the river occurs.
- ✓ Communicate with the wastewater treatment facility to ensure that the plant's underground and/or aboveground storage tanks have secondary containment and are maintained properly.

6. Agricultural Activities – There are several agricultural activities within the Zone II area including non-commercial, cropland and hayfields. Pesticides, fertilizers and manure have the potential to contaminate a drinking water source if improperly stored, applied, or disposed. If not contained or applied properly, animal waste from barnyards, manure pits and field application are potential sources of contamination to ground and surface water supplies. In addition, farms and large commercial facilities often conduct their own maintenance on their equipment and have storage of hazardous materials and hazardous waste.

Agricultural Activities Recommendation:

- ✓ If appropriate, work with the Department to negotiate additional Conservation Restrictions regarding the type of activities conducted in land areas determined to be most critical to source protection.
- ✓ Work with commercial farmers in your protection areas to make them aware of your water supply and to encourage the use of a USDA Natural Resources Conservation Service (NRCS) farm plan to protect water supplies. Review the fact sheet available online and call the local office of the NRCS in Hadley at 413-585-1000 for assistance or online at http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf.
- ✓ Encourage farmers and property managers to incorporate an Integrated Pest Management (IPM) approach into their pest management program. IPM is an ecologically-based approach to pest control that links together several related components, including monitoring and scouting, biological controls, mechanical and/or other cultural practices, and pesticide applications. By combining a number of these different methods and practices, satisfactory pest control can be achieved with less impact on the environment.
- ✓ Promote the use of BMPs for fuel oil storage, hazardous material handling, storage, disposal, and emergency response planning. Continue efforts to assist Colrain in promulgation of Hazardous Materials Handling Regulations through the Board of Health.
- ✓ Continue your current work with farmers to ensure that pesticides and fertilizers are being stored within a structure designed to prevent runoff.
- ✓ The USDA has various funding sources for government agencies, non-government organizations and agricultural facilities through programs such as those listed on the USDA web site http://search.sc.egov.usda.gov/. One program in particular, the Environmental Quality Incentives Program (EQIP) may be utilized in a variety of projects from DPW stormwater management to farm nutrient management designed to protect surface and groundwater. Review the fact sheet available online at http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf and call the local office of the NRCS for assistance.
- ✓ Work with hobby farmers by supplying them with information about protecting their own wells and the public water supply by encouraging the use of BMPs. Refer to http://www.state.ma.us/dep/brp/dws/dwspubs.htm and http://www.state.ma.us/dep/consumer/animal.htm#dwqual for additional resources.

7. Protection Planning – The Shelburne Falls Fire District wells and Zone II are located within Colrain. Currently, Colrain does not have water supply protection controls that meet the minimum requirements of the Department's Wellhead Protection regulation 310 CMR 22.21(2). Shelburne Falls Fire District was awarded wellhead protection grants to prepare a wellhead protection plan that included forming a committee with members from Colrain and Shelburne and implementation of the plan. Protection planning protects drinking water 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.

It should be noted that activities within the Zone III may pose a potential threat to the water supply. Specifically, under conditions when the river contributes water to the aquifer an accidental release to the river may pose a significant threat to water quality in the wells. This report does not include facilities located within the Zone III either along the river or just outside the Zone II such as USTs/ASTs or other activities that may pose a threat to the sources.

Protection Planning Recommendations:

- ✓ Consider inventorying activities in the Zone III, just outside of the Zone II that may pose a potential threat and include them into an Emergency Response Action Plan, this may include USTs or farms that may store or use hazardous materials.
- ✓ Update the Wellhead Protection Plan as appropriate. Continue meeting with the protection committee and

coordinating with Colrain to promulgate protection regulations/bylaws in Colrain.

- ✓ Continue to coordinate with local officials to compare local wellhead protection controls with current MA Wellhead Protection Regulations 310 CMR 22.21(2) to adopt controls that meet requirements of that regulation. For more information on DEP land use controls see http://mass.gov/dep/brp/dws/protect.htm.
- ✓ Local controls in Colrain do not regulate floor drains; continue efforts through the Aquifer Protection Committee and the Colrain Board of Health to promulgate floor drain controls, hazardous materials handling regulations and an inspection program.
- ✓ Work with town boards to review and provide recommendations on proposed development within your water supply protection areas. To obtain information on build-out analyses for the town, see the Executive Office of Environmental Affairs' community preservation web site, http://commpres.env.state.ma.us/.

Other land uses and activities within the Zone II are listed in Table 2. Refer to Table 2 and Appendix 2 for more information about these land uses.

Identifying potential sources of contamination 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 sources of contamination are identified, specific recommendations like those below should be used to better protect your water supply.

Section 3: Source Water Protection Conclusions and Recommendations

Current Land Uses and Source Protection:
As with many water supply protection areas, the system Zone II contains potential sources of contamination. However, source protection measures reduce the risk of actual contamination, as illustrated in Figure 2. The water supplier is commended for taking an active role in promoting source protection measures in the Water Supply Protection Areas through:

- Proactively pursuing land acquisition options in the Zone I.
- Preparing and implementing a Wellhead Protection Plan and Emergency Response Plan.
- Efforts to include and work with the community of Colrain to promote source protection.

Source Protection Recommendations:
To better protect the sources for the future:

- ✓ Inspect the Zone I regularly, and when feasible, remove any non-water supply activities.
- ✓ Educate residents on ways they can help you to protect drinking water sources.
- ✓ Continue working with emergency response teams to ensure that they are aware of the stormwater drainage in your Zone II and to cooperate on responding to spills or accidents. Ensure that industries and the treatment plan include the District in their emergency response plan list of agencies to notify in the event of a release of hazardous materials.
- ✓ Consider inventorying USTs within the Zone II and Zone III.
- ✓ Work with farmers in your protection areas to make them aware of your water supply and to encourage the use of a NRCS farm plan to protect water supplies including IPM.

Conclusions:
These recommendations are only part of your ongoing local drinking water source protection. Additional source protection recommendations are listed in Table 3, the Key Issues above and Appendix A.

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 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. If funds are available, 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://mass.gov/dep/brp/mf/mfpubs.htm.

The assessment and protection recommendations in this SWAP report are provided as a tool to encourage community discussion, support ongoing source protection efforts, and help set local drinking water protection priorities. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures. The water supplier should supplement this SWAP report with local information on potential sources of contamination and land uses. Local information should be maintained and updated periodically to reflect land use changes in the protection area. Use this information to set priorities, target inspections, focus education efforts, and to develop a long-term drinking water source protection plan.

Section 4: Appendices

A. Protection Recommendations
B. Regulated Facilities within the Water Supply Protection Areas
C. Confirmed hazardous material release sites
D. Additional Documents on Source Protection

Table 3: Current Protection and Recommendations

Protection Measures	Status	Recommendations
Zone I		
Does the Public Water Supplier (PWS) own or control the entire Zone I?	**NO (However, DEP has approved 03G)**	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. Continue working with land owners to negotiate a Conservation Restriction, MOU and other forms of protection.
Is the Zone I posted with "Public Drinking Water Supply" Signs?	**YES**	Additional economical signs are available from the Northeast Rural Water Association (802) 660-4988.
Is Zone I regularly inspected?	**YES**	Continue daily inspections of drinking water protection areas.
Are water supply-related activities the only activities within the Zone I?	**NO**	Continue to keep other land uses out of the Zone Is. Continue working with land owners to negotiate a Conservation Restriction and other forms of protection.
Municipal Controls (Zoning Bylaws, Health Regulations, and General Bylaws)		
Does the municipality have Wellhead Protection Controls that meet 310 CMR 22.21(2)?	**N/A**	
Do neighboring communities protect the Zone II areas extending into their communities?	**NO**	The wells and Zone II for Shelburne Falls Fire District are completely within the Town of Colrain. Under stressed conditions, the river contributes water to the aquifer, therefore activities within the Zone III should also be monitored and Emergency Response Plans should include upstream (Zone III) land uses that may pose a significant threat.
Planning		
Does the PWS have a Wellhead Protection Plan?	**YES**	When updating plans, include an update on implementation and review the effectiveness of the plan.
Does the PWS have a formal "Emergency Response Plan" to deal with spills or other emergencies?	**YES**	Augment the plan by reviewing and encouraging a joint emergency response plan with fire department, Board of Health, DPW, industries, wastewater treatment plant, and local and state emergency officials.
Does the municipality have a wellhead protection committee?	**YES**	Include representatives from citizens' groups, neighboring communities, and the business community.
Does the Board of Health conduct inspections of commercial and industrial activities?	**NO**	For more guidance see "Hazardous Materials Management: A Community's Guide" at www.state.ma.us/dep/brp/dws/files/hazmat.doc Continue to work with neighboring communities to adopt floor drain regulations and work with industries to protect water supplies.
Does the PWS provide wellhead protection education?	**YES**	Aim additional efforts at commercial, industrial and municipal uses within the Zone II and as appropriate Zone III.