Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
For
Savoy Elementary School

What is SWAP?

The Source Water Assessment and 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 susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

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

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared:
December 31, 2003

Table 1: Public Water System (PWS) Information

PWS Name	Savoy Elementary School
PWS Address	26 Chapel Road
City/Town	Savoy, Massachusetts
PWS ID Number	1263003
Local Contact	Mr. William S. Enser, Jr.
Phone Number	(413) 243-1416

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA*	*Source Susceptibility*
Well #1	1263003-01G	100	407	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water sources may be threatened by many potential sources of contamination, including septic systems, 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. 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:
1. Description of the Water System
2. Discussion of Land Uses in the Protection Areas
3. Protection Recommendations
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

Savoy Elementary School is a small, rural school with a total student and staff population of approximately 75 people per day, located on the corner of Chapel Road and Hawley Road in the town of Savoy, Massachusetts. Savoy is a residential, recreational community situated in the Berkshire Hills in northern Berkshire County. The Town of Savoy does not have municipal water or sewer; therefore, the school operates a single public water supply well and disposes of wastewater through an on-site septic system. The school uses propane as a heating fuel and has a single aboveground

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 an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The Zone II** The primary recharge area defined by a hydrogeologic study.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

storage tank adjacent to the school. The school well is a 6-inch diameter, 80-feet deep bedrock well that is located approximately 75 feet from the closest school building, but within 20 feet of the school parking area and 64 feet from Hawley Road. The well is located within a 3-feet diameter pit that is approximately 3-feet deep with a cement cover.

The Zone I is the protective area immediately surrounding the source and is assumed to contribute recharge to the source. The Zone I for individual wells is a circle centered on the well with a radius ranging from 100 to 400 feet based on the approved withdrawal rate from the well. An Interim Wellhead Protection Area (IWPA) is a primary recharge area designated for a groundwater source when the Zone II has not yet been delineated. The actual recharge area for a well may be significantly larger or smaller than the IWPA. The Zone I and IWPA protective radii for Well #1 are 100 feet and 407 feet, respectively and was originally based on the estimated daily water use from Title 5 flow estimates. Current metered water use data confirms that the average daily water use is approximately 380 gallons per day. The school was recently expanded and replaced the septic system leachfield; the addition and the leachfield are within the IWPA but outside of the Zone I.

Geologic mapping and field observations indicate the school is located in the Berkshire uplands with thin till overburden covering the bedrock. The bedrock is mapped as schist of the Rowe-Hawley Zone. The bedrock is a complex series of folds and faults with bedrock mapped as various metamorphic rock types. There is no evidence of a continuous confining, clay layer or a thick till layer in the immediate vicinity of the well. Wells located in these conditions are considered to be located in aquifers with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from activities on the ground surface. Please refer to the attached map of the Zone I and IWPA.

The water from the well is treated through a limestone contactor to raise the pH for corrosion control prior to distribution. In addition, a review of water quality data shows sodium levels increasing from 22 mg/L in1995 to 74 mg/L in 2001. There is no drinking water standard for sodium, however, the DEP does have a guideline of 20 mg/l for sodium. The DEP requires public water suppliers to regularly monitor the quality of the water. For current information on monitoring results and treatment, please refer questions to the Public Water System contact person listed above in Table 1 for the most recent information. Drinking water monitoring reporting data is also available at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html, the EPA's website for Envirofacts.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Non-conforming Zone I	-	-	-	Contact DEP prior to conducting any work in Zone I or expanding the system.
Septic system components	Yes	Yes	Moderate	Maintain septic systems.
Transportation corridors and school parking	Yes	Yes	Moderate	Control the use of deicers and coordinate with emergency response personnel. Monitor for leaks and spills near the well.
School	Yes	Yes	Moderate	Use BMPs for school facilities.
Residential	No	Yes	Moderate	Provide information on BMPs.
Horse farm/hay fields	No	Yes	Moderate	Manure management, fertilizers/pesticides, and petroleum products.

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

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 that resists penetration by water.

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

Additional Documents:

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

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

2. Discussion of Land Uses in the Protection Areas

There are some land uses and activities within the drinking water supply protection areas that are potential sources of contamination. Although most of the agricultural activities are outside of the Zone I and IWPA, because the IWPA is not a scientifically determine recharge area, the DEP often identifies activities that are near the source.

Key issues include:

1. **Non-conforming Zone I;**
2. **School;**
3. **Residential;**
4. **Transportation corridor/parking; and**
5. **Agricultural activities.**

The overall ranking of susceptibility to contamination for the system is moderate, based on the presence of at least one moderate threat land use or activity in the protection areas of the well, as seen in Table 2.

1. Non-conforming Zone I – Well #1 has a non-conforming Zone I with respect to ownership and activities within the Zone I. There is a play structure within the Zone I of Well #1, however, the DEP may allow some passive recreation and other non-threatening activities within the Zone I. There are also non-conforming activities in the Zone I such as parking. The school is commended for recently installing a berm around the parking area to prevent runoff from the parking area to flow toward the well.

Recommendations:

- ✓ Continue to work toward prohibiting/limiting activities in close proximity to the well and using BMPs to protect the water supplies.
- ✓ Do not allow any additional non-conforming activities within Zone I. Inspect the well cap and pit regularly to ensure the security of the pit, and that there is no standing water in the pit. Replace the split cap with a sanitary, watertight cap that is secure.
- ✓ Although historically this has not been a problem, if at any time, water is evident in the pit, consider raising up the well casing to above grade with a sanitary seal sloping away from the casing to prevent the potential for water ponding at the well casing.
- ✓ Monitor the runoff from the parking area and roadways to ensure there is no runoff directed toward the well.

2. School and residential use – The school facilities and portions of residential properties are within the Zone I and IWPA of the well. Elementary schools generally use only household hazardous materials and the recommendations for small schools are similar to those for residents. In addition, there are state and federal controls on some activities and products used at schools to promote "healthy schools". All of the school's facilities are located within the IWPA of the well. Potential exists for contamination of the well by on-site use of cleaning materials, petroleum from lawn equipment, fertilizers, and pesticides. If managed improperly, activities associated with residences and the school can contribute to drinking water contamination. Common potential sources of contamination include:

- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, petroleum products for home equipment and lawn maintenance equipment and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Septic Systems** – Improper disposal of 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 could be a potential source of microbial contamination.

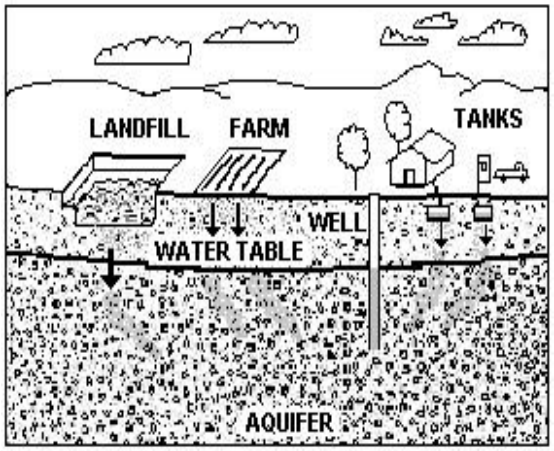

Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

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

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Copies of this assessment have been made available to the public water supplier and town boards.

- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) and their associated fuel lines 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 and streams. 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. Visit the Nonpoint Source pollution web site for additional information at the following MADEP website http://www.state.ma.us/dep/brp/wm/nonpoint.htm.

School and Residential Use Recommendations:

- V Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in Appendix A and online at www.mass.gov/dep/brp/dws/protect.htm, the MA DEP website which provides BMPs for common residential issues.
- V Continue the use and maintenance of BMPs for activities within close proximity to the well.
- V Continue to prohibit the use pesticides or fertilizers within the Zone I of the well. Consider the use of Integrated Pest Management to minimize the use of pesticides and nutrients in fertilizers.
- V Continue the use of Best Management Practices for all activities at the school and at the athletic fields across the street. Consider drought resistant grasses and/or low release nutrient fertilizers in the IWPA, as required.
- V Use secondary containment as necessary for any petroleum products kept for maintenance and lawn care equipment.
- V Review your emergency response plan regarding accidental releases within the area. Ensuring that emergency responders in town are aware of the locations of your resource areas.
- V Refer to the Massachusetts Public Health Association's Healthy Schools website for additional information at: http://www.mphaweb.org/pol_schools.html
- V Prepare a policy and a plan for maintenance operations regarding the boiler. DEP recommends that you require your boiler maintenance contractor use containment and have absorbent materials on hand to prevent accidental leaks while conducting routine maintenance. The contractor should be responsible for the off-site disposal of any boiler blow down generated during maintenance.

6. Transportation corridor and parking – The parking areas for the school and a portion of Chapel Road and Hawley Road are within the Zone I of the well. Accidents and normal use and maintenance of roads pose a potential threat to water quality. Catch basins transport stormwater from roadways and adjacent properties to the ground, streams, rivers or reservoir. As flowing stormwater travels, it picks up de-icing materials, petroleum chemicals and other debris on roads and contaminants from streets and lawns. Common potential contaminants in stormwater originate from automotive leaks, automobile maintenance and car washing, accidental spills as well as waste from wildlife and pets.

Recommendations:

- V Prepare an Emergency Response Plan that includes coordination between the emergency responders to be sure they are aware of the location of your well.
- V Notify the Town Highway Department of your well and inform them of the elevated sodium levels. Review the stormwater management near the well with the Highway Department and work to ensure runoff is directed away from the well.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the source's susceptibility to contamination. The Savoy Elementary School is commended for utilizing propane as a fuel source, expanding the school away from and outside of the Zone I and for installing a berm around the parking area to prevent runoff from flowing toward the well. The DEP encourages continued diligence in monitoring activities within and near protection areas. The water supplier should review and adopt the key recommendations above. Consider contacting the agricultural property landowner just 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.

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. 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. Call the local office of the NRCS in Pittsfield at 413-443-6867 ext. 3 for assistance and review the fact sheet available online at the following NRCS website: http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf. This may be appropriate for the Savoy Highway Department. 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 regarding hobby farmers' BMPs.

Funding:
The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the program fact sheet. If funding is available, each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at: http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

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

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas
- Source protection fact sheets