# Massachusetts Department of Environmental Protection
# Source Water Assessment and Protection (SWAP) Report
# For
# Becket/Washington 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*** | Becket/Washington School |
| ***PWS Address*** | Maple Street |
| ***City/Town*** | Becket, Massachusetts |
| ***PWS ID Number*** | 1022011 |
| ***Local Contact*** | Mr. William S. Enser, Jr. |
| ***Phone Number*** | (413) 243-1416 |

| *Well Name* | *Source ID#* | *Zone I (in feet)* | *IWPA* | *Source Susceptibility* |
|---|---|---|---|---|
| Well #2 | 1022011-02G | 158 | 454 | 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

Becket/Washington School is a small, rural school with a total student and staff population of approximately 245 people per day, located on the corner of Main Street and Maple Road in the town of Becket, Massachusetts. The school is located between Yokum Brook to the west and a steep embankment to the southeast. The school is located just south of the confluence of Yokum Brook and the West Branch of the Westfield River. Becket is a residential, recreational community situated in the Berkshire Hills in eastern Berkshire County. The Town of Becket does not have

### 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).

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 storage tanks adjacent to the school. Recently, the school underwent an expansion that included the replacement of the original school Well #1 (01G) with Well #2 (02G). There was little information regarding the depth or construction of 01G. That well is believed to have been the original shallow dug well for the site that had been a hotel built in the late 1880s. The well was located beneath the loading dock of the school. The original school was constructed in 1940 with an addition built in 1980 with the most recent addition completed in 2002. The new school Well #2 (02G), is a 6-inch diameter, 395-feet deep bedrock well that is located approximately 125 feet from the addition to the school building. The well casing is finished above grade and is located near the school playground. The Department agreed upon the location of the replacement source after the school was unable to secure land for a well conforming to Zone I requirements. Well #1 is to be abandoned as a water source and decommissioned; that source has been designated as an emergency source and Well #1 will not be discussed further in this report.

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 158 feet and 454 feet, respectively. The protective radii for the well were based on an approved withdrawal rate determined through a pumping test as part of the New Source Approval Process. As previously noted, the school was recently expanded and the original well replaced. The fuel oil UST was removed (the heating system was converted to propane) and the septic system was upgraded; the leachfield is located across the street, outside of the protection areas.

Geologic mapping and field observations indicate the school is located in the Berkshire uplands with thin till overburden covering the bedrock. Sand and gravel deposits are mapped just north of the school in the Westfield River valley, but drilling logs and observations of bedrock outcrops confirm thin overburden at the site. Drilling indicated a relatively thin layer (13 feet) of sandy loam, most likely alluvium over fractured bedrock. Sound bedrock was encountered at approximately 25 feet below grade. The bedrock structure is mapped as a complex series of folds and faults

## 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/facility. |
| Septic system components | Yes | Yes | Moderate | Maintain septic systems. |
| Transportation corridors and school parking | No | 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. |

*** -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

with bedrock mapped as various metamorphic rocks of the Taconic-Berkshire Zone. The bedrock in the immediate vicinity of the school is mapped as Tyringham Gneiss. 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 not treated prior to distribution. 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.

## 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.

**Key issues include:**

1. **Non-conforming Zone I;**
2. **School/Institutional facilities;**
3. **Residential; and**
4. **Transportation corridor/parking.**

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 IWPA 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. The DEP approved this replacement source with a non-conforming Zone I as part of the school upgrade and improvement to replace a more vulnerable shallow well. There are also non-conforming activities in the Zone I, such as part of a tennis court and the school.

**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 regularly to ensure the security of the cap and that there is no standing water at the well.
- ✓ Monitor the runoff from the parking area and roadways to ensure there is no runoff directed toward the well.
- ✓ If Well #1 has not been decommissioned yet, contact the Springfield Regional office of the DEP for assistance.

**2. School/Residential and Institutional use–** The school facilities, several residential properties, a church and the library are within the Zone I or IWPA of the well. Elementary schools and these institutional facilities generally use only household hazardous materials and the recommendations for small schools are similar to those for residents. There are state and federal controls on some activities and products used at schools to promote "healthy schools". Potential exists for contamination of the well by onsite use of cleaning materials, petroleum from lawn equipment, fertilizers, and pesticides. Storm drains in the parking areas or the roads and residences drain directly into the ground or to the brook. If managed

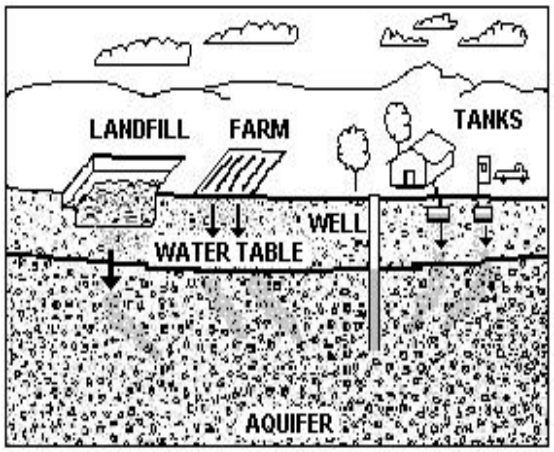


Figure 1: Example of how a well could become contaminated by different land uses and activities.

**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.

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.
- **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/Institutional and Residential 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 online at www.mass.gov/dep/brp/dws/protect.htm, the MA DEP website which provides BMPs for common residential issues.
- Continue the use and maintenance of BMPs for activities within close proximity to the well.
- Continue to prohibit the use of 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.
- 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.
- Use secondary containment as necessary for any petroleum products kept for maintenance and lawn care equipment.
- 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.
- Refer to the Massachusetts Public Health Association's Healthy Schools website at the following website http://www.mphaweb.org/pol_schools.html for additional information
- Prepare a policy and a plan for maintenance operation regarding the boiler. DEP recommends that you require your boiler maintenance contractor to use containment and have absorbent materials on hand to prevent accidental leaks while conducting routine maintenance. The contractor should also 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 as well as Main Street and Maple Street are within the IWPA of the well. Most of these activities are topographically downgradient 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:**

- Prepare an Emergency Response Plan that includes coordination between the emergency responders to be sure they are aware of the location of your well.

## 3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the source's susceptibility to contamination. The School is commended for utilizing propane as a fuel source and working to provide a more protective source at the school. The DEP encourages continued diligence in monitoring activities within and near protection areas. The water supplier should review and adopt the key recommendations above.

### 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.

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 http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf and call the local office of the NRCS in Pittsfield at 413-443-6867 ext. 3 or assistance. This may be appropriate for the local Highway Department.

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