# Massachusetts Department of Environmental Protection
# Source Water Assessment and Protection (SWAP) Report
# for
# Shaker Heights Association

### 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.

### 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:
November 19, 2003

### Table 1: Public Water System (PWS) Information

| | |
|---|---|
| ***PWS NAME*** | **Shaker Heights Association** |
| ***PWS Address*** | **Skyline Drive** |
| ***City/Town*** | **Hancock, Massachusetts** |
| ***PWS ID Number*** | **1121001** |
| ***Local Contact*** | **Mr. William Enser** |
| ***Phone Number*** | **413-2431416** |

| *Well Name* | *Source ID#* | *Zone I (in feet)* | *IWPA (in feet)* | *Source Susceptibility* |
|---|---|---|---|---|
| Well #1 | 1121001-01G | 190 | 489 | High |

## Introduction

We are all concerned about the quality of the water we drink. Drinking water supplies may be threatened by many potential sources of contamination, including septic systems, road de-icing, 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 within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

## 1. Description of the Water System

Shaker Heights Association is a residential development located in Hancock, a small rural, hilltown in western Berkshire County on the New York state border. The community consists of 20 homes on the western slope of Mt. Lebanon and some lesser, unnamed hills of the Taconic Range. Hancock does not have municipal water and sewer systems; therefore, the community is served by two, on-site water supply wells and wastewater is discharged through individual on-site septic systems. The wells are located topographically upgradient of the development.

### 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 IWPA** is the larger area that is likely to contribute water to the well.

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).

Well #1 is a 6-inch diameter, 250-feet deep, bedrock well located approximately 190 feet from one of the homes of the community. Well #2 is located 40 feet from Well #1 and is a 6-inch diameter, 570-feet deep, bedrock well. Well #1 works as the main source and Well #2 pumps as a back-up to supply water at times of peak demand. Water from the wells is pumped to a storage tank near the wells.

The geologic mapping of the area indicates thin overburden material of till with numerous exposures of bedrock. Geologic mapping also identifies the bedrock as metamorphic equivalents of the sedimentary and volcanic rocks of the Taconic Allochton, predominantly a chloritoid-rich schist and phyllite.

The Zone I is the protection area immediately surrounding the wellhead, while the IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The Zone I and Interim Wellhead Protection Area (IWPA) radii, based on the Title 5 estimated volume from the wells, are 190 feet and 489 feet, respectively. Metered data for the last three years ranges from 1500 gallons per day to 6800 gallons per day; these data are inconsistent and unreliable to confirm actual water use at the Association. The Department suggests that you read the meter regularly to determine actual water usage and utilize the data to manage the system. The Department may revise the Zone I and IWPA based on actual use. Please refer to the attached map of the Zone I and IWPA.

There is no record or evidence of a continuous, confining and protective layer such as thick till or clay, in the vicinity of the well. Wells located in this type of geologic setting are considered to have a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

For information on current water quality monitoring results, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Refer to Table 2 for additional information regarding the location of the well and activities within the protection areas.

## 2. Discussion of Land Uses in the Protection Areas

The well is fairly remote and the protection areas include a hiking trail, forest and two residences on the edge of the IWPA.

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

| Potential Contaminant Sources | Zone I | IWPA | Threat | Comments |
|---|---|---|---|---|
| Non-conforming Zone I | - | - | - | Remove all non-conforming activities from Zone I. |
| Tractor storage shed/storage of woodchips and other debris | Yes | Yes | High | The tractor contains petroleum products and recently there are debris and woodchips stored in the Zone I. |
| Residential | No | Yes | Moderate | Supply BMPs to residents. |

*** -For more information, see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

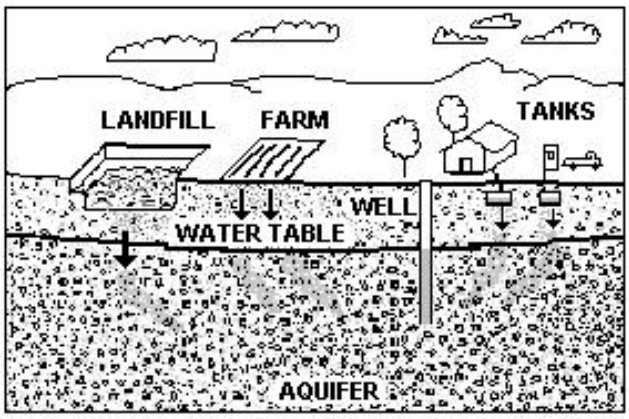


Figure 1: Example of how a well could become contaminated by different land uses and activities.

**Key issues include:**

1. **Non-conforming Zone I;**
2. **Maintenance shed; and**
3. **Residential land use.**

The overall ranking of susceptibility to contamination for the Shaker Heights supply wells is high based on the presence of at least one high ranked potentially threatening land use or activity in the Zone I and IWPA. Please refer any questions about water quality at the facility to the contact person listed in Table 1.

1. **Non-conforming Zone Is –** Currently the wells do not meet DEP's restrictions, which only allow water supply related activities or other non-threatening activities in the Zone I. The Zone Is contain a tractor shed and the 190 feet Zone I is just on the edge of one of the homes. As noted previously, the Zone I may in fact be larger or smaller then the 190 feet but it cannot be determined with the currently available meter data. Recently it has been noted that storage of debris and woodchips is occurring adjacent to the tractor garage. This activity is not permitted in the Zone I. In addition it appears that the Zone I is not entirely owned by the Association. However, the Zone I area to the east that is not owned by the Association is owned by the Department of Conservation and Recreation and is unlikely to be developed. Systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

**Recommendations:**

- Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- Do not store debris or any other materials within Zone I.
- Restrict automobile access to Zone I.
- Control access to the wellhead areas with sanitary seals and secure facilities.
- Inspect the wells regularly to ensure the integrity of the cap, sanitary seal and the drainage around the well is directed away from the wells.

**2. Tractor shed –** The tractor is stored in a garage within the Zone I. The only petroleum products stored in the garage are those in use within the equipment.

**Recommendations:**

- Do not store any other fluids in the shed and check regularly for leaks and spills.
- Prohibit access to the area.
- Do not allow the accumulation of debris or other items within the protection areas.

2. **Residential Land Use –** There are two residences within the IWPA protection area. 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 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 (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil they store.

**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.

### Glossary

**Zone I:** The area closest to a well; a 100 to 400-feet radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

**IWPA:** A 400-feet to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

**Zone II:** The primary recharge area defined by a hydrogeologic study.

**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.

### For More Information:

Contact Catherine V. 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/

## 4. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will further enhance the protection of the well and minimize its susceptibility to contamination. The Department commends the Association for previous efforts to protect the source such as removing the fuel tank for the tractor from the protection areas, but there is still work needed to fully protect the sources. The water supplier should review and adopt the key recommendations above and the following:

### Priority Recommendations:

- Monitor and control activities in the Zone I and IWPA areas.
- Consider ways to protect the well if activities cannot be controlled.
- Ensure the integrity of the sanitary caps and seals at the wells.

### Zone I:

- Prohibit any new, non-water supply activities from the Zone I.
- Continue regular inspections of the Zone I. Look for illegal dumping, evidence of access or vandalism.
- Redirect drainage in the Zone I, downgradient and away from the well area.

### Training and Education:

- Post drinking water protection area signs at key visibility locations away from the immediate wellhead area.
- Educate residents, neighbors and consumers regarding BMPs with respect to household hazardous materials handling and disposal.
- Keep areas near transformers free of tree limbs that could endanger the transformer in a storm.

### Planning:

- Have a plan to address short-term water shortages and long-term water demands.
- Keep the phone number of a bottled water company readily available in the event of an emergency.
- Be sure that the local emergency responders know where your sources are located and notify you in the event of an accident in the vicinity of your well.
- Supplement the SWAP assessment with additional local information, and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

**Other Funding Sources:**

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 USDA also has various funding sources for government agencies, non-governmental organizations and agricultural facilities through programs listed on the USDA web site http://search.sc.egov.usda.gov/nrcs.asp?qu=eqip&ct=NRCS. 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. Suggest that the town review the fact sheet available online and call the local office of the NRCS for assistance: http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf.

The DEP's Wellhead Protection Grant Program provides funds to assist public water suppliers and their partners in addressing water supply source protection through local projects. Protection recommendations discussed in this document may be

**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 water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

eligible for funding under this grant program. If funds are available, in the spring, DEP posts a new Request for Response for the grant program (RFR).

These recommendations are only part of your on-going local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures. Copies of this report have been forwarded to the water supplier and Town officials.

## 4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet