Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for
New Hingham Elementary School

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: October 10, 2003

Table 1: Public Water System (PWS) Information

PWS Name	**New Hingham Elementary School**
PWS Address	**30 Smith Road**
City/Town	**Chesterfield**
PWS ID Number	**1060004**
Local Contact	**Mr. William Enser**
Phone Number	**413-243-1416**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1060004-01G	257	646	Low

Introduction

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

New Hingham Elementary School is a regional elementary school located in Chesterfield. The school serves pre-school through sixth grade and has a population of approximately 200 staff and students. There are no municipal water or wastewater systems in Chesterfield and therefore, the facility is served by an on-site water supply and wastewater disposal through a septic system. The well was installed in 1996 to a depth of 440 feet and hydrofractured to enhance water flow to the well.

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).

The Zone I for a well is the protected area immediately surrounding the wellhead while the Interim Wellhead Protection Area (IWPA) provides an interim protection area for a water supply well when the actual recharge area (Zone II) has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The approved withdrawal rate for Well #1 is 10.3 gallons per minute based on the results from an extended duration pumping test conducted as part of the New Source Approval Process. Based on that maximum daily withdrawal rate, the Zone I and IWPA radii for Well #1 are 257 and 646 feet, respectively. All of the school facilities are located outside of the IWPA. Only walking and field mowing are conducted in the Zone I and IWPA.

New Hingham Elementary School is located in an area of thin overburden (till/hardpan) on top of bedrock. There is no evidence of a confining, protective layer of clay or thick till in the vicinity of the well. Wells located in these geological conditions are considered to have a high vulnerability to potential contamination from activities conducted on the land in the recharge area to the wells due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

Water withdrawn from the school's well does not require treatment, and is not treated at this time. For current information on 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. Please refer to the attached map of the Zone I and IWPA and Table 1 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 Zone I is owned and controlled by the School District and therefore is in compliance with DEP requirements. There are few potential sources of contamination within the mapped drinking water supply protection areas.

Key issues include:

1. **Passive recreation**
2. **Lawn/field mowing**

The overall ranking of susceptibility to contamination for the New Hingham Elementary School well is low, based on the presence of a few low ranked potentially threatening land uses or activities in the IWPA. Please refer any questions about water quality at the facility to the contact person listed in Table 1.

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Passive recreation	No	Yes	Low	Inspect the area regularly and monitor activities.
Lawn/field mowing	Yes	Yes	Low	Use caution when utilizing equipment with petroleum products near the well

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

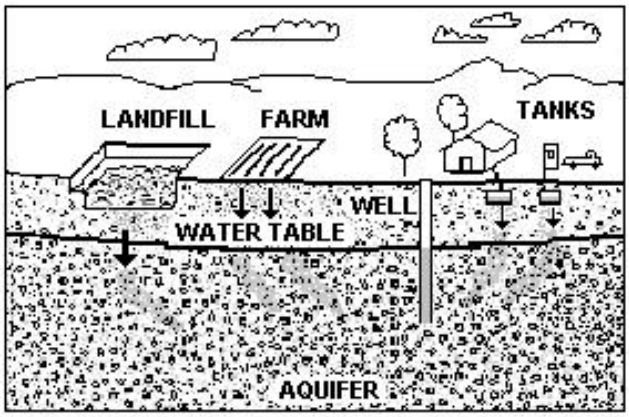

Figure 1: Example of how a well could become contaminated by different land uses and activities.

1. Passive recreation – The well is located in a rural area and recreation is not encouraged. All of the school facilities are located outside of the IWPA but the area is accessed infrequently for passive recreation.

Transportation corridor Recommendations:

- Monitor the area regularly.

2. Lawn/field mowing – The Zone I and IWPA areas are maintained for access.

- Use equipment near the well with caution.

The school district is commended for development of a source in such a well-protected area.

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 school should review and adopt the key recommendations above and the following:

Priority Recommendations:

- Continue efforts to control access to Zone I and monitor activities in the IWPA area.

Zone I:

- Keep non-water supply activities out of the Zone I.
- Continue regular inspections of the Zone I. Look for illegal dumping, evidence of access or vandalism.

Training and Education:

- Train staff on proper hazardous material use, disposal, emergency response, and best management practices. Post labels as appropriate on raw materials and hazardous waste.
- Post drinking water protection area signs at key visibility locations away from the immediate wellhead area.

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.
- 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.

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.

Glossary

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

IWPA: A 400-foot 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/

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

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

Copies of this report have been forwarded to the water supplier and Town officials.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet