Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
For
Brookside Village

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 10, 2003

Table 1: Public Water System (PWS) Information

PWS Name	Brookside Village
PWS Address	Stafford Road
City/Town	Wales, Massachusetts
PWS ID Number	1306001
Local Contact	Mr. David Anderson
Phone Number	413-245-9300

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well # 2	1306001-02G	250	784	Moderate

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 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 within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

Brookside Village is a mobile home park for retired citizens and is located in Wales, a small town in southwestern Massachusetts along the Connecticut border. The park accommodates 64 units with a total population of approximately 80 to 90 residents. There is no municipal water system or wastewater disposal in Wales, therefore, the facility is served by one on-site well with one emergency well and individual septic disposal systems (some are shared systems). The facility is presently proposing upgrades to the wastewater disposal system.

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).

This report addresses only the active Well #2 (02G) which is located southeast of the main residential area. Well #1 (emergency source) is a 15 feet deep, 9-feet in diameter (caisson type) well located in the center of the facility that was replaced in 1983 with Well #2. Well #2 is an infiltration area that is 46 x 24 x 14 feet deep, (8 feet deep at the shallow end). The area was excavated and backfilled with 1.5-inch stone. In the deeper half of the infiltration area, nine, 6.5 feet diameter well tiles were installed with the source intake set in the center tile. The construction was within an unconfined sand aquifer with an "impervious" material backfilled from 6 feet below grade to the surface with a topsoil finish to grade. The intake is set in the center tile and the centrifugal pump is located in the adjacent pump house.

There is no surficial geology map available for the area; however, based on observations, the source is located on the edge of a narrow valley filled with sand and gravel and wetland deposits. The source construction diagrams indicate the source is on the edge of the bedrock valley and the deposits are primarily fine-grained material underlain by till. The USGS state bedrock map shows metamorphic rock, sulfidic mica schist and amphibolite of the Partridge Formation. There is no record of a confining, protective clay layer in the protection area of the source. Sources located in these geological conditions are considered to have a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

The Zone I is the area immediately surrounding the well and the Interim Wellhead Protection Area, (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 for an infiltration system, such as this one, is a 250 feet radial area from the outside edges of the source area. The IWPA for the source is a radius of 784 feet centered on the source. The IWPA radius is based on the maximum average daily water use as reported by the system. A review of the annual reports indicates that the system use fluctuates seasonally and is also related to leaks. Although water use has decreased somewhat due to diligence in leak detection and repair, the IWPA remains at 784 feet. Please refer to the attached map of the Zone I and IWPA.

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Aquatic wildlife	Yes	Yes	Moderate /High	Control beaver activity to protect the source from flooding.
Fuel Storage Above Ground	Yes	Yes	Moderate	Proper maintenance and upgrades to fuel oil tanks to prevent releases from occurring
Lawn Care/Gardening	Yes	Yes	Moderate	Encourage residents in proper storage, disposal, and application of pesticides.
Transportation Corridor	Yes	Yes	Moderate	Fuels and other hazardous materials: accidental leaks or spills; pesticides: over-application or improper handling

*** -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

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-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.

The well serving the facility has no treatment at this time however, water is disinfected prior to distribution. The DEP requires public water suppliers to monitor the quality of the water frequently. For current information on 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. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Zone I;**
2. **Aquatic wildlife;**
3. **Residential Land Uses; and**
4. **Transportation Corridor.**

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

1. **Zone I** – The facility owns the Zone I area around the source and the land uses include an access road, woods, water storage tank and wetland. The system is in compliance with Zone I restrictions.

Recommendations:

- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Direct driveway and parking lot drainage in the Zone I away from the source.
- ✓ Control beaver activity to prevent flooding near the source.

2. **Aquatic wildlife** - A wetland and pond are located within the Zone I and IWPA. Beavers, ducks and other wildlife waste in and around the pond is a potential source of contamination to the water supply.

Recommendation:

- ✓ Control the beaver activities to prevent flooding of the source area. Contact DEP for assistance in permitting beaver controls.

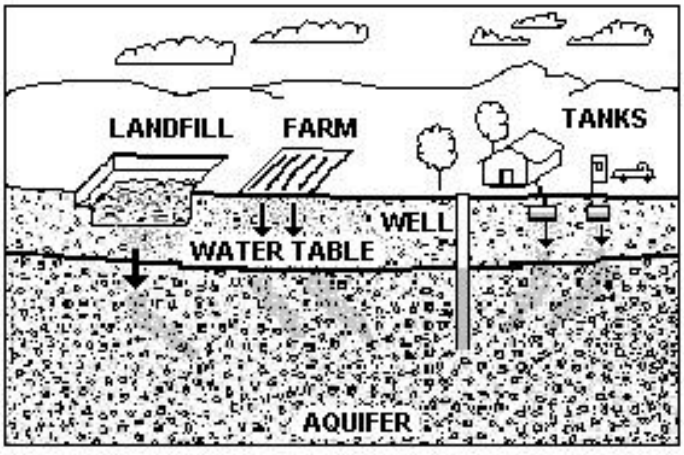

Figure 1: Example of how a well could become contaminated by different land uses and activities.

3. **Residential Land Uses –** Brookside Village utilizes on-site septic disposal and is presently working with the DEP to stay in compliance with wastewater requirements. If managed improperly, activities associated with residential areas 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, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- ➢ **Heating Oil/Kerosene 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/kerosene they store. Require that fuel lines are sleeved to protect from leaks.

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/

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.

- **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 the following DEP website www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.
- ✓ Promote BMPs for stormwater management and pollution controls.
- ✓ Consider a bylaw requiring that replacement heating/hotwater systems not be fueled by fuel oil or kerosene. Encourage maintenance of those tanks that exist and encourage conversion to propane.

4. **Transportation Corridor –** Even minor roads and parking areas are potential sources of contamination due to salting of roadways and leaks or spills of fuels and other hazardous materials during accidents.

Recommendation:

- ✓ Contact the local emergency responders to ensure that the IWPA is included in Emergency Response Planning and monitor activities in Brookside to ensure residents manage hazardous household waste.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the source's susceptibility to contamination. Brookside Village is commended for past efforts to protect the sources by posting signs in the Zone I and educating tenants on wellhead protection issues. The facility should continue efforts in water supply protection through reviewing and adopting the key recommendations above and the following:

Zone I:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Restrict the use of salt within Zone I and drain stormwater away from the source.
- ✓ Conduct regular inspections of the Zone I especially with respect to beaver activity and the integrity of sanitary seals.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Consider well relocation or installation of a deep well if water quality at the source deteriorates or land uses cannot be controlled.

Facilities Management:

- ✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility properties.
- ✓ For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.
- ✓ Continue to educate residents regarding BMPs for household hazardous waste management and septic management.
- ✓ Maintain septic systems.

Planning:

- ✓ Work with local officials in town to assist in the development of an Aquifer Protection District with appropriate Bylaws and include the facility's IWPA within the district.

- ✓ 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.
- ✓ Work with your community to ensure that stormwater runoff is directed away from the wells and is treated according to DEP guidance.
- ✓ Continue efforts to maintain and upgrade wastewater disposal systems.

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". If funds area available, 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 the following DEP website: 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
- Recommended Source Protection Measures Fact Sheet