Source Water Assessment Program (SWAP) Report For Silver Meadow

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:
December 10, 2001

Table 1: Public Water System (PWS) Information

PWS Name	**Silver Meadow**
PWS Address	**Monson Rd.**
City/Town	**Wales, Massachusetts**
PWS ID Number	**1306006**
Local Contact	**Larry Nelson, HAP Inc.**
Phone Number	**413-785-1251 x291**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1306006-01G	172	467	Low
Well #2	1306006-02G	172	467	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 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

Silver Meadow is a residential complex for the elderly, serving 40 residents in the rural community of Wales. The community is served by on-site septic disposal systems and two, 6-inch diameter bedrock water supply wells. Well #1 is 342-feet deep with an approved daily withdrawal rate of 3,046 gallons per day (GPD). Well #2 is 242-feet deep with an approved daily withdrawal rate of 2,970 GPD. The Zone I and Interim Wellhead Protection Area (IWPA) radii for both are 172 feet and 467 feet, respectively. The Zone I is the protected 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.

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).

As previously mentioned, both wells are bedrock-drilled wells. There is no surficial geology map available; however, based on the observed bedrock outcrops and topography at the site, it is assumed the surficial geology is a thin layer of till. The bedrock in the area USGS maps as metamorphic rocks, mainly gneisses and schists. There is no record of a confining, protective clay layer in the vicinity of the well. Wells 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 well water serving the facility has no treatment 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

Both wells for Silver Meadow were approved through the DEP NSA (New Source Approval) in 2000. As a result, the Zone I is in full compliance and the IWPA has few activities that are potential sources of contamination.

Key issues within the IWPA include:

1. **High density housing with associated septic system;**
2. **Floor drains in boiler rooms; and**
3. **Internal transportation corridors and parking.**

The overall ranking of susceptibility to contamination for wells 1 and 2 is low, based on the presence of few threatening land uses or activities in the Zone I and IWPA.

1. High density housing with associated septic system – Most of the facility is located within the IWPA of the wells, along with associated parking, driveways and sewer lines to the septic. The most significant threats from residential areas are the septic systems due to lack of maintenance and improper disposal of non-sanitary waste. Another potential threat from residential users is mismanagement of household waste.

Recommendations:

- ✓ Provide residents with information about proper maintenance and disposal practices for septic systems. Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems.
- ✓ Encourage residents to utilize local household hazardous waste collection days.

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
High density housing with associated septic system	No	Well #1	Low	See septic system brochure, leach field outside IWPA
Floor Drains in Boiler Rooms	No	Well #1	Low	Leach field outside IWPA, be sure the floor drains are in compliance with Department Regulations
Internal Transportation Corridors and Parking	No	Both Wells	Moderate	Limit road salt usage and provide drainage away from wells
Underground Storage Tank (Propane)	No	Both Wells	Low	Propane storage less of a threat
Herbicide and Pesticide use	No	Both Wells	Moderate	Do not use herbicides or pesticides in Zone I

*** -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/.**

- ✓ Supply residents with information about BMPs for household hazardous waste management.

2. Floor Drains in Boiler Room – Oil storage is in aboveground tanks located in the boiler room with adequate secondary containment. Floor drains in the boiler room, discharge to the septic system and are equipped with oil/water separators. Title 5 prohibits disposal of any wastewater other than sanitary waste to a septic system. The floor drain must be protected to prevent boiler blow down or other prohibited discharges through the floor drain. Oil/water separators must be maintained to provide adequate protection. In addition, in the case of a catastrophic failure the separator may be overwhelmed.

Recommendations:

- ✓ Be sure that the floor drains are in compliance with Department Regulations (refer to Industrial Floor Drain Brochure attached).
  - o Contact the UIC coordinator for the Western Region Office of the Department (Rick Larson 413-755-2207).
- ✓ Maintain oil/water separator and keep any hazardous materials from the septic system.
- ✓ Oil lines from the tank to the boiler can be sleeved so that any leaks would drain back to the tank or minimal oil would leak to the boiler room. Require a policy and a plan should be in place during maintenance operations, especially when oil filters are changed. We recommend that you require your boiler maintenance contractor to use containment, protect the drain 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.

3. **Internal transportation corridors and parking –** Within the IWPA of both wells, there are roadways into and around the facility and parking. Potential exists for hazardous material spills or leaks from any vehicle traveling in these areas.

Recommendations:

- ✓ Use Best Management Practices for handling treatment chemicals and vehicles used to access the area. Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Prepare an emergency response plan for responding to an accidental release.
- ✓ Monitor roadside for spills and leaks.

Other potential threats in the IWPA at the time of the site visit include an Underground Storage Tank (UST) for propane fuel, and herbicide and pesticide use. A UST is categorized as a high potential threat for contamination; however, since the fuel stored is propane the threat is minimal. Pesticide and herbicide use is prohibited in the Zone I, and should be used minimally if at all in the IWPA.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the wells' susceptibility to contamination. Silver Meadow is commended for the facility design that directs storm water runoff away from the wells, utilizing propane fuel and fully complying with DEP's Zone I requirements. Silver Meadow should review and adopt the key recommendations above and the following:

Priority Recommendations:

- V Lock all raw well water sample stations.
- V Consult your cross connection inspector regarding the integrity of the sampling taps.
- V Eliminate non-sanitary wastewater discharges to on-site septic systems. Consult with the regional UIC program coordinator.

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.

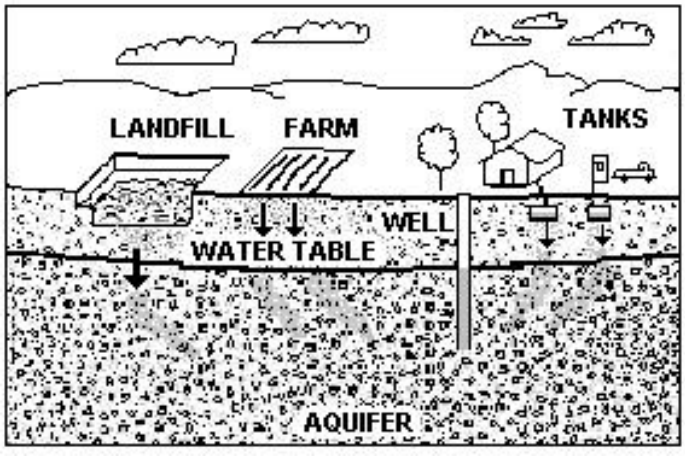

Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Catherine Skiba in DEP's Western Region 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, town boards, and the local media.

Zone I:

- Keep non-water supply activities out of the Zone I.
- Prohibit public access to the well and pump house by locking facilities, gating roads, and posting signs.
- Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, leaks of above ground tanks, etc.
- Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, and certified operator.
- Post drinking water protection area signs at key visibility locations.

Facilities Management:

- Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, refer to http://www.state.ma.us/dep/bwp/dhm/files/sqgsum.pdf for the Requirements for Small Quantity Generators.
- Floor drains in areas where hazardous materials or wastes might reach them need to drain to a tight tank, be sealed, or be connected to a sanitary sewer (refer to attachment "Industrial Floor Drain Brochure").
- Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
- Septic system components should be located, inspected, and maintained on a regular basis.
- Concrete or earthen protective wellhead collars should slope away from well and well casing.
- Keep the area near electrical transformers free of tree limbs that could endanger the transformer in a storm.

Planning:

- Work with local officials in Wales to develop wellhead protection bylaws and include the Silver Meadow IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- 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.
- 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.

Funding:

The Department's Wellhead Grant Protection 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 attached program fact sheet. Please note: each program year the Department posts a new Request for Response for the Grant program (RFR). On or about May 1 the new RFR is available and the application is due back on or about June 31. 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 spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure
- Pesticide Use Fact Sheet
- Industrial Floor Drains Brochure
- Wellhead Protection Grant Program Fact Sheet
- Source Protection Sign Order Form