



# Source Water Assessment Program (SWAP) Report For Manchaug Water District

## 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:  
January 26, 2001

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

<b>PWS NAME</b>	Manchaug Water District
<b>PWS Address</b>	Putnam Hill Road
<b>City/Town</b>	Sutton, Massachusetts
<b>PWS ID Number</b>	2290001
<b>Local Contact</b>	James Ouellette, Water Manager
<b>Phone Number</b>	

<b>Well Name</b>	<b>Source ID#</b>	<b>Zone I (in feet)</b>	<b>Zone II</b>	<b>Source Susceptibility</b>
Well #1	2290001-01G	379	# 542	Moderate
Well #2	2290001-02G	379	# 542	Moderate
Well #3	2290001-03G	379	# 542	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

Manchaug Water District get its water supply from three wells (Well #1, #2, and #3). The wells are located west of Putnam Hill Road, near the intersection of Cote Lane and Putnam Hill Road, in the Town of Sutton. Well #1 is a 12-inch diameter well that was installed to a depth 20 feet below grade. Well #2 is an 8-inch diameter well that was installed to a depth of 27 feet below grade. Well #3 is also an 8-inch diameter well that was installed to a depth of 37.5 feet below grade. All three wells were installed in 1952. Each well has a Zone I of 379 feet, and an approved Zone II.

### 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 a Zone II or, in the absence of a Zone II, 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** is the larger area that contributes water to the well as defined by a hydrogeologic study.

### 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 Zone II.

According to the USGS Bedrock Geologic Map of Massachusetts, the wells are located in an area underlain by the Scituate Granite Gneiss and the Hope Valley Aslaskite Gneiss. Glacial ice covered the area during the Pleistocene Epoch. Vast ice sheets advanced in a southerly direction, scouring valleys and depositing unsorted compact mixtures of clay, silt, sand, gravel and boulders. Bedrock throughout the area is blanketed by till deposited during glacial advance and stratified drift deposited during glacial retreat. Stratified glacial deposits are in the area. The deposits consist of fine to coarse-grained sand deposited by streams flowing from melting glacier. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone I and Zone II. The well serving the facility has no treatment at this time. For current information on monitoring results and treatment and a copy of the most recent Consumer Confidence Report, please contact the Public Water System contact person listed above in Table 1. 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](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. **Inappropriate Activities in Zone Is;**
2. **Septic System; and**
3. **Lawncare and gardening.**

The overall ranking of susceptibility to contamination for the well is Moderate, based on the presence of only low and moderate threat land use or activity in the Zone II, as seen in Table 2.

1. **Zone Is** – Currently, the wells do not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The Zone Is for Manchaug Water District contain homes, street and parking spaces. The public water supplier does not own and/or control all land encompassed by the Zone I. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

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

Potential Contaminant Sources	Zone I	ZoneII	Threat	Comments
Parking spaces & local road	Well # 1 & #3	Well # 1 & #3	Moderate	Limit road salt usage and provide drainage away from wells
Septic System	No	Well # 1 & #3	Moderate	See septic systems brochure in the appendix
Lawncare & Gardening	Well # 1 & #3	Well # 1 & #3	Moderate	Fertilizer and Pesticide use
Aquatic wildlife	All wells	All wells	Low	
Structures	All Wells	All Wells	-	Non-water supply structures 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/](http://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 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 I. 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.

### Recommendations:

- ✓ Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

2. **Septic systems** - The septic systems are located within the Zone II of the wells. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the water supply.

### Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.

3. **Lawncare and Gardening** – The owners of the homes that are located in the protection area of the wells apply fertilizers and pesticides to their lawn and gardens. Fertilizers and pesticides, if improperly applied or stored, can be potential sources of contamination to the water supply.

### Recommendations:

- ✓ Do not use fertilizers or pesticides in the Zone I.
- ✓ Use best management practices when applying fertilizer or pesticide in the Zone II.

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 well's susceptibility to contamination. Manchaug Water District should review and adopt the key recommendations above and the following:

### Priority Recommendations:

- ✓ Never use fertilizer in the Zone I. Fertilizer use in Zone I is prohibited.

### Zone I:

- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Since the homes in Zone I are privately owned and will continue to be used, use BMPs and restrict activities that could pose a threat to the water supply.
- ✓ If it's not feasible to purchase privately owned land within the Zone I at this time, consider a conservation restriction that would prohibit potentially threatening activities or a right of first refusal to purchase the property.

### Training and Education:

- ✓ Instruct staff on proper hazardous material use, disposal, emergency response, and best management practices; include the private home owners and certified operator. Post labels as appropriate on raw materials and hazardous waste.

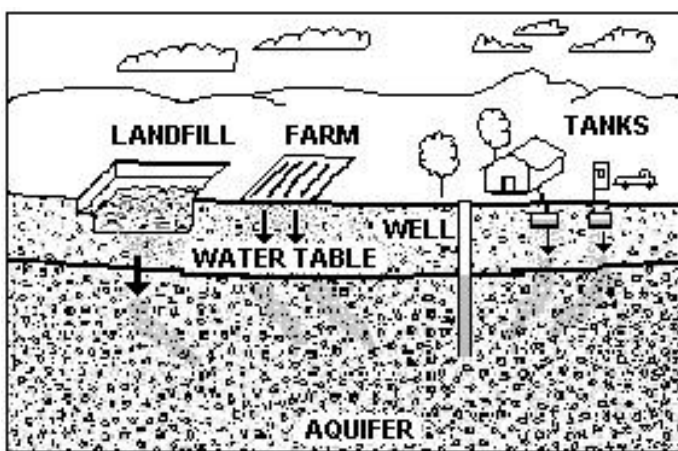


Figure 1: Example of how a well could become contaminated by different land uses and activities.

### For More Information:

Contact **Josephine Yemoh-Ndi** in DEP's **Worcester Office** at (508) 792-7650 x 4030 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/](http://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/](http://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 provided to the public water supplier and town boards.

### Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, see the hazardous materials guidance manual at [www.state.ma.us/dep/bwp/dhm/dhmpubs.html](http://www.state.ma.us/dep/bwp/dhm/dhmpubs.html).

### Planning:

- ✓ Work with local officials in town to include the facility Zone II 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 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 attached program fact sheet. Please note: 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>.

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 Factsheet
- Your Septic System Brochure
- Pesticide Use Factsheet
- Wellhead Protection Grant Program Fact Sheet
- Source Protection Sign Order Form