Source Water Assessment and Protection (SWAP) Report for The Ranch Golf Club

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: June 3, 2003

Table 1: Public Water System (PWS) Information

PWS Name	**The Ranch Golf Club**
PWS Address	**65 Sunnyside Ranch Road**
City/Town	**Southwick, Massachusetts**
PWS ID Number	**1279003**
Local Contact	**Mr. William Barton**
Phone Number	**800-340-6041**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1279003-01G	183	488	Moderate
Well #2	1279003-02G	100	424	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 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

The Ranch Golf Club is an 18-hole golf course and clubhouse located in the town of Southwick, a small primarily agricultural/residential community with some industrial land uses, located in southwestern Massachusetts along the Connecticut border. The Ranch owns and operates two water supply sources. Well #1 (01G) serves the maintenance shop and clubhouse and Well #2 (02G) serves a small bathroom on the north side of the course.

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 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 has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The Zone I and IWPA radii for the Ranch wells were based on approved pumping rates determined following extended duration pumping tests conducted on each well as part of the New Source Approval process. The Zone I and IWPA for Well #1 are 183 feet and 488 feet, respectively. The Zone I and IWPA for Well #2 are 100 feet and 424 feet, respectively. The wells were approved through the NSA and therefore are in compliance with the Zone I requirement that prohibits all but water supply activities from the Zone I. Please refer to the attached map of the Zone I and IWPA.

Geologic mapping of the area indicates the overburden material at the site is glacial till of varying thickness; the underlying bedrock aquifer from which the wells withdraw is composed of the Deerfield Arkose, which is equivalent to the New Haven Arkose of the Triassic Period. Although there is some material overlying the bedrock aquifer utilized by the Ranch sources, there is no evidence of a significant hydraulic barrier at the surface. Wells located in these geologic 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.

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. Refer to 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 protection areas for the wells include few activities that pose significant threats to the aquifer. There are a few residences and the golf course within the IWPA.

Key issues include:

1. **Golf course**
2. **Transportation corridor**
3. **Residential land use**

The overall ranking of susceptibility to contamination for the Ranch water supply wells is moderate based on the presence of several moderate ranked potentially threatening

Table 2: Table of Activities within the Water Supply Protection Areas for Both Sources

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Golf course	No	Yes	Moderate	Integrated Pest Management should be used at the course. Review regulatory restrictions of pesticides in IWPAs.
Transportation corridor	No	Yes	Moderate	Limit road salt usage and provide drainage away from wells
Residential development	No	Yes	Moderate	Supply BMPs to residents
Septic	No	Yes	Moderate	Supply BMPs to residents.

*** -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/.**

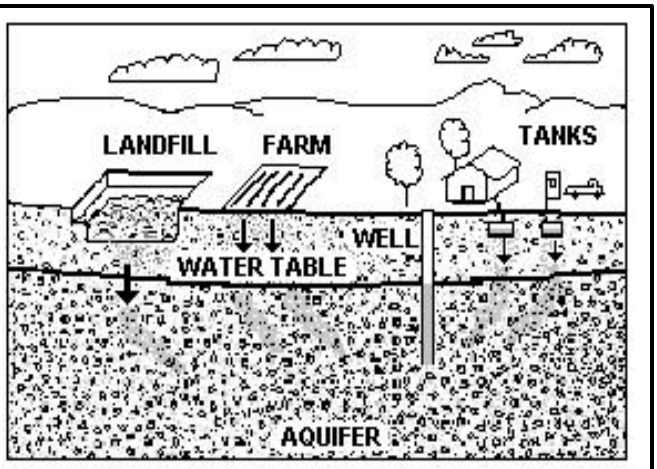

Figure 1: Example of how a well could become contaminated by different land uses and activities.

land uses or activities in the IWPA. Continued monitoring and use of Best Management Practices (BMPs) is recommended to prevent accidents and minimize threats within the protection areas of the wellhead. Please note that the well cap on Well #2 at the time of the assessment was not a sanitary or secure well cap and there was soil slumping around the well casing providing a potential conduit for surface runoff to impact the well. It is recommended that you replace the cap prior to the first seasonal sampling of the well and correct the drainage around the wellhead to provide drainage away from the casing. In addition, there is a small intermittent drainage area adjacent to Well #2. Be sure that seasonal and intermittent drainage does not flow toward the wellhead.

1. Golf course – The system is part of a golf course. Pesticides, fertilizers and hazardous materials utilized as part of the normal operation of a course, have the potential to contaminate a drinking water source if improperly stored, applied, or disposed.

Very often golf courses have maintenance garages for equipment and may have storage tanks for hazardous materials. The Ranch is not registered as a hazardous waste generator. The maintenance garage is located outside of the protection areas and topographically downgradient from the wells. However, as noted previously, the IWPA does not provide a scientific determination of the contribution area to a well. 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. We recommend the use of BMPs for all activities that are a potential source of contamination.

Golf Course Recommendations:

- ✓ Incorporate an Integrated Pest Management (IPM) approach into the course management program. IPM is an ecologically based approach to pest control that links together several related components, including monitoring and scouting, biological controls, mechanical and/or other cultural practices, and pesticide applications. By combining a number of these different methods and practices, satisfactory pest control can be achieved with less impact on the environment.
- ✓ Pesticide applicators at the course must be made aware of the IWPA areas. The Massachusetts Pesticide Bureau regulates products that may be applied in water supply protection areas.
- ✓ Review the use of hazardous materials in the maintenance facility and determine if the facility should be registered as a hazardous waste generator.
- ✓ Promote the use of BMPs for fuel oil storage, hazardous material handling, storage, disposal, and emergency response planning.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

2. Transportation corridor – Well #2 is located adjacent to a rural residential road. The potential threats from the road are deicing materials, runoff, accidental spills or access by the public.

Recommendations:

- ✓ Work with the Town to ensure that road runoff is directed where feasible, to an area downgradient (southeast) of the well.
- ✓ Prepare an Emergency Response Plan that includes coordination among the DEP, the Water Department, the Town and State Police in the event of an accident near the wellhead.

3. Residential Land Uses – There are few residences located within the protection area. None of the areas have public sewers to treat wastewater; therefore on-site septic systems are used. 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 leach to the ground. If septic systems fail or are not properly maintained they might be a potential source of microbial contamination.

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/

- **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 (UST and AST) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catchbasins transport stormwater from roadways and adjacent properties to the ground and streams. 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 www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.

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. Please review and adopt the key recommendations above and the following:

Priority Recommendations:

V Incorporate IPM into course management.

Zone I:

V Keep non-water supply activities out of the Zone I.
V Prohibit public access to the well. Secure caps, gating roads, and posting signs as appropriate.
V Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of access or vandalism.
V Re-grade the area around the wellhead and ensure it slopes away from well casing. Any natural periodic drainage or runoff near the well should be controlled and directed away from the well.

Training and Education:

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

Planning:

V Work with local officials in Southwick to include the IWPAs into the Aquifer Protection District.
V Have a plan to address short-term water shortages and long-term water demands.
V Keep the phone number of a bottled water company readily available in the event of an emergency.
V 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 ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur 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 Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure