



Source Water Assessment Program (SWAP) Report For Gould Farm

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

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March 27, 2002

Table 1: Public Water System (PWS) Information

PWS NAME	Gould Farm
PWS Address	P.O. Box 157, 100 Gould Road
City/Town	Monterey, Massachusetts
PWS ID Number	1193003
Local Contact	Daniel Cryns
Phone Number	413-528-1804

Well Name	Source ID#	Zone I (in feet)	IWPA (in feet)	Source Susceptibility
Well #1	1193003-01G	232	568	Moderate
Retreat Lodge Well	1193003-02G	163	459	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
5. Appendix

1. Description of the Water System

Gould Farm is an agricultural, community living facility for people with special needs, located in Monterey. The community is served by a few on-site septic disposal systems and operates a wastewater lagoon for the majority of wastewater disposal. The lagoons are topographically downgradient of the wells and outside of the IWPA's. Well 01G is a 210-foot deep, 6-inch diameter well. The source has a safe yield of 9 gallons per minute based on historical metered data of the system. The Zone I and Interim Wellhead Protection Area (IWPA) radii are 232 feet and 568 feet, respectively. The Retreat Lodge Well (02G) is a 6-inch diameter, 405-foot deep bedrock well, with 59 feet of casing grouted into bedrock with an approved pumping rate of 1.83 gpm, serves a single

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).

retreat house for short-term visitors. The Zone I and IWPA radii for the Retreat Lodge Well are 163 feet and 459 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. The facility also has an emergency, surface water supply (01S) that has been physically disconnected from the system and is not addressed in this report. It is our understanding that Gould Farm intends to officially abandon that source.

Both wells are bedrock wells, located in an area the USGS has mapped as quartzose schist. Geologic mapping identifies the bedrock as fairly complex structure of folding and faulting; there is a relatively thin layer of till often referred to as "hardpan", overlying the bedrock. There is no evidence of a confining clay layer in the area. Wells drilled in these conditions are considered highly vulnerable to potential contamination from the ground surface because there is no significant hydrogeologic barrier such as clay to prevent surface contamination from migrating into the bedrock aquifer. The water does not require and is, at the time this report was prepared, is not treated. Ultra-violet light is utilized to disinfect the water prior to distribution. 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

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. **Nonconforming Activities in Zone Is;**
2. **Confirmed Hazardous Materials/Oil Release Sites;**
3. **Aboveground Storage Tanks (ASTs) With Heating Oil;**
4. **Sump pumps in basement.**

The overall ranking of susceptibility to contamination of both wells is moderate, based on the presence of many moderate threat land uses or activities in the IWPA, as seen in Table 2. Please note that the area within the IWPA that is designated as "Cropland" is actually an organic, children's garden. No pesticides or commercial fertilizers are used.

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Confirmed hazardous materials/oil release sites (2)	No	Well #1	**	RTN 1-0013146, Tier 1C sites (RAO submitted); See Appendix A
Fuel Storage - Aboveground	Well #1	Both wells	Moderate	Oil tanks should have 110% containment
Sump pumps in boiler room	Well #1	Both wells	Moderate	Protect sumps from potential release or close out the sumps. Refer to UIC program.
Septic System	No	Both wells	Moderate	See septic systems brochure in the appendix
Electrical Transformers	Well #1	Both wells	Moderate	Request information regarding PCB in MODF change from your electric company
Parking lot, driveways & private access roads	Well #1	Both wells	Moderate	Limit road salt usage and maintain drainage away from wells

* -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/. ** - See Appendix A.

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 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.

1. Nonconforming Activities in Zone Is – Currently, the wells do not meet DEP's restrictions, which allow only water supply related activities in the Zone I. Well #1's Zone I contains several buildings, driveways, fuel oil storage and waste transfer/recycling stations. 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.

Recommendations:

- ✓ If land uses within the Zone I cannot be managed to mitigate potential threats to the well, or water quality is impacted by existing activities, consider installing a well in a more remote area.
- ✓ Do not use or store pesticides, fertilizers, petroleum products (including equipment that use petroleum) or deicing material within the Zone I.

2. Confirmed Oil Release Site - The IWPA contains a DEP Bureau of Waste Site Cleanup, Tier 1C Classified Oil and/or Hazardous Material Release site indicated on the map as Release Tracking Number 1-0013146. There had been two releases that were link together and addressed simultaneously. The first release of oil was discovered after the filling of ASTs in October 1999 and the second was in 2000. Contaminated soil was removed from the sites, and an RAO statement was submitted in August 2000. A screening of the RAO by the BWSC Audits/Site Management group did not find any deficiencies in the RAO. For further information on the site, please contact the DEP-Bureau of Waste Site Cleanup at 413-784-1100. For information regarding the location of the site refer to the attached map. Refer to Appendix A for information regarding the Massachusetts Contingency Plan (MCP) and where additional information is available.

Recommendation:

- ✓ Comply with the requirements of the MCP process and continue monitoring as prescribed by DEP.

3. Aboveground Storage Tank (AST) – There are several ASTs containing heating oil and propane located within the Zone I and throughout the IWPA. All of the underground fuel oil tanks have recently been replaced with these new ASTs. All of the ASTs at Gould Farm have some containment, although it may not be 110% of tank capacity. Aboveground Storage Tanks may still be a potential source of contamination due to leaks, spills or overfills of the chemicals they store and must be monitored and maintained.

Recommendations:

- ✓ Monitor all deliveries and ensure lines are sleeved and maintained.
- ✓ Increase as is practical, all oil/hazardous material storage containment and maintain safety practices. Any modifications to the AST must be accomplished in a manner consistent with Massachusetts' plumbing, building, and fire code requirements. Consult with the local fire department for any additional local code requirements regarding ASTs.

4. Floor drain sump pumps in boiler rooms - Floor drains are often installed in boiler rooms to provide drainage in the event of a plumbing failure. If there is a potential for hazardous materials to flow accidentally into the floor drain, preventive measures must be taken. In this case, sump pumps present in the basement may be subject to contamination from boilers within the vicinity. Sump pumps in an area that contains hazardous materials must be sealed, discharged to a sewer or a tight tank. Most sump pumps drain to the septic waste lagoons nearby.

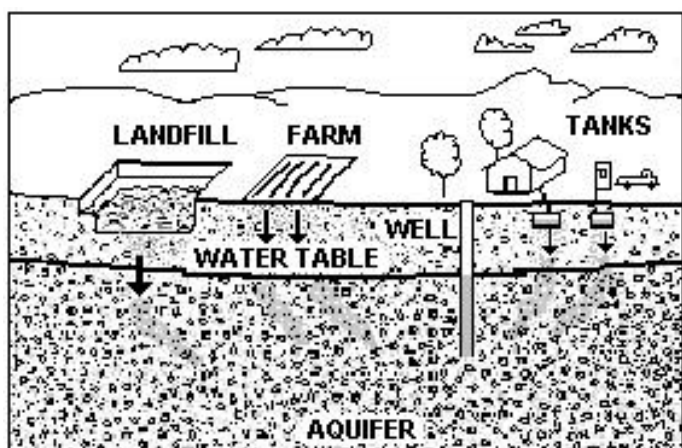


Figure 1: Example of how a well could become contaminated by different land uses and activities.

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.

Recommendations:

- ✓ Bring the floor drains into compliance with Department Regulations (refer to Industrial Floor Drain Brochure attached).
 - Contact the UIC coordinator for the Western Region Office of the Department (Rick Larson 413-755-2207).
 - Interim Actions: cease using the floor drains.
- ✓ Protect the sumps from contaminants. 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. Install containment around the boiler to protect the sump from contaminants. A policy and plan should be in place during maintenance operations, especially when oil filters are changed. 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.
- ✓ If protection measures cannot guarantee that boiler blow down or oil will not enter the floor drain, seal the floor drain or install a tight tank and connect the sump pumps that may be impacted by boilers to the tank.

Other activities noted within the protection areas or in the immediate vicinity are several individual septic systems serving Gould Farm buildings, electrical transformers and farming activities. The sanitary waste from the main facilities discharges to wastewater treatment lagoons located just outside the IWPA. The most significant threats from a septic system are from lack of maintenance and improper disposal of non-sanitary waste. Refer to the attachments for more information regarding septic systems. Electrical transformers contain Mineral Oil Dielectric Fluids (MODF). Although the use of PCBs is banned in new transformers, historically, PCBs were used in some older transformers. Contact the local utility to determine if the transformers contain PCBs. Keep the area near the transformers free of tree limbs that could endanger the transformer in a storm. Refer to attachments for agriculture BMPs.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the wells' susceptibility to contamination. Gould Farm is commended for removing all Underground Fuel Oil Storage Tanks. Gould Farm should review and adopt the key recommendations above and the following:

Priority Recommendations:

- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Provide proper containment for all ASTs.
- ✓ Seal or otherwise address floor drains in boiler room areas.

Zone I:

- ✓ Keep all new non-water supply activities out of the Zone I.
- ✓ Prohibit public access to the well and pumphouse by locking facilities, gating roads, and posting signs in areas such as along the parking lots and roadway.

- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism. Monitor fuel delivery and check above ground tanks for leaks, etc.
- ✓ If Gould Farm intends to continue utilizing the structures in the Zone I, use BMPs and restrict and control activities that could pose a threat to the water supply.
- ✓ Redirect road and parking lot drainage in the Zone I away from well.
- ✓ Do not use or store petroleum products, pesticides, fertilizers or deicing materials within the Zone I. Use secondary containment for these products stored in the IWPA.
- ✓ Upgrade to propane or natural gas for back-up power sources.

Training and Education:

- ✓ Continue staff training on proper hazardous material use, disposal, emergency response, and best management practices;

include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.

- ✓ Post drinking water protection area signs at key visibility locations away from the wellhead.
- ✓ Work with your community to ensure that stormwater runoff is directed away from the well and is treated according to DEP guidance.

Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials.
- ✓ Eliminate any non-sanitary wastewater discharges to on-site septic systems.
- ✓ Bring the floor drains into compliance with DEP Regulations (refer to attachment “Industrial Floor Drain Brochure”).
- ✓ Remove hazardous materials from rooms with floor drains that drain to the ground or septic systems.
- ✓ 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.
- ✓ Implement Best Management Practices (BMPs) and an Integrated Pest Management Program for the use of fertilizer and pesticides on facility property.
- ✓ The facility is currently not registered as a generator of hazardous waste or waste oil. Review enclosed document “A Summary of Requirements for Small Quantity Generators of Hazardous Waste” to determine your status and regulatory requirements.

Planning:

- ✓ Work with local officials in Monterey to include Gould Farm’s 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.

Agriculture:

- ✓ Follow all applicable UMASS recommendations on Integrated Pest Management.
- ✓ Become certified in UMASS/Natural Resource Conservation Service Nutrient Management Certification program.
- ✓ Obtain and follow a Farm Plan through Natural Resource Conservation Service. Alternatively, complete and follow a plan developed through the publication *On Farm Strategies to Protect Water Quality: An Assessment and Planning Tool for Best Management Practices*.

Funding:

The Department’s Source Water and Wellhead Protection Grant Programs provide funds to assist public water suppliers in addressing protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 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 (RFR), application request, for the Grant program on or about May 1. The applications are due back to the Department on or about June 30. 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/glpgrgm.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

5. Appendix

Table of DEP Regulated Chapter 21E Hazardous Materials Release Sites