



Source Water Assessment Program (SWAP) Report For Carver Municipal Building

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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Table 1: Public Water System (PWS) Information

PWS NAME	Carver Municipal Building
PWS Address	108 Main Street (Route 58)
City/Town	Carver, Massachusetts
PWS ID Number	4052061
Local Contact	Gerald Farquharson
Phone Number	(508) 866-3460

Well Name	Source ID#	Zone I (in feet)	IWPA (in feet)	Source Susceptibility
Well #1	4052061-01G	250	622	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

The Carver Municipal Complex is a community public water system serving the Carver Town Library, Town Hall, police, fire, Carver Department of Public Works, Carver Housing Authority and South Shore Housing Authority. The Carver Municipal Complex is served by an 8-inch well drilled to a depth of 250 feet. The well was drilled through 61 feet of overburdened and 189 feet of bedrock with 16 feet grouted into bedrock. There is a 173 feet of uncased bedrock. The well is located in a wooded area approximately 250 feet northeast of the library parking lot. A pumping station for the public water supply containing storage of water treatment chemicals and treatment units is located 250 feet southwest of the well. The public water system for the facility also includes well 4052061-02G, and -03G, which are emergency wells that are not covered by this report. Well #1 was developed under the Department's new source approval process in 1995-1996. Based on the current Zone I of 250 feet and Interim Wellhead Protection Area (IWPA) of 622 feet, the average daily withdrawal for the well is limited to 10,000 gallons

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).

per day. The system has averaged 6,157 gallons per day based on the last two years of water consumption data. Please refer to the attached map of the Zone I and IWPA. 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 well is located in a bedrock aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. In natural gas generator provides backup power for the well.

Groundwater from Well #1 is treated with Hexametaphosphate to sequester iron and manganese to minimize aesthetic effects associated with water containing iron and manganese. 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.

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-Trespassing/Historical Illegal Dumping,**
2. **Septic Systems,**
3. **Residential,**
4. **Stormwater Catchbasin**
5. **Agriculture.**

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-Historical Illegal Dumping/Trespassing-**As part of the SWAP site visit, the Zone I and IWPA were assessed for potential sources of contamination. During the site visit department staff observed evidence of historical dumping in the Zone I (e.g. scrap metal, paints cans, empty petroleum cans and small containers). Additionally, there was evidence of recent trespassing (ramp for bikes, miscellaneous bottles and cans) in the Zone I. Currently, the well does meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone I contains consist

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

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Residential	No	Well #1	Moderate	Septic systems, lawn care, pet waste
Storage, use, and handling of hazardous materials	No	Well #1	Moderate	Water treatment chemicals, cleaning supplies and household hazardous waste
Storm water (parking lots, driveways and roads)	No	Well #1	Moderate	Limit road salt usage and provide drainage away from wells
Agriculture	No	Well #1	Moderate	Fertilizer and pesticide use
Septic System	No	Well #1	Moderate	Refer to septic systems brochure attached
Illegal/historical dumping and trespassing	Well #1	Well #1	Moderate	Small amounts of solid waste observed
Structures	No	Well #1	-	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/.

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.

primarily of woodlands. The well casing extends 18 inches above the ground surface and access to the well is restricted by a locked enclosure. The public water supplier does own and/or control all land encompassed by the Zone I. The Zone I is posted with a Drinking Water Protection Sign.

Recommendations:

- ✓ Conduct regular inspections of the Zone I and IWPA. Look for illegal dumping and evidence of vandalism.
- ✓ Prohibit public access to the well by locking facilities, gating roads and posting signs.
- ✓ Educate residents on the problems of disposing hazardous materials in landfills, septic systems, storm drains, and on the ground. Encourage residents to participate in Carver's household hazardous waste collection days or center.
- ✓ Remove solid waste from the Zone I.

2. **Septic Systems**-The septic system for the Carver Library and portions of the Housing Authority are located in the IWPA of Well #1. If a septic system fails or is not properly maintained it could be a potential source of nutrients and microbial contamination. Improper disposal of household hazardous chemicals to the septic system is a potential source of contamination to the water supply.

Recommendations:

- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to attachment for more information regarding septic systems.
- ✓ Educate residents on private septic systems about using cleaning compounds that are safe for the septic system, on proper disposal practices, i.e. only sanitary waste in the septic system. Residents should dispose of used oil, antifreeze, paints, and other household chemicals properly - not in septic systems. Information on septic systems can be found at mass DEP web site <http://www.state.ma.us/dep/brp/files/yoursyst.htm>.

3. **Lawn Care and Maintenance**-Over application of pesticides and fertilizers on lawns is a potential source of contamination to the water supply. Fertilizer and pesticides contain hazardous chemicals that can travel to the soil and contaminate groundwater if over applied.

Recommendation:

- ✓ Provide educational materials to residents and organizations in charge of lawn

care and maintenance about the proper application of pesticides or fertilizers. Refer to attachment, *A Homeowner Guide to Environmentally Sound Lawn Care*. Additional information on environmentally sound lawn care practices can be obtained from the Massachusetts Department of Food and Agriculture Pesticide Bureau's web site at <http://www.massdfa.org>.

4. **Storm water**- Catch basins transport storm water from the roadway and adjacent properties to the ground. As flowing storm water travels, it picks up debris and contaminants from streets, parking areas and lawns. Common potential sources of contamination include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents. Storm water pollutants such as nitrogen can be found in animal waste, fertilizers and failing septic systems. Pet waste may contain bacteria, parasites or viruses.

Recommendations:

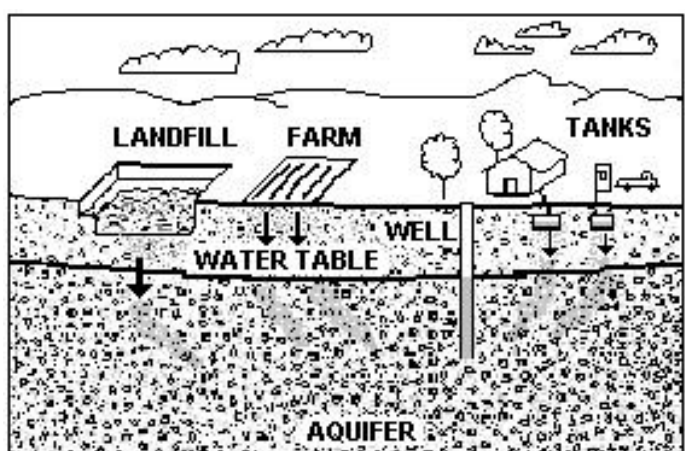


Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Isabel Collins in DEP's Lakeville Office at (508) 946-2726 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 provided to the public water supplier, town boards, the town library and the local media.

- ✓ Have the catch basins inspected, maintained, and cleaned on a regular schedule.
- ✓ Sweeping streets and parking lot reduces the amount of potential contaminants in storm runoff. It is critical to remove accumulated sediments from the winter months before heavy and frequent spring precipitation, especially with catch basins without deep sumps or from retention/detention basins.
- ✓ Develop a maintenance plan for storm water structures within the IWPA. Maintenance plans should identify owners, parties responsible for maintenance and inspection and maintenance schedule (referred to attachment; Storm Water Management Handbook, Volume 1 and 2).
- ✓ Consider structural Best Management Practices (BMPs) to prevent pollution from storm water affecting water quality. Best management practices reduce or prevent pollution from reaching water bodies and control the quantity/quality of runoff from a site (refer to *Storm Water Management Handbook*, volume 1 and 2 for information on BMPs).
- ✓ All sediments and hydrocarbons (i.e. Oil/water separators) should be properly handled and disposed in accordance with local, state and federal guidelines regulations. Catch basin cleanings are classified as a solid waste and must be handled and disposed of in accordance with all Department regulations, policies and guidance.
- ✓ Provide signs and educational materials to residents as to importance of proper disposal of pet waste.

5. **Agricultural**-A portion of the wellhead protection area is comprised of cranberry bogs which are located Northeast of the well. As is the case for most other crops, the commercial production of cranberries usually requires input of fertilizer and pesticides. Utilization of best management practices (BMPs) as planned and described in an established conservation farm plan can ensure that agricultural system will uphold the integrity of the surrounding natural resources.

Recommendation:

- ✓ Encourage Cranberry bog owner/operator to:
 1. Obtain and follow an approved USDA, Natural Resource Conservation Service Conservation Farm Plan.
 2. Maintain a pesticide license or certification with the Massachusetts Department of Food and Agriculture including all applicable training and recertification courses.
 3. Follow applicable Best Management Practices as published by the University of Massachusetts Cranberry experiment station.

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 #1 susceptibility to contamination. Carver Municipal Complex should review and adopt the **key recommendations above** and the following:

Zone I:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ 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 labels as appropriate on raw materials and hazardous waste.
- ✓ 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. To learn more, refer to the hazardous materials guidance manual at www.state.ma.us/dep/bwp/dhm/dhmpubs.html.
- ✓ Eliminate non-sanitary wastewater discharges to on-site septic systems. Instead, in areas using hazardous materials, discharge drains to a tight tank or sanitary sewer.
- ✓ 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.
- ✓ Upgrade all oil/hazardous material storage tanks to incorporate proper containment and safety practices.
- ✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
- ✓ 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.

Planning:

- ✓ Work with local officials in Carver to include the Carver Municipal Complex 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 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 Fact sheet
- Source Protection Sign Order Form