

Massachusetts Department of Environmental Protection
Drinking Water Program - Source Water Protection Program

Land Use, Activity or Issue Matrix, and Land Use Pollution Potential Matrix

The Drinking Water Program (DWP) developed this matrix as part of the strategy for the Source Water Assessment and Protection (SWAP) Program, to assist with developing assessments and reports. It is still used by DWP staff and public water systems. Over time the matrix is reviewed to determine if updates are needed.

The matrix is an inventory of potential sources of contamination and their likelihood to adversely impact public water supplies. Each potential source of contamination has been ranked (high, moderate, low) relative to its threat to water quality considering the type of drinking water source (groundwater or surface water). When looking for a potential contamination threat, all categories should be reviewed, as some activities may overlap land use categories (i.e., pesticide use and storage), but may be listed under only one category.

The potential sources of contamination, *if managed improperly*, could adversely impact public drinking water. *It is important to understand that a release may never occur from the potential source of contamination provided best management practices (BMPs) are used. If BMPs are in place, the actual risk may be lower than the ranking presented in this matrix. Many potential sources of contamination are regulated at the federal, state and/or local level to further reduce the risk of a release.*

Please take note that MassDEP's Drinking Water Regulation, independent of this matrix, limits land uses in a Zone I to those directly related to the provision of the water supply. No other land use or activity is permitted within a Zone I, unless such use or activity is first demonstrated, to the satisfaction of MassDEP, to have no significant impact on water quality. Regardless of a land use's pollution potential threat ranking as identified in this matrix, all current and proposed land uses and activities must comply with Drinking Water Regulations and policies.

The matrix was originally developed using a compilation of numerous source water protection documents published in New England and the combined field experience of MassDEP staff from the Drinking Water Program, Bureau of Waste Site Cleanup and the Bureau of Waste Prevention¹. Internal and external SWAP advisory committees also provided advice.

Note: A number of land uses and activities have the potential to generate Per- and polyfluoroalkyl substances (PFAS), which may contaminant ground and surface water supplies. More information about PFAS and the Massachusetts Maximum Contaminant Level (MCL) for drinking water is posted at <https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas>. The U.S. Environmental Protection Agency is proposing a federal MCL. More information on the proposed EPA MCL is available at <https://www.epa.gov/pfas>. This matrix will be updated as more information becomes available about PFAS. Please contact MassDEP's Drinking Water Program at program.director-dwp@mass.gov with questions.

References:

- ¹ CCAMP, A Guide to Contamination Sources for Wellhead Protection, February 1989.
 MA DEP/DWS, Watershed Resource Protection Self-Audit, May 8, 1996.
 NEIWPC, Source Protection: A Guidance Manual for Small Surface Water Supplies In New England, March 1996.
 EPA OTA, Protecting the Nation's Groundwater from Contamination, October 1984.
 MA DEP/DWP, Making Wellhead Protection Work in Massachusetts: A Guide for Developing Local Groundwater Protection Controls, December 1997.
 EPA/ORD, Environmental Planning for Small Communities: Guide for Local Decision-Makers, September 1994.

AGRICULTURAL	Groundwater*	Surface Water
Dairy farms	M	H
Fertilizer storage or use	M	M
Forestry Operations	L	M**
Livestock Operations	M	H
Landscaping	M	M
Manure spreading or storage	H	H
Nurseries	M	M
Pesticide storage or use	H	H
Slaughterhouses	M	H

* All listed activities are generally prohibited in the Zone I of a ground water source. See 310 CMR 22.21

** Threat is low with an approved Chapter 132 forest management plan.

COMMERCIAL	Groundwater*	Surface Water
Airports	H	M
Auto repair shops	H	M
Boat yards/builders	H	H
Bus and Truck terminals	H	M
Car washes	L	L
Cemeteries	M	L
Dry cleaners	H	M
Funeral homes	L	L
Furniture Stripping and Refinishing	H	M
Gas/service stations	H	M
Golf courses	M	M
Junk yards and Salvage yards	H	H
Laundromats	L	L
Medical facilities	M	L
Nursing homes	L	L
Paint shops	H	M
Photo processors	H	M
Printer and Blueprint shops	M	M
Railroad tracks and Yards	H	H
Repair shops (engine, appliances, etc.)	H	M
Research laboratories	M	M
Rust proofers	H	H
Sand and Gravel mining/washing	M	M

* All listed activities are generally prohibited in the Zone I of a ground water source. See 310 CMR 22.21

INDUSTRIAL

Groundwater*

Surface Water

Asphalt, Coal tar, and Concrete plants	M	M
Chemical manufacture or storage	H	H
Electronics/electrical manufacture	H	M
Electroplaters	H	M
Food processors	L	L
Foundries or Metal fabricators	H	M
Fuel oil distributors	H	H
Gasification plants (oil or coal)	M	H
Hazardous waste storage, treatment and recycling	H	H
Industrial lagoons and pits	H	H
Hazardous materials storage	H	H
Industrial parks	H	H
Jewelry or Metal plating	H	M
Machine/metalworking shops	H	M
Metal and Drum cleaning/reconditioning	H	H
Nuclear power plants	H	H
Paper manufacture	H	H
Pharmaceutical manufacture	H	H
Plastic manufacture	H	H
RCRA TSDF facilities	H	H
Storage facilities (petroleum and chemical)	H	H
Tanneries	H	H
Textile manufacture	H	H
Wood preserving facilities	M	M

* All listed activities are generally prohibited in the Zone I of a ground water source. See 310 CMR 22.21

RESIDENTIAL

Groundwater*

Surface Water

Fuel oil storage	M	M
Lawn care/Gardening	M	M
Septic systems/cesspools	H/M*	H/M**

* All listed activities are generally prohibited in the Zone I of a ground water source. See 310 CMR 22.21

**Threat is Moderate for Title 5 compliant septic systems located outside the Zone A, Zone I

MISCELLANEOUS

Groundwater*

Surface Water

MISCELLANEOUS	Groundwater*	Surface Water
Aboveground storage tanks	M	M
Aquatic wildlife	L	H
Clandestine dumping	H	H
Combined sewer overflow	L	H
Composting facilities	L	M
Dredge disposal facilities	M	H
Fire training facilities	H	M
Fishing/boating	L	M
Landfills and Dumps	H	H
Land application of sewage sludge	M	M
Large quantity hazardous waste generators	H	H
Military facilities (past and present)	H	H
NPDES locations	L	H
Pipelines (oil and sewer)	M	M
Prisons	M	M
Road and Maintenance depots	M	M
Schools, colleges and universities	M	M
Small quantity hazardous waste generators	M	L
Snow dumps	M	M
Stormwater drains/ Retention basins	L	H
Tire dumps	M	M
Transmission line right of ways	L	H
Transportation corridors	M	H
Underground storage tanks	H	H/M*
Utility substation transformers	L	M
Very small quantity hazardous waste generators	L	L
Waste incinerators	M	H
Waste transfer stations	M	M
Wastewater treatment plants	M	H
Water treatment sludge lagoon	M	L

* All listed activities are generally prohibited in the Zone I of a ground water source. See 310 CMR 22.21

**Threat is Moderate outside the Zone A.

NOTE: These rankings may be revised in the future if additional information indicates that the current ranking is inappropriate.

H = High
M = Moderate
L = Low