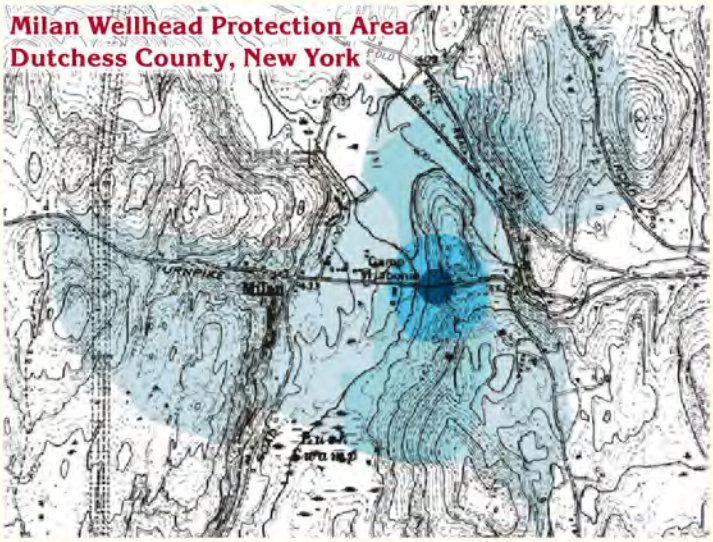
WELLHEAD AND AQUIFER PROTECTION

Designate wellhead protection areas and adopt measures against potential sources of aquifer contamination to ensure long-term sources of clean drinking water.

The cleanup of a contaminated groundwater source can be 30 to 40 times more costly than preventing it in the first place, and some contaminants are virtually impossible to remove. Contaminants can make their way through soil and fractures in the rock to underlying groundwater aquifers, then travel to a water supply well. The pumping action of larger public wells can actively draw contaminants into wells. Unsealed or abandoned wells can further act as direct conduits for contamination of groundwater, as can carbonate geology with its solution channels and sinkholes.

Milan Wellhead Protection Area
Dutchess County, New York

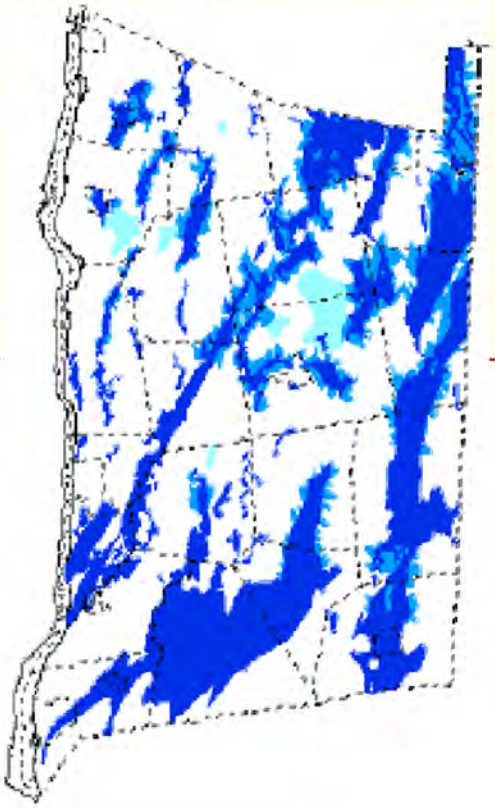


- Secondary Management Area
- Primary Management Area
- 1 Year Time of Travel
- 200-Foot Remedial Action Area

Define the area to be protected

Choose a method of defining the wellhead and aquifer protection areas, such as:

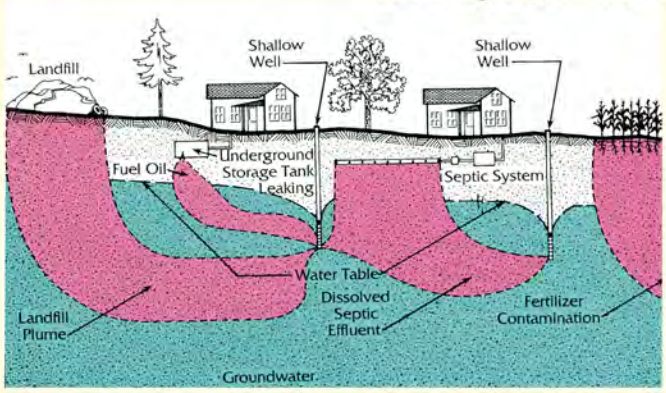
- Detailed delineation of one or more wellheads or an aquifer area by a professional hydrogeologist.
- Generalized delineation of one or more wellheads by a non-professional.
- Map priority protection areas.



Dutchess County Aquifer Protection Areas

Zone I	Permeable deposits directly overlying the aquifer
Zone II	Less permeable deposits located upgradient from the aquifer
Zone III	Area which may contribute to the aquifer through stream infiltration

Identify Potential Sources of Contamination

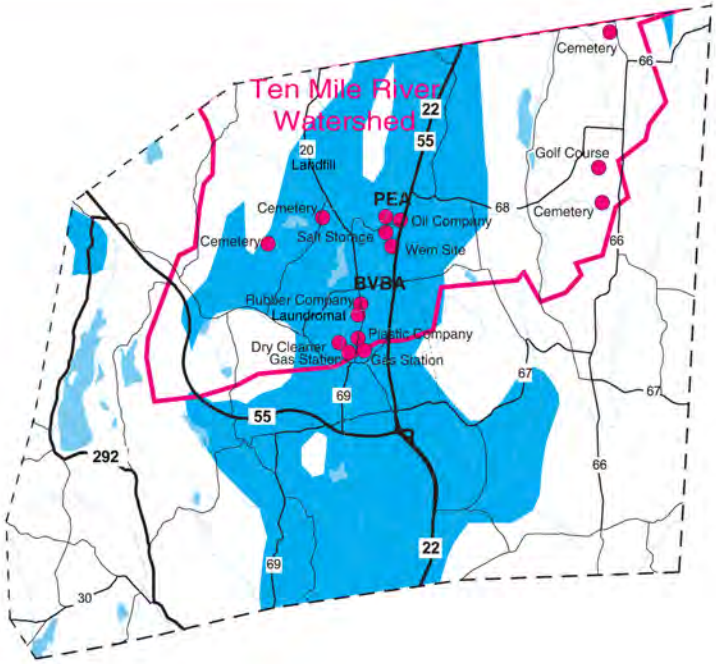


Water contamination occurs when the intensity or location of certain land uses exceeds the natural cleansing capacity of the vegetation and soils.

- **Residential uses**, such as septic systems, yard chemicals, and abandoned wells.
- **Agricultural uses**, such as feedlots, manure storage, and improper pesticide application.
- **Commercial uses**, such as gas stations, dry cleaners, junkyards, and car washes.
- **Industrial uses**, such as chemical manufacturing, storage tanks, pipelines, and mining.
- **Institutional uses**, such as landfills, deicing operations, sewage treatment plants, and cemeteries.

Map Potential Contamination Sites

- Review available data at the Dutchess County Environmental Management Council, Department of Health, the NYS Department of Environmental Conservation, or your local town offices.
- Interview residents to gain historical knowledge.
- Conduct a field survey of aquifer and wellhead protection areas.
- Map and describe potential contamination sources as an overlay to the protection areas.



Develop and Implement a Plan of Action

1. Enlist widespread public support and participation.
2. Coordinate protection program with neighboring communities and larger watershed planning area. Aquifer protection requires an intermunicipal approach. The four towns and two villages in the Harlem Valley have prepared a strategy to protect their common aquifer system that can be a model for others in the region.
3. Select priority tools for wellhead and aquifer protection, including:
   - zoning restrictions, such as setbacks, buffers, and overlay districts;
   - land acquisition or protective easements;
   - septic system maintenance programs;
   - wellhead protection signs;
   - monitoring and remediation of contaminated sites.
4. Devise timeline and determine resources and responsibilities.

Clean water is among everyone's top concerns.

Sources:

The Chazen Companies, *Harlem Valley Watershed Investigation*, 1998

Horsley Witten Hegemann, Inc., *Water Supply Protection Program for Dutchess County, New York*, 1992

New York State Water Resources Institute, Cornell University, *Groundwater Contamination*, November 1988