

3.6 Groundwater Aquifers and Recharge Zones

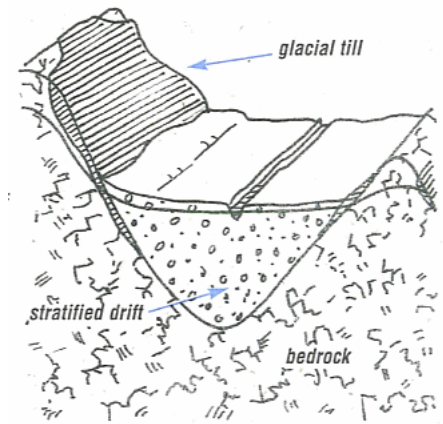
The U.S. Geological Services ([USGS](https://www.usgs.gov/)) defines an aquifer as a water-bearing rock that transmits water to wells and springs. Precipitation adds water and recharges the porous rock of the aquifer. Depending on the aquifer, the recharge rate will differ, which must be considered when pumping water to form a well. The City of Meriden uses groundwater for drinking water, which is treated at four water treatment plants in the city.

The city of Meriden has four state-designated aquifer protection areas. One of the aquifers runs along the border of Meriden and Southington. There are six groundwater wells throughout the city. The City of Meriden has a designated list of regulated activities to reduce threats to the aquifers. Please use the following link for more information on the City's Drinking Water.

[https://www.meridenct.gov/Customer-Content/www/CMS/files/Public_Uilities/2021MeridenCCR - website.pdf](https://www.meridenct.gov/Customer-Content/www/CMS/files/Public_Uilities/2021MeridenCCR_-_website.pdf)

The U.S. [Forest Service](https://www.usfs.gov/) (USFS) notes that many rivers use groundwater as baseflows for rivers, which helps regulate river flow during times of little precipitation. When surface water in streams and rivers begins to suffer, groundwater releases to compensate for the low flow. Groundwater is inherent to stream health. Microorganisms in groundwater also clean contaminants, aiding in surface water health. When groundwater discharges into waterways, it helps species viability because some plants depend on groundwater.

In their section on Ground-water dependent ecosystems, the USFS also notes, "Groundwater-dependent ecosystems are ecosystems that are supported by groundwater. These places include springs and seeps, caves and karst systems, and deep-rooted plant communities (phreatophytes). In many cases, rivers, wetlands, and lakes are also included. Where groundwater meets the surface, a unique community of plants and animals flourish. A wide variety of rare, threatened, and endangered species call these places home."



Cutaway view of principal aquifers

Recharge areas are where water can seep into the ground and refill an aquifer. Surface conditions can determine how well an aquifer is recharged in recharge zones. Most recharge zones are found in floodplains, wetlands, and vernal pools. If an aquifer has an impervious cover, it is less likely to be recharged to its original capacity.

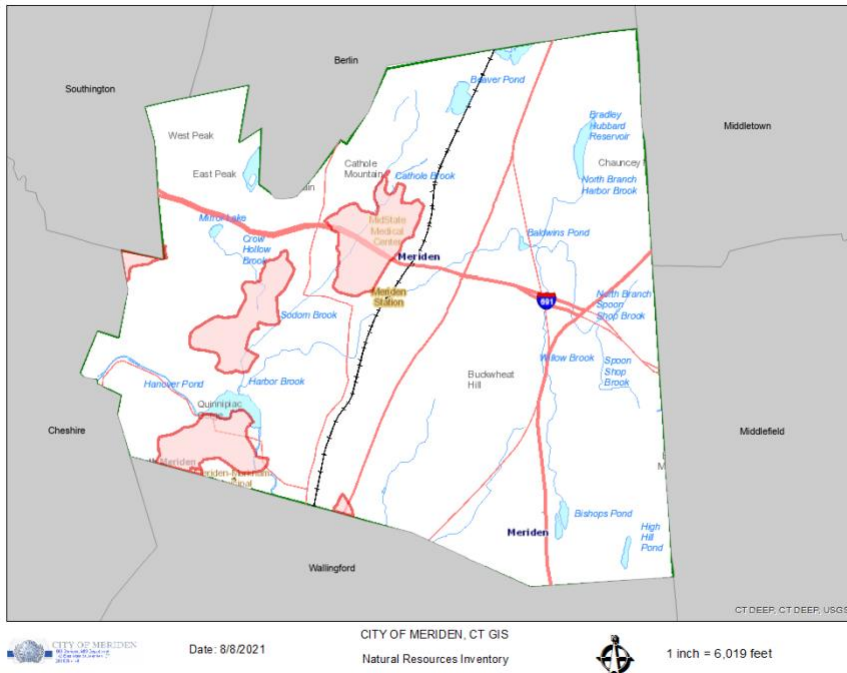
When an aquifer is depleted, the depletion results in low lake or reservoir levels and dry streams, harming animals and plants that rely on watershed areas. This can also lead to sinkhole formation or land subsidence in areas of heavy withdrawal.

3.6a State-Designated Aquifer Protection Areas

Connecticut state-designated aquifer protection areas protect significant public water supply wells in sand and gravel aquifers to ensure a plentiful public drinking water supply for present and future generations. The program protects aquifers by regulating land use within the designated areas. This minimizes the potential for contamination of the aquifers. The map below shows the aquifers in Meriden.

Main Types of Aquifers in Connecticut		
	Bedrock-Till Aquifers	Stratified Dirt Aquifers
Location	Formations are under the whole State	Form in river valleys
Comprised of	Different rock types and till (combination of rocks, sand, silt, and clay)	Layered deposits of sand, gravel, silt, and clay
Yield	Up to ten gallons of water per minute	Possible millions of gallons per day

A diagram (DEEP) of the difference between bedrock and stratified dirt aquifer can be found above, and a further description of aquifers is linked below. Most of Meriden's groundwater is made up of bedrock till.



References and Resources

Connecticut's DEEP description of Aquifers:

<https://portal.ct.gov/DEEP/Aquifer-Protection-and-Groundwater/Ground-Water/Understanding-Ground-Water/Aquifers>

Connecticut State-Designated Aquifer Protection Areas Map:

<https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=6b33fc05fccc4c5286fafae1b2cccbbf>

City of Meriden's Regulated Activities for Aquifer Protection:

https://www.meridenct.gov/Customer-Content/www/CMS/files/Planning_Zoning/AquiferProtectionAgency/28RegulatedActivities.pdf

USGS, "Aquifers and Groundwater"

<https://www.usgs.gov/special-topics/water-science-school/science/aquifers-and-groundwater>

USGS, "Groundwater Basics"

<https://www.usgs.gov/mission-areas/water-resources/science/groundwater-basics>

U.S. Forest Service, Groundwater Dependent Ecosystems

<https://www.fs.usda.gov/managing-land/natural-resources/geology/groundwater/groundwater-dependent-ecosystems>

Connecticut DEEP, Connecticut's Aquifers

<https://portal.ct.gov/DEEP/Aquifer-Protection-and-Groundwater/Ground-Water/Connecticuts-Aquifers>