

## What is an Aquifer?

An **aquifer** is a saturated geologic formation that provides water in usable quantities to a well or to surface waters like streams and ponds. Groundwater is the subsurface water that fills the spaces, crevices and fractures within an aquifer. Amazingly, groundwater makes up 21 percent of the Earth's freshwater and is recharged – or replenished – through precipitation.

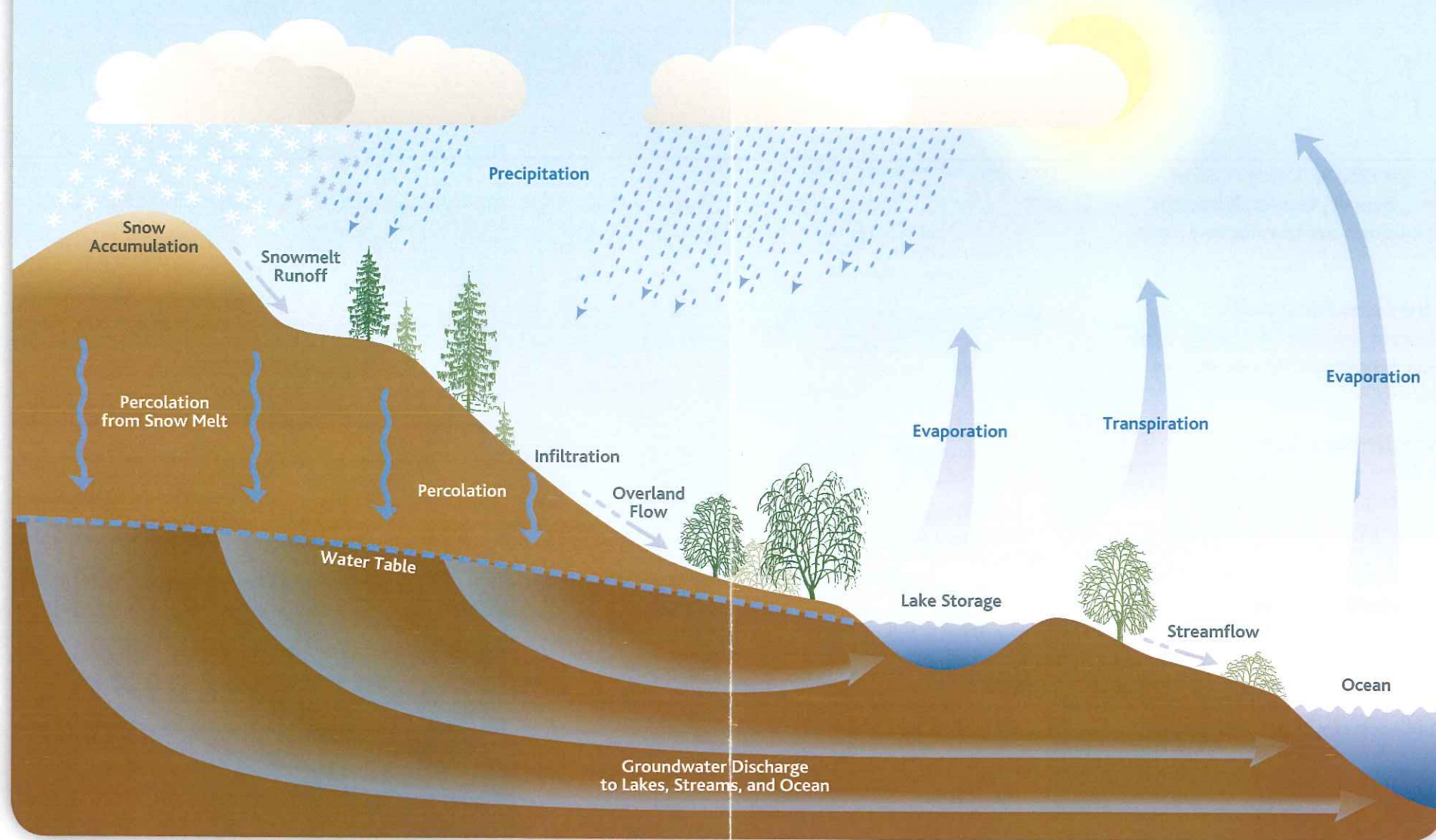
The **Plymouth/Carver Aquifer** was created approximately 14,000 years ago as the glaciers retreated. As the glacier melted, broad areas of sand and gravel – known as outwash plains – washed out of the ice. These outwash plains make excellent aquifers; the sandy soil is highly permeable. That is, it allows water from rainfall and snowmelt to filter through easily, recharging the aquifer.

## The Sole Source Aquifer

In 1989, concerned citizens asked the US EPA to designate the Plymouth/Carver aquifer as a Sole Source Aquifer meaning that it is the only source of drinking water for residents. **The aquifer contains an estimated 500 billion gallons of water.** Plymouth, Carver, two districts in Bourne, parts of Plympton and Kingston and most of Wareham rely exclusively on the Plymouth Carver Sole Source Aquifer for their drinking water. The designation doesn't convey new regulations but is intended to help bring focus on the significance of the resource. The nomination noted that this is a precious resource that deserves proper management and protection.

## Water on the Move...

The image below is a simplified representation of the movement of water through the environment. Known as the hydrologic cycle, it displays how groundwater is connected to ponds and streams. Soils in the Plymouth/Carver aquifer are sandy so proper management is critically important.



## Natural Habitats

Due to the sandy soils of the Plymouth/Carver aquifer, water readily discharges to the surface supporting natural communities that define the region's character. Perhaps the most globally significant of these are the many coastal plain ponds that dot the 199 square mile aquifer area. These ponds are essentially windows on the aquifer and typically aren't connected to a stream. They provide a glimpse of where the aquifer surface (or water table) is exposed. **These pond habitats occur in Southeastern Massachusetts and few other places on Earth** and rely on the aquifer to shape the plants and animals that live there. Other important habitats supported by the aquifer include Atlantic white cedar swamps and coastal rivers, such as the Wareham, Agawam, Wankinko, Red Brook, the Eel and Weweantic Rivers. The cedar swamps are home to a number of rare and declining species. Our coastal rivers serve many functions including recreation, spawning areas for migratory fish and, in the colonial times, were centers of commerce and manufacturing.

## What are threats to the aquifer?



### Pollution

The PCA is very susceptible to pollution. Because it is located in a vast area of sand and gravel, water flows freely throughout its boundaries. It is also directly connected to streams, ponds, bogs and the ocean. Fertilizers, pesticides and leaking underground storage tanks all move through the soil to the aquifer along with rainfall and snowmelt. If you dump it, we all drink it!

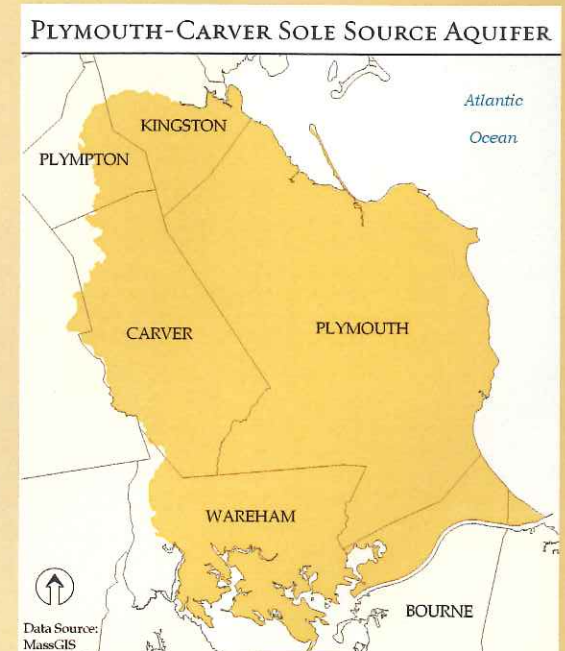
Once pollution occurs, cleaning up the aquifer is costly. Costs for the Sagamore Lens on Cape Cod are expected to exceed \$850 million. A coordinated protection effort is the best way to preserve the quality and quantity of our drinking water.

### Poorly planned growth

The Plymouth/Carver aquifer area is predominantly rural with abundant natural areas such as pine barrens and oak woodlands. These areas support the healthy functions of the aquifer by allowing water to sink into the ground. The region is also known for its cranberry farming, which helps to maintain the rural character.

However, this area is subject to the fastest development trends in Massachusetts. Rapid conversion of natural areas and agricultural lands is altering aquifer functions. Rainwater and snowmelt do not seep through pavement and rooftops. Instead, runoff is directed to stormwater drainage systems and streams, where it will reach the ocean without recharging the aquifer.

Our communities enjoy clean, affordable water. We must work together to balance human needs with the protection and management of the natural resources that make this the special home that it is.





# What we can do

- 💧 **Appoint a committee to focus on aquifer protection:** Comprised of town representatives within the aquifer's boundary – Bourne, Carver, Kingston, Plymouth, Plympton and Wareham – the committee's goals are to raise awareness of the aquifer and promote its protection.
- 💧 **Support your town's efforts to strengthen by-laws for aquifer protection:** These by-laws can include zoning clusters, transfer of development rights, policies for well placement, and natural areas protection. Ideally, the six towns will have uniform aquifer protection bylaws.
- 💧 **Adopt practices that protect the aquifer in your own home:** Individual actions, such as water conservation, landscaping with native plants, and the careful disposal of gas and oil can all help clean the aquifer healthy. For tips on landscaping that saves water, visit <http://www.nsrwa.org/greenscapes/default.html>
- 💧 **Join The Nature Conservancy or other local conservation organization:** Visit [nature.org/Massachusetts](http://nature.org/Massachusetts) to find out what The Nature Conservancy is doing in your area.

For more information, contact:



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## The Plymouth Carver Sole Source Aquifer

### Our Hidden Asset

There is an important natural resource in your town that few think about.  
We depend on it for our health and well being, but it is hidden.

The Plymouth/Carver Sole Source Aquifer (PCA) is the source of our public and private water supply. Covering 199 square miles, including all or portions of six communities, the PCA is one of the largest designated aquifers in New England. It provides an abundance of clean drinking water for thousands of residents, and supports an array of natural resources.

Because water is necessary for all life and critical for a healthy environment and economy, we must protect it for our future.