

Wetlands and Water Supply

Would you drink water from a wetland? Probably not, when you think of the smelly, brown, stagnant water generally associated with swamps. But appearances can be deceiving. Wetlands do indeed help maintain both the quantity and quality of our water supplies. Consider the nature of wetlands more closely and the important role they serve in protecting water supplies for people as well as fish and wildlife becomes apparent.

Wetlands act like giant sponges, absorbing and holding vast quantities of water, and releasing it slowly. Water gathers in wetlands from melting winter snows and spring rains, and flows gradually into nearby streams and rivers. The water held back by wetlands helps keep water levels up in rivers and ponds during the dry summer and early fall months. Thus, wetlands help maintain our surface water supplies by increasing the amount of water remaining in reservoirs during dry periods.

Some people depend on groundwater pumped from public or private wells, rather than surface reservoirs, for their water supplies. Wetlands help maintain these supplies too. Many water supply wells are located within deep layers of sand and gravel deposited by retreating glaciers at the end of the last Ice Age 10,000 years ago. These deposits are often thickest where they fill an ancient river valley, frequently with a river flowing above them through the remnants of the valley. These "buried valley aquifers" are a major source of water supply in Massachusetts.

There is a connection between the river flowing above and the groundwater in the sand and gravel aquifer below. Pumping large quantities of water from water supply wells can draw water from the river down into the aquifer and into the well, in a process called "induced infiltration." Once again, the role wetlands play in maintaining river flows during dry spells contributes to the amount of water available for use by people. Large wetlands, as well as lakes and ponds, also maintain a higher level of groundwater in the surrounding area. Where people depend on shallow private wells, the effect of wetlands on maintaining local groundwater levels can help ensure a constant supply.

What about water quality? How does all that mucky water in wetlands contribute to the crystal clear water pouring from your tap? Just as the spongy soil of wetlands absorbs water, it also removes many contaminants that otherwise would flow into surface waters or seep into groundwater. Water flow slows down in wetlands, allowing dirt and other sediments to settle out. Many pollutants in runoff from urban areas, lawns, and roadways, like lead, pesticides, and hydrocarbons bind to sediments and the organic, mucky soils of wetlands. A process called denitrification is at work in wetland soils, whereby bacteria break down nitrates. Nitrates enter water from many sources, including septic systems, agricultural runoff, and fertilizer washed off lawns by rain. Nitrates can be toxic in excess amounts, particularly for infants. The bacteria that provide the service of removing these substances from water only occur in wet soils that lack oxygen. Wetland plants also absorb and use nutrients like nitrogen and phosphorus, helping to keep them out of rivers, lakes, and water supplies.

So, the next time you drink a glass of cool, clear, refreshing water, remember to thank the wetlands that helped make it possible. Wetlands are protected under federal and state laws because of the important values they provide, including water supply, flood control, and fisheries and wildlife habitat. The Conservation Commission is the primary agency responsible for wetlands in Westford, including administration of the Massachusetts Wetlands Protection Act and protections for rivers and streams under the new Massachusetts Rivers Protection Act. For more information, contact the Conservation Commission or Heidi Roddis, at the Massachusetts Audubon Society, (617) 259-9500 x7260.