

## Understanding Wetlands and Groundwater

Lakes, rivers, streams, wetlands, and groundwater are part of a single hydrologic system. Wisconsin has constructed separate management systems for “groundwater” and “surface water,” but these waters are physically connected. Exchange of waters above and below ground takes place continually. Separate management systems puts all waters at risk.



A common way groundwater enters surface waters is in areas where the **water table** – the area below which the ground is saturated – intersects the land. These areas, often described as *springs*, provide continuous sources of base flow for many of Wisconsin’s wetlands, lakes, rivers, and streams. Shallow sub-surface groundwater is a primary water source for many wetlands.

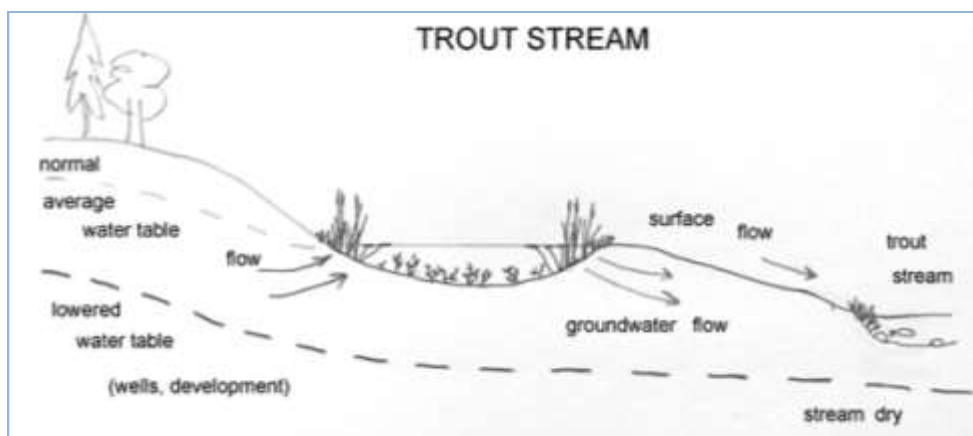
**Excessive pumping lowers the water table and can remove and degrade these groundwater-fed wetlands.** This is problematic because groundwater-fed wetlands help maintain the quantity and quality of water flowing into our lakes, rivers, and streams.

**Loss of groundwater-fed wetlands by excessive pumping hurts our lakes, rivers, and streams by:**

- reducing bank storage and base flow
- lowering water levels
- raising water temperatures
- intensifying flood peaks
- increasing erosion, sedimentation, and nutrients
- degrading fish and waterfowl habitat

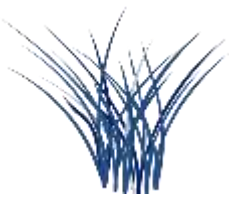


*Pickerel Lake Fen in Walworth County is one many groundwater dependent wetlands protected by private land trusts in Wisconsin. Photo by Gerald H. Emmerich, Jr courtesy of The Nature Conservancy.*



**Did you know that the low-oxygen environment of groundwater-saturated wetland soils supports specialized bacteria and plants that remove nitrates from the soil and water? These benefits disappear when groundwater levels drop and the soils go dry.**

**Consideration of wetlands in groundwater management is critical to the health of our lakes, rivers, and streams.**



**Groundwater-fed wetlands reduce erosion and sedimentation:** These wetlands receive, store, infiltrate, and release groundwater and surface water as it travels from higher to lower elevations. This retention and filtration slows the flow, reducing the timing and erosive energy of water moving downstream, and the amount of sediment and nutrients carried with it. Excessive groundwater pumping can lower the water table, causing groundwater to bypass these wetlands altogether. This leads to an increase in the volume and velocity of contaminated water moving downstream.

**Groundwater-fed wetlands support wildlife:**

Groundwater flow to wetlands maintains the seasonal water levels and plants needed by fish and wildlife to breed, nest, feed, and hide from predators.

Excessive groundwater pumping disrupts wetland water cycles, causing seasonally inappropriate decreases in water levels. This can degrade the quality of habitat for more than 75% of Wisconsin’s wildlife, species - including *all* of our home-grown waterfowl.



*Important waterfowl production areas are vulnerable to groundwater pumping. Photo by Ken Tapp*

**Protecting groundwater-fed wetlands protects public and private investments and private property rights:**

Many publicly owned parks, state natural areas, and waterfowl production areas contain groundwater dependent wetlands.

Many state and federal agencies and non-profit organizations have invested heavily in wetland restoration.

Tens of thousands of Wisconsin landowners have purchased wetland property to use and enjoy for hunting, fishing, and other recreation. Excessive groundwater pumping can reduce property values and violate the rights of these property owners to use and enjoy their wetlands.



*Privately owned wetlands, like this parcel in Adams County, are at risk.*



**Consideration of wetlands in the regulation of groundwater pumping is needed to protect the health of our lakes, rivers, streams, and wildlife, and to protect public and private conservation investments.**

Questions? Contact Erin O’Brien, Wisconsin Wetlands Association’s Policy Director: [policy@wisconsinwetlands.org](mailto:policy@wisconsinwetlands.org)

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