

## **Groundwater Resources of the Newfound Watershed**

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May 2009

Ground water comes from rain and snow melt that soaks into the ground and is stored in the pores of sand and gravel overburden materials or in fractures within the underlying bedrock. Where there is enough groundwater available for human use, overburden and bedrock water supplies are called aquifers. Essentially all drinking water in the nine towns of the 63,000-acre Newfound Watershed comes from ground water. Bristol's Fowler River well pumps nearly 800 gallons per minute (gpm) from a 100-foot thick overburden aquifer, serving roughly 1,500 customers. The remaining 3,500 watershed residents are supplied by private wells that can produce as little as one gpm and are typically drilled hundreds of feet into bedrock. During summer months, the roughly 10,000 visitors to the area also depend on ground water for drinking and other uses.

Ground water is replenished by infiltration of rain and snow into the ground. Where steep slopes, shallow soils or impervious surfaces (pavement, houses, lawns) are present, infiltration is lower and surface water runoff higher. In areas of gentler slopes and deeper, more pervious soils (such as river valleys) infiltration is higher and surface water runoff is lower. The upper surface of saturated overburden or bedrock is called the water table, which can be seen by peering in to shallow (dug) wells or where it meets the land surface in the form of a spring (e.g. the Breck-Plankey spring in Bristol).

Ground water quality and quantity vary with land use. In forested and pristine watersheds water quality and quantity both tend to be high. If an area becomes overly developed, less pervious to infiltration and with more contaminants such as road salt, fertilizer and petroleum by-products, water quality and quantity tend to decline. Because ground water moves much more slowly than surface water and lacks the biological processes that break down many common contaminants, once ground water quality is impacted it is very hard and very expensive to clean up. In times of drought, or when we lose power to our well pumps, the importance of water quantity becomes immediately clear.

Protecting ground water resources is critical, as we depend on it for all aspects of our lives and because cleanup is so expensive and difficult. High priority areas for protection include existing aquifers located along the lower Fowler and Cockermouth River valleys, George's Brook and the southern ends of Newfound Lake. Other high-priority areas include the many smaller streams that feed the larger rivers and recharge ground water as they reach the valley bottoms. Wetlands, especially at higher elevations, are critical recharge areas as well as valuable wildlife habitats. In large part protecting surface water quality also protects ground water quality, thus yielding good land management "bang for the buck".

Some key actions to protect our ground water resources include:

- Identify critical aquifer recharge areas.
- Limit development and construction in and around critical aquifer recharge areas.
- Control the amount of potential contaminants (fuel storage, fertilizers, herbicides/pesticides, septic systems, road salt) used and stored in critical recharge areas.
- Maintain natural vegetation between surface water and developed areas, including roads. These vegetative buffers provide natural filters for surface contaminants and promote infiltration and ground water recharge.

Through wise and thoughtful land use planning, Newfound area towns and residents can direct future growth while protecting our shared and vital ground water resources.

*Author and affiliation: Boyd Smith is the Director of the Newfound Lake Region Association, a member-supported nonprofit. The Association – through education, programs and collaboration – promotes conservation and preservation of the region's natural, social and economic resources.*