

Protection of Pennichuck Watershed as Drinking Water Supply
For the Citizens Today and 50 Years from Now
Allan Fuller – 02/02/02, Revised 02/27/02

Per the City of Nashua's Master Plan, the Pennichuck Brook watershed has an area of 17,984 acres. The Pennichuck Brook watershed comprises 3,702 acres in Nashua, which is 20.6% of the total watershed area. Pennichuck watershed supplies drinking water for the towns of Nashua (ponds with about 15 million gallons per day and supplemental supply from the Merrimack River to a total of 20 million plus gallons per day depending on demand), Merrimack (35 foot deep well head behind PC Depot with 1 million gallons per day), Amherst (35 foot deep well behind Wal-Mart with 1 million gallons per day), Hollis (wells at each home).

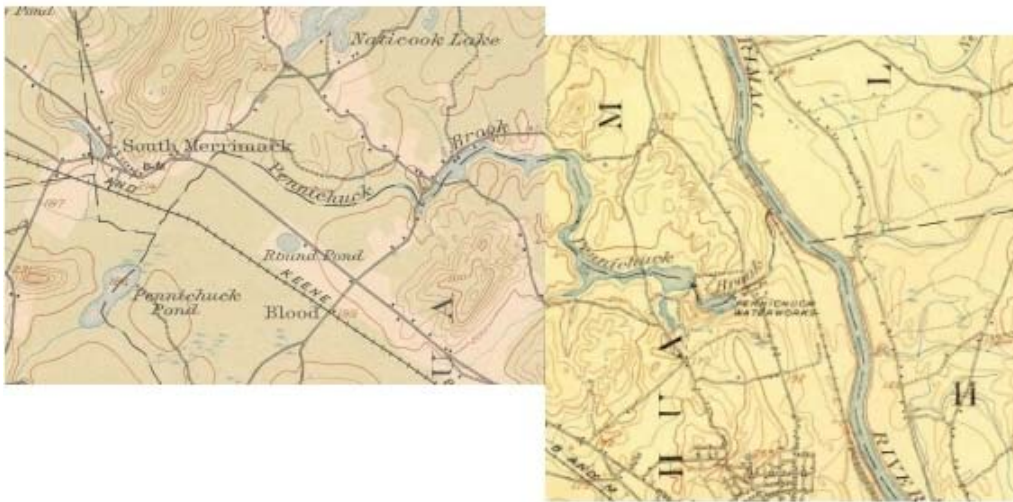
Pennichuck Water Company was incorporated in 1853. It has been split into a water company and a development company in 1983. At that time they owned or maintained about 2000 acres of watershed protection lands. The result of this is that some water company lands have been considered not essential to the watershed and are being developed. The water company does not own all the land in the watershed. The local planning and conservation commissions approve each individual development using the guidelines outlined by the regulations. The commissions are not allowed to consider the summation of the effects of all the developments on the watershed. The result is the gradual destruction of our drinking water supply for future generations.

NH DES with the help of Pennichuck Water Company rewrote the regulations for protecting the Pennichuck Watershed. There was an informational meeting January 10, 2002. The proposed regulations were less restrictive than the current regulations by PUC on Pennichuck Water Company, Nashua watershed protect ordinances, conservation control in the town of Hollis. I have talked to Mayor Streeter about working with the towns of Hollis, Amherst, and Merrimack in proposing new DES watershed protection regulations that are in the best interest of protecting the drink water quality, recharge capacity for today's citizens and future generations. The goal is to make it a win for everyone if possible without compromising our water supply. We are currently working on developing a working committee of concerned citizens, conservation commission members, and planners from each town to develop and set of regulations and cooperation between to towns to protect the watershed. This will not be easy. Education will be very important as well as everyone working towards a common goal.

Where is the watershed right now?

1. The amount of impervious cover in our drinking watershed is an important measure of present and future watershed quality and health. Currently the Pennichuck Watershed is over 20% and rising.
 - a. Tom Schueler has evaluated about 350 watersheds and says that
 - i. 0 – 10% Impervious cover - data is fuzzy
 - ii. 10- 20% Impervious cover - Moderate Impact
 - iii. > 30% Impervious cover – High Impact

2. The effect of impervious cover is:
 - a. Increased volume and velocity of runoff
 - b. Increased frequency and severity of flooding
 - c. Peak storm flows many times greater than in natural basins
 - d. Loss of natural runoff storage capacity in vegetation, wetland and soil
 - e. Reduced groundwater recharge (watershed capacity)
 - f. Decreased base flow



1905 Topographical Map of Pennichuck Watershed



Satellite Photograph of the Pennichuck Ponds



New Housing at Herron Cove in Merrimack looking toward the Everett Turnpike



Aerial Photograph from Everett Turnpike area to the Southwest (Pennichuck Mall/Amherst St)



Pennichuck Brook feeds the chain ponds (reservoir). Look at the impervious cover and development encroachment up to the buffer of less than 75 feet in some cases



Northwest Boulevard, Amherst St looking West at Pennichuck Square and Pennichuck Pond part of the watershed



Pennichuck Pond looking southwest towards Hollis. The brook outlet is center right.



Looking to the Pennichuck Watershed source in the southwest looking north and east from Hollis. The narrow valley of connected ponds Silver Lake (bottom) feed Pennichuck Pond (left top) and the Amherst St area (top)

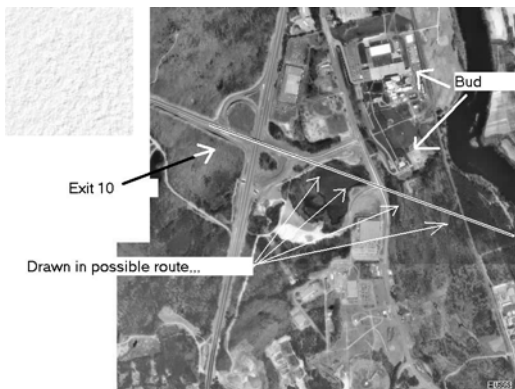
3. Town officials need to consider:
 - a. Preventing such impacts in the first place
 - b. Strategy of natural resource based planning
 - c. Appropriate site design
 - d. Storm water treatment

4. The commissions are obligated to approve development requests and following current regulations. They are threatened that they will be taken to court if the plan is not approved. The problem these commissions have is:
 - a. Regulations are not written to effectively protect the drinking water supply
 - b. There is now way to determine if the developer's plan to protect and treat the water run off is scientifically valid
 - c. There is no enforcement mechanism to insure that the plans submitted are followed or that the storm water treatment designs are maintained
 - d. The regulations do not consider the cumulative impact of all the developments on the health of the watershed.

5. One major impact that is planned for the future is Exit 9 for the Circumferential Highway. This intercept to the Everett Turnpike is planned to cross the Merrimack River from Londonderry, up Pennichuck Brook to Concord Street and then over the north shore of Harris Pond with an interchange less than 1 mile south of Exit 10. The effect will be to increase the impervious area close to the ponds. The Exit 10 interchange already goes to Continental Boulevard and would divert traffic off of Amherst Street section that runs through the watershed.



Harris Pond and the Everett Turnpike looking north towards Exit 10. The proposed Exit 9 of the Circumferential Highway is would come on the north shore of the ponds (bottom of the gravel pits) increasing the impervious cover and impact on the reservoir directly.



Alternate to Exit 9 would be use Exit 10. It would save money because it is already there, protect the watershed, and be a safer alternative to squeezing Exit 9 in between the ponds and Exit 10. Running the Circumferential Highway from Exit 10 to the proposed route on the Londonderry side of the Merrimack will have minimum impact on the project and will help protect the water supply. Besides Exit 10 already connects to the west and Continental Blvd. Exit 9 does not and will be difficult get approved.

Some related links:

<http://www.cwp.org/> - Center for Watershed Protection

Founded in 1992, the Center for Watershed Protection is a non-profit 501(c)3 corporation providing the tools to help communities protect some of the nation's most precious natural resources: our streams, lakes and rivers. Joining forces with local watershed groups, federal and local governments, as well as nationally respected experts and professionals, the Center has developed and disseminated a multi-disciplinary strategy to watershed protection that encompasses watershed planning, watershed restoration, stormwater management, watershed research, better site design, education and outreach, and watershed training.

<http://www.epa.gov/safewater/topics.html> - EPA Ground Water and Surface Water

Excellent site with all types of information from analytical techniques to watershed protection, and regulations

<http://nemo.uconn.edu/> - University of Connecticut: the Cooperative Extension System – Non Point Education of Municipal Officials (NEMO)

NEMO's Reason for Being: A one sentence description of the NEMO Project appears at the top of each page of this web site: an educational program for local land use officials that addresses the relationship of land use to natural resource protection. That pretty much says it all. However, never having learned to leave well enough alone, we will elaborate just a bit on the key elements in that definition, in the reverse order that they appear:

Natural Resource Protection is the Goal: (even we feel that no further elaboration is needed on this point)

Land Use is the Issue: We believe that better land use decisions are the key to protecting the natural resources, community character, and long-term economic health of our communities.

Local Officials are the Target Audience: Because land use is the issue, the people making land use decisions are our key target audience. In the United States, this mean local officials serving on land use boards at the county and municipal levels. (Quick - name 5 groups or organizations devoted to assisting these critical decision makers! Can't do it, can you? Chalk up yet another good reason for NEMO...)

Education is the Method: Given that the local land use decision making process is complex, political, and widely varying, state and federal regulation can only go so far in dictating better land use policies and practices. We believe that education - particularly research-based, non-advocacy professional outreach education - is the best way to foster better land use decisions.

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