



## Memorandum

To: Triangle Mayors & Commissioners

From: Bill Holman, Visiting Senior Fellow  
Nicholas Institute for Environmental Policy Solutions

**Re: Efficient use of water resources**

Date: December 13, 2007

Cities and counties in the Research Triangle Region have a long and active history in planning and managing water resources, including Durham's investments in Lake Michie (1925) and Little River, Raleigh's investment in Falls Lake, OWASA's investment in Cane Creek, and State and local investments in Jordan Lake.

Cities and counties in the Research Triangle Region also lead the State in protection of drinking water supplies. In general the cities and counties of the region have developed, adopted, and enforced stricter rules than the state minimum water supply watershed rules required by the Water Supply Watershed Protection Act of 1989. Cities, counties, and local land trusts have targeted local and state funds to acquire key properties in these watersheds from New Hope Creek in the Jordan watershed to and the Upper Neuse Clean Water Initiative. These water supplies and local actions have been critical to the growth of the Research Triangle Region.

However, increasing population, increased demand for water services, and more extreme weather associated with global climate change will require new water policies. The greatest and most cost-effective source of "new" water to sustain the Triangle's population, economic growth, and environment in the 21<sup>st</sup> century is **water efficiency**. I am writing to provide some options for you to consider increasing efficient use of water in the region.

Earlier this year the Nicholas Institute provided some options for State, local and private decision makers to consider increasing efficient use of water in North Carolina ([www.nicholas.duke.edu/institute/waterreport.pdf](http://www.nicholas.duke.edu/institute/waterreport.pdf)). Some policies may be more appropriate for state action; others, local action.

The 2007 General Assembly of NC authorized its Environmental Review Commission (ERC) to study water allocation policies (HB 820/Session Law 2007-518). The ERC is conducting five public meetings on the scope of the water allocation study starting on December 20, 2007 in Charlotte and including one in Raleigh after the ERC meeting on January 23, 2008.

Richard Whisnant at the School of Government at UNC-CH and I plan to assist the ERC in developing options to consider in 2008 and in 2009. We met recently with the Technical Advisory Committee of the NC League of Municipalities and plan to meet with staff of the League and the NC Association of County Commissioners next week.

The ERC and the 2008 General Assembly may also consider statewide water efficiency ideas, such as improving water use reporting by agriculture, electric utilities, and community water systems, strengthening the plumbing code, clarifying use of grey water, and providing more authority to counties to regulate withdrawal of water from private wells.

We can also look for opportunities to connect our energy and water efficiency programs, because such efficiencies are cross-cutting. Pumping and treating water requires significant energy, and power plants are major consumers of water, so efficiency gains in either sector reduce the impacts of the other. North Carolina and the nation are increasing efforts to improve energy efficiency.

### **Conservation Pricing for Water Services**

Water services in the 20<sup>th</sup> century were abundant and cheap. If we want industries, institutions, businesses and citizens to value and conserve water in the 21<sup>st</sup> century, we need to price water services accordingly. Durham has already taken some steps in this direction. In the 1990's Durham wisely eliminated declining block rates and adopted an irrigation rate (twice the water rate). These are important conservation policies.

However according to UNC-CH's Environmental Finance Center ([www.efc.unc.edu](http://www.efc.unc.edu)) Durham and Raleigh charge among the lowest rates for both the 5000 gallons/month block of water and the 10,000 gallons/month block of water in NC. Both Cary and OWASA charge above the median for water services.

It is possible to develop a water and wastewater rate structure that is affordable for average users and sends a stronger price signal to large users, providing a financial incentive for conservation. I understand that both Durham and Raleigh are updating their utility billing system so that it will have more capacity to analyze and differentiate rates and impacts. More detailed, **monthly** water bills will be necessary if local governments desire to educate customers on their choices.

Because it takes some time to develop and approve a new rate structure, local governments should set these processes in motion soon if they want to have them in place some time next year. In the short term, drought surcharges can be approved with less delay.

In addition to considering a conservation rate structure, consider setting aside adequate capital reserves to implement the Capital Improvement Plan; to aggressively detect and repair leaks (and to reduce revenue lost for unaccounted water); to fund conservation technical assistance, like water audits for customers, retrofit and incentive programs,

financial assistance and education; and to increase local funding to protect and restore riparian buffers, wetlands, and floodplains upstream from water supplies in the Upper Neuse and Upper Cape Fear River Basins. Sediment and nutrient loading in reservoirs has reduced water storage capacity and increased treatment costs.

### **Mandatory, Year Round Conservation & Efficiency Programs**

Mandatory, year-round water conservation and efficiency programs are more effective than occasional efforts. While short-term conservation strategies rely on asking consumers to forgo or reduce uses to which they expect to return to eventually, efficiency strategies rely upon positive action to meet the same or growing needs with less water. For example Durham has an ongoing showerhead exchange program.

Water systems could cost-share the costs of **water audits** for larger industrial, institutional, and commercial customers and could conduct free water audits for residential customers. A conservation rate structure will make many measures such as industrial water recycling more cost effective. Electric utilities cost share the costs of energy audits. Cities and counties could conduct water audits of their own buildings by the end of the 2007-2008 fiscal year, and identify cost effective improvements for the 2008-2009 fiscal year.

In existing buildings, water systems could also offer incentives to retrofit with water efficient fixtures and appliances, possibly by partnering with appliance and fixture sellers. In new buildings, the Triangle which is already a leader in green building, could promote more water efficiency, in municipal and county buildings and by drawing attention to the water use efficiency measures taken in proposed developments.

Regional and statewide water conservation marketing campaigns would be more effective than local campaigns. The public is confused that water conservation stages may impose different requirements in different jurisdictions. Regional water conservation measures would reduce confusion and increase compliance. If we want the public to understand and conserve, we need to provide clear and simple messages.

### **Lost Water Equals Lost Revenue**

Local governments submit local water supply plans to the NC Division of Water Resources about every five years. The plans estimate the amount of unaccounted for water. Leaks are the most common source of lost water. Lost water is also lost revenue.

Much of our water infrastructure is old. Pipes and pumps wear out. Investments in leak detection and repair will pay for themselves. However when conservation efforts are reducing water revenues, many systems may reduce funding for routine maintenance and leak detection.

### **Is Water Pressure Too High?**

We pressurize our water systems to fight fires more than to deliver drinking water. Higher pressure increases leaks and losses. While we need to maintain pressure to fight fires, new technology enables cities to selectively manage water pressure. Water systems customers could reevaluate the water pressure in its system.

### **Storm Water is a Resource**

Collection and treatment of storm water reduces flooding, reduces stream erosion, and protects water quality. Storm water could also become a source of water for purposes such as irrigation and cooling. According to estimates provided by Durham Stormwater Services about 3,000,000,000 gallons of water ran off Durham's streets, parking lots, roofs, and other impervious surfaces during the three inch rain storm in October. Local governments could work with citizens and developers to evaluate its storm water ordinances and policies to increase collection and reuse of storm water. Local governments could also investigate the benefits of requiring more storm water collection such as rain barrels and cisterns at new construction. County-wide, watershed based and regional approaches to storm water management will be more effective than local approaches.

### **Wastewater is a Resource**

Like storm water, treated wastewater can be used for non-potable drinking water purposes such as irrigation and cooling. Durham County, Wake County, and Cary are already working together on a project to increase use of treated wastewater or reclaimed water in Research Triangle Park and Cary. A regional study to identify the most cost effective opportunities for wastewater reuse could be a valuable planning tool. Increasing use of treated wastewater will also help many wastewater systems comply with stricter nitrogen and phosphorus standards proposed to improve water quality in Jordan and Falls Lakes and the Neuse River.

### **Landscaping**

Local governments could encourage or require more drought resistant plants and landscaping practices. Increasing use of compost, soil amendments, and mulch conserves water and helps plants survive droughts. Local Soil and Water Conservation Districts and Cooperative Extension Service could help educate homeowners, landscapers, and others.

### **Duke and Other Universities**

Duke University is committed to helping Durham conserve water. President Dick Brodhead wrote all Duke students, faculty and staff to encourage us to reduce our water use by 30% on November 13. Duke is auditing its use of water and evaluating strategies to conserve. The City of Durham, Durham Chamber, Duke, and others are sponsoring a forum at Duke from 3:00 – 5:00 pm on December 19, 2007 for large water users. The Nicholas School at Duke plans to host a Town Hall Meeting on Water Issues for both

Durham residents and the Duke community from 6:00 – 8:00 pm on January 8, 2008 at Duke Gardens.

University of North Carolina at Chapel Hill, NC State University, NC Central University are all great resources for local governments.

Thank you for your consideration. Please contact me if you need more information or if I can be of assistance.