Providing water and sewer in Wake County

by Jeri Gray

Note: On *the recommendation of Commissioners Yevonne Brannon and Betty Lou Ward, Jeri Gray has been appointed to the Wake Water and Sewer Task Force. Jeri has been monitoring meetings of the Task* Force *for the League since April.*

At the November 26 meeting of the Wake. Water and Sewer Task Force, the engineering consultant, Cl-42M Hill, presented three framework scenarios for providing water and sewer services countywide to the year 2030.

To develop the scenarios, CH2M Hill reviewed existing water and wastewater facilities in Wake county; projected population, water demand, and wastewater flows in the county over the next three decades; and reviewed existing and anticipated state regulations that will affect water supply and allowable wastewater discharges.

Projections

According to the consultant's projections, 1.2 million people will live in Wake County in 2030, but only 54,000 will live in unincorporated areas. On an average annual basis, population will increase 3.1% In the incorporated (municipal) areas of Wake County and decrease 2.9% in the unincorporated areas between 1996 and 2030. This projection shows the effects of the county's new land-use plan, which anticipates nearly all of Wake County—except for most watershed areas, the airport, and some other small areas—being annexed by existing municipalities

The consultant projects that by 2030, the 1.1 million people living in cities and towns will each "demand" 130 gallons of water per day. This doesn't mean that each person will use this much water in her/his home, but that domestic, institutional, commercial and industrial use of water in the county will average 130 gallons per day on a per-person basis. Altogether, people living in Wake County will need a maximum of 203.6 million gallons of water per day in 2030. Today, we use about 75.3 million gallons per day. In other words, to meet the projected water demand in 2030, we need an increase equal to almost double the current supply.

The wastewater that Wake County will need to treat and dispose of in 2030 is projected to be 159.5 million gallons per day, almost three times the wastewater handled by all treatment systems (treatment plants and septic systems) in the county today.

How can local governments in Wake County provide the water and wastewater needs projected for 2030? This question must be considered in two parts: (a) where will we find enough raw water and enough waste assimilative capacity to meet the demands of growth, and (b) how will we finance and build the water treatment and distribution systems and wastewater treatment and collection systems to meet the needs? Any county-wide plan for water and sewer must answer both parts of this question.

The natural resources

There are limited options for raw water supply and waste assimilative capacity in Wake County, and each of the consultant's three scenarios relies on essentially the same resources.

Water Supply: From the Neuse River, we will use the full safe yield of Falls Lake, get some water from Durham, use water from Lakes Benson and Wheeler, and develop a new reservoir on the Little River in eastern Wake County. From the Cape Fear, we will increase withdrawals from Jordan Reservoir to a total combined Wake County allocation of 42 million gallons per day (of the total 10O available).

Waste Assimilation: Problems with nutrients in the Neuse River and the newly adopted rules to deal with those problems will severely restrict future wastewater discharges into the Neuse. To deal with this restriction the consultant envisions installation of advanced treatment technology to reduce nutrients in existing wastewater discharges; an aggressive water reuse program, which will reduce the volume of wastewater discharged; and moving some wastewater discharges from the Neuse River to the Cape Fear River. Wastewater treatment plants produce not only wastewater but also sludge (often called biosolids), and disposing of wastewater sludge is becoming a problem in Wake County. Sludge is usually applied to agricultural fields, but agricultural land in the county is disappearing, and neighboring counties don't like to have Wake sludge dumped on them (particularly where it
competes with agricultural waste for available land). The consultant recommends a county-wide sludge management program and will study alternative ways of disposing of sludge including composting and incineration.

The Scenarios

The ability to use Wake County's available water supply and waste assimilative capacity to the fullest and in the most efficient way possible depends on the way water and sewer infrastructure is configured. To identify the most efficient system configuration, the consultant has developed and will later compare three scenarios for using existing water and sewer facilities and building future facilities. Space does not allow a detailed discussion of these scenarios. In essence they are:

(a) ***Constancy.*** In this scenario each local government in Wake County continues doing what it's doing now. Currently, some small municipalities rely on Raleigh for water and sewer to one degree or another; some rely on Cary; and some operate their own water and/or sewer facilities.

(b) ***Increased sharing of facilities.*** In this scenario communities in Wake County coalesce into four utility groups: (1) Apex, Cary, Morrisville; (2) Fuquay-Varina, Harnett County, Holly Springs; (3) Garner, Raleigh; (4) Knightdale, Rolesville, Wake Forest, Wendell, Zebulon.

(c) ***Maximum Sharing of Operations.*** In this scenario, communities coalesce into two utility groups: (1) East Wake Utility Group, with Raleigh as the central provider and including Garner Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon; and (2) West Wake Utility Group, with Cary as the central provider and including Apex, , Fuquay-Varina Holly Springs, and Morrisville.

In each case, the consultant has projected what kind of facilities would need to be developed and where they would need to be located to serve future needs of communities or groups of communities. The more cooperation and consolidation among communities, the fewer but larger the new facilities will tend to be, so that what emerges in scenario "c' is regional water and wastewater treatment facilities.

In November, CH2M Hill presented these framework scenarios to the Water and Sewer Task Force and asked for approval to develop detailed engineering and financial studies based on each scenario. These studies will put dollar figures on each option and identify the most economically efficient one. The Task Force approved proceeding with the detailed studies, and although the consultant did not recommend a scenario of one county-wide water and sewer utility (for both political and geophysical reasons), a request was made that they "run the numbers" on the one-utility option.

In a future issue of the ***Voter***, I hope to be able to follow up this report with some analysis of the consultant's technical memos and some suggestions for additional or differently focused study.