

November/December 2004

Environmental Update



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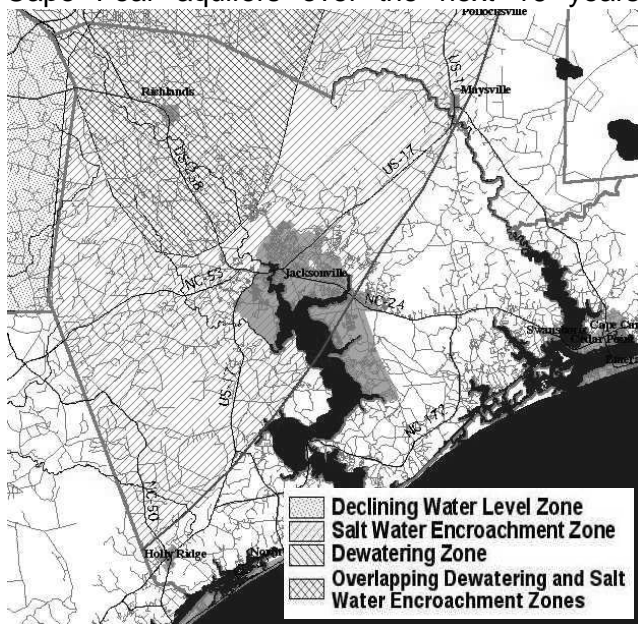
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Water: Do you take it for granted?

Where do you get your water? Private well? Public well? Public surface water? People in the NC coastal plains get their water from a variety of sources, much of it from ground water aquifers. Some of these aquifers have shown signs of strain (e.g., lower aquifer levels and saltwater intrusion). Because of the demand on ground water resources, the Central Coastal Plain Capacity Use Area (CCPCUA) Rule was enacted by the Water Resources Division of NC Department of Environment and Natural Resources. The counties involved are: Beaufort, Carteret, Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pamlico, Pitt, Washington, Wayne, and Wilson. The rule went into effect in 2002.

The main purpose of the rule is to reduce water withdrawals from the Black Creek and Upper Cape Fear aquifers over the next 16 years.



Three reduction zones were established in the CCPCUA: the *dewatering zone*, the *saltwater intrusion zone*, and the *declining water level zone*. These zones in Onslow county are shown in the figure.

In the dewatering zone, water use from the Black Creek and Upper Cape Fear must be reduced by 75%. In the saltwater intrusion zone, use from the aquifer must be reduced between 30-75%. In the declining water level zone, water use must be monitored and reduced up to 30%.

Where is the water going?

The NC Rural Economic Development Center arranged for two studies, one of which was an evaluation of water resources in the 15-county CCPCUA by a consulting firm (Golder Associates, Inc.). The water use study presented the following observations:

- Groundwater supplies 66% of total water use (64 million gallons per day (MGD)).
- Roughly 40 MGD comes from the Cretaceous aquifer system, which contains the Upper Cape Fear and Black Creek aquifers.
- Public water systems provide water to 70% of the population in the area.
- The average daily public water demand in the region is 95 MGD
- The maximum daily demand, which reflects tourists and seasonal usage, is 142 MGD.
- The following water uses were identified:

Residential: 46%
Industrial, commercial, and institutional: 39%
Sold (to other systems): 4%

Unaccounted for (water loss): 11%

- Self-supplied water (private wells at homes, farms, and fisheries) used 68 MGD.
- Dewatering operations at mines pumped 60-80 MGD.
- Total groundwater use in the area: 190-210 MGD.

Some water supply alternatives?

Groundwater resources from other aquifers:

These are usually harder to get or are of poorer quality than the aquifer currently being used, so more treatment will be needed.

Surface water: Surface water is currently used in Goldsboro, Greenville, Tarboro, and Wilson. It is being considered in other locations, but faces significantly more treatment than groundwater.

Brackish water: Brackish (salty) groundwater and surface water sources are available for many of the CCPCUA counties. Dare County, although not part of the CCPCUA, uses brackish groundwater for its water supply. The water is treated by reverse osmosis, which produces a very high quality drinking water. It is more expensive than treating fresh groundwater, and the brine residue can be a disposal issue.

Aquifer storage and recovery (ASR): Water is stored in a suitable aquifer when excess water is available and drawn out again when it is needed. This can help even out peak demands.

Water conservation: This is where individuals can have the biggest impact on future water and wastewater treatment needs! Water conservation

is defined as any reduction in water *use*, *waste*, or *loss*. Conservation can also reduce the need for water treatment plant expansions and locating new sources.

Water reuse (or “reclaimed water”): This practice uses highly treated wastewater to supply non-potable (not drinking water) water demands. Reclaimed water is typically used for agricultural and landscape irrigation, toilets, industrial cooling and process water, cooling water in commercial air conditioning systems, street cleaning, and ornamental ponds and fountains. Several locations in eastern NC have water reuse projects being developed. Cary NC already has a reuse program.

How much water do you use?

Residential water use is roughly 60 gallons per person per day. If you are on a public water supply, check your water bill. A 4-person household should average 7,200 gallons of water per month:

$4 \text{ people} \times 60 \text{ gallons per person per day} \times 30 \text{ days}$

How does your household compare? If your actual water use averages less than the calculated amount, congratulations! You aren't wasting water. If your water use is frequently more than the average for your household size,, you may want to begin some conservation practices at home.

Sincerely,

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