

BASIN 2 CAPE FEAR

BASIN DESCRIPTION

The Cape Fear Basin is located entirely within North Carolina. It is the largest basin in the state, draining 9,149 square miles from its headwaters in the northern Piedmont to its mouth at Cape Fear, south of Wilmington. The major basin is divided into six sub-basins as shown on the shaded area of the map. The Haw River and the Deep River merge at the border of Lee and Chatham Counties to form the Cape Fear River, which flows southeast across the Coastal Plain past the Port of Wilmington to the Atlantic Ocean. The South River and the Northeast Cape Fear River merge with the Cape Fear near Wilmington. The New River in Onslow County is also included in the Cape Fear River Major Basin.

The Haw River is impounded by the B. Everett Jordan Dam just above the confluence with the Deep River, providing storage for flood control, water supply, and releases to maintain downstream water quality.

Most of the basin below the confluence of the Haw and Deep Rivers lies in the Coastal Plain. Ground water from the water-bearing sandy deposits in the Coastal Plain provide a significant amount of water used in the basin.

WATER USE

Factors Affecting Water Demand

This basin has 24% of the state's residents and contains all or part of 114 municipalities in 27 counties, including six of the ten fastest growing counties in the state. Five of the 12 major metropolitan areas get all or part of their water supply from this basin. From 1990 to 1997 population in 16 counties in this basin grew by 10% or more, with seven counties having population growth of 20% or more.

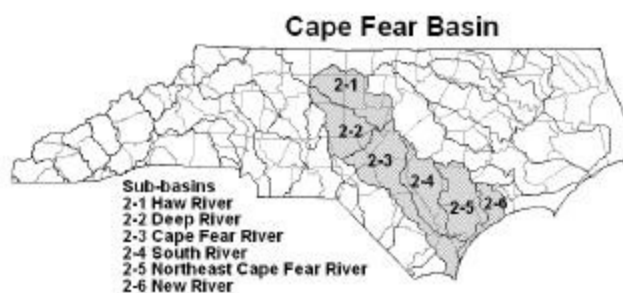
The influx of summer residents and visitors in the coastal counties greatly increases demand for water. For coastal areas of North Carolina it is common for summer demand to be 4 to 5 times the levels of winter demand.

Demand for water increases during the growing season, especially in agricultural areas and in communities where irrigated residential landscaping is popular.

Rapid growth in the livestock populations in coastal plain counties in this basin has also increased the withdrawals of ground water in the lower basin.

Total Water Use in Basin

The U.S. Geological Survey's (USGS) 1995 summary of water use estimated total water use in the basin (excluding electric power generation) at 433 million gallons per day (mgd), with just over two-thirds coming from surface water sources. Total basin population was estimated at 1,718,210 with total residential demand estimated at 106 mgd. About two-thirds of the residents were served by public water systems. Overall, public water systems supplied 38 mgd from ground water and 123 mgd from surface water for both residential and non-residential uses. The remaining residential water demand was met by 96 mgd of self-supplied ground water. In addition, 176 mgd of self-supplied surface water was withdrawn for non-residential water uses.



Local Water Supply Plans (LWSPs)

Units of local government that supply or plan to supply water to the public are required to develop a LWSP. The Division of Water Resources (DWR) reviews LWSPs and maintains a database of the LWSP information. This summary is based on data contained in the 1997 LWSPs.

LWSPs were submitted by 124 public water systems using water from this basin. (Green Level, Ossipee, Gibsonville, Holly Ridge, and North Brunswick SD have not submitted a 1997 LWSP, so their 1992 LWSP data were used in these summaries.) These systems supplied 218 mgd of water to 1,367,088 persons. The following discussion and table summarize the LWSP population served with water from this basin and water use for 1997.

1997 LWSP System Water Use from Basin (mgd)				
Sub-basin	LWSP Population	Residential Use	Non-resid. Use	Total Use*
Haw River	461,504	32.47	35.91	81.5
Deep River	105,666	7.89	7.60	20.8
Cape Fear River	547,222	31.89	35.21	85.9
South River	21,640	1.68	0.83	3.0
NE Cape Fear River	40,043	2.56	3.24	7.5
New River	191,013	7.83	8.02	19.0
Total	1,367,088	84.3	90.8	218.0

*Total Use also includes unaccounted-for water and system process water

Thirty-nine percent of the water supplied by these systems was for residential use, 42% was for non-residential uses, and 14% was unaccounted-for water.

The Cape Fear Basin supplies water to some of the state's fastest growing areas. LWSP systems expect to supply water to over 2.25 million persons by the year 2020, a 65% increase over 1997 levels. Their demand for water is projected to grow 73% from 218 mgd to 377 mgd over this period.

In the 1997 LWSPs, 19 of the 124 systems using water from this basin reported that their peak demands will exceed their water treatment capacity by 2010.

Water systems should maintain adequate water supplies and manage water demands to ensure that average daily use does not exceed 80% of their available supply. Data for 1997 indicated that 21 of the 124 LWSP systems in this basin had average demand above this threshold. By 2020, 46 systems project demand levels that will exceed 80% of their available supply.

Self-supplied Use

The USGS estimated that self-supplied users, excluding power generating facilities, accounted for 272 mgd of the 433 mgd total of water used from this basin, as shown in the table below. Industrial use comprised half of the self-supplied uses, followed by irrigation (22%), livestock (15%), domestic (12%), and commercial (1%).

1995 USGS Estimated Self-supplied Water Use in mgd						
Sub-basin	Domestic	Livestock	Industrial	Commercial	Irrigation	Total
Haw River	12.42	4.01	21.62	0.60	15.93	55
Deep River	6.66	8.98	18.02	0.23	9.07	43
Cape Fear	3.18	5.14	88.56	0.46	19.67	117
South River	3.28	10.18	0.73	0.23	6.97	21
NE Cape Fear	4.44	12.56	6.16	0.20	5.54	29
New River	3.70	0.72	0.00	0.08	2.39	7
Basin Total	34	42	135	2	60	272

Registered Water Withdrawals

Anyone withdrawing 1.0 mgd or more of surface or ground water for agricultural uses or 100,000 gallons per day for other uses is required to register that withdrawal with DWR. Registered withdrawals in this basin are summarized in the table below.

Registered Water Withdrawals for 1999						
Sub-basin	Agricultural		Non-agricultural		Total	
	#	mgd	#	mgd	#	mgd
Haw River	0	0	19	4.173	19	4.173
Deep River	0	0	10	0.12	10	0.12
Cape Fear River	1	0.625	52	99.81	53	10.435
South River	8	4.016	2	0.901	10	4.917
NE Cape Fear River	0	0	11	13.649	11	13.649
New River	0	0	4	11.37	4	11.37
Total	9	4.641	98	130.23	107	134.66

*Excludes water use for power generation

WATER AVAILABILITY

Surface water is used for the majority of overall water needs in the Cape Fear Basin, especially in the Haw, Deep, and Cape Fear sub-basins. However, in the South, Northeast Cape Fear and New River sub-basins, ground water provides most of the supply. LWSPs indicate water systems in this basin withdrew about 181 mgd of surface water and 28.5 mgd of ground water.

Surface water will continue to be the primary source of water for most of the residents of the basin. Local water supply plans show that 16 systems maintain reservoirs for all or part of their water supply. The combined demand on these reservoirs averaged about 137 mgd in 1997. The estimated available supply from these reservoirs is 269 mgd.

Jordan Lake holds by far the largest water supply storage capacity in the upper basin, with an estimated 100 mgd supply. Local governments currently hold allocations for 35 mgd of the supply. Allocations requests for an additional 7.5 mgd are still pending before the Environmental Management Commission, along with the needed interbasin transfer

certifications associated with these requests. In addition, the EMC has already initiated a third round of allocations.

Final approval is expected in 2001 for a major new reservoir on the Deep River near Randleman that will provide 48 mgd of water supply to Piedmont communities in both the Deep and Haw River sub-basins.

Thirteen of the surface water systems submitting local water supply plans have run-of-river intakes, seven of which are on the mainstem of the Cape Fear River. The 13 intakes supplied about 44 mgd of water in 1997. The total available supply from these intakes, based on information reported in LWSPs, is estimated to be about 148 mgd. This available supply from intakes below Jordan Lake will be re-evaluated during the third round of Jordan allocations and may be revised based on instream flow needs, water quality, and Jordan Lake storage considerations.

Ground water is the major source of water for residents of the South, New, and Northeast Cape Fear sub-basins and much of the coastal region of the Cape Fear River sub-basin. Throughout the basin are 61 systems with the combined capacity to pump 64 mgd of ground water.

The water-bearing geologic deposits of the Coastal Plain form a regional aquifer system that has historically provided plentiful, high-quality, low-cost water. However, ground water levels in some of the major aquifers have been declining because of over-pumping.

To ensure that ground water remains a reliable long-term water source in the Coastal Plain, the Environmental Management Commission adopted rules in December 2000 establishing a Capacity Use Area for 15 counties in the Central Coastal Plain, including Duplin, Onslow, and Wayne. If approved by the Legislature in 2002, permits would be required for all ground water withdrawals over 100,000 gallons per day within these counties. Pumping from the Black Creek and Upper Cape Fear aquifers would be limited or reduced in some areas. Affected water users will need to manage water demand and develop alternative sources of supply to offset these reductions.

INTERBASIN TRANSFERS OF SURFACE WATER

As noted earlier, some of the water supplied to residents of this basin comes from other basins. Regulatory approval is generally needed for transfers of 2.0 mgd or more. The table below summarizes the identified interbasin transfers in 1997 associated with this basin.

Estimated Interbasin Transfers based on 1997 data			
Sub-basin	Number	mgd OUT	mgd IN
Haw River	12	10.3	18.5
Deep River	17	4.4	7.6
Cape Fear River	22	10.0	0.3
South River	4	0	0.2
NE Cape Fear River	2	0	467
New River	1	0	0.1

While many of these transfers are of relatively small amounts of water, there are several significant, but offsetting, transfers affecting sub-basins of the Cape Fear Basin. In 1997 the Durham transferred about 18 mgd from the Neuse River Basin to a tributary of Jordan Lake (Haw River Basin), while the Cary/Apex system transferred over 9 mgd from Jordan Lake to the Neuse River Basin.

SUMMARY OF INFORMATION FROM 1997 LWSPs

! Total per capita water use for this basin was 159 gallons per day (gpd) in 1997 and is projected to increase to 163 gpd by 2010.

! 47 systems are not connected to another water supply system that can supply water in an emergency.

! 44 water systems purchased a total of 76 mgd from this basin. Thirteen of these systems had no purchase contract.

! 34 systems rely on purchase water as their sole supply.

! Based on LWSP data and other factors such as instream flow need, water treatment plant capacity, and water quality factors, the estimated raw water supply was 418 mgd for surface water and the 12-hour ground water supply was reported as 64 mgd.

! There are three regional water supply systems and 10 county-wide systems.

! In the coastal areas, water systems must plan to have adequate water supplies during the summer months when major seasonal peak demands for water occur.

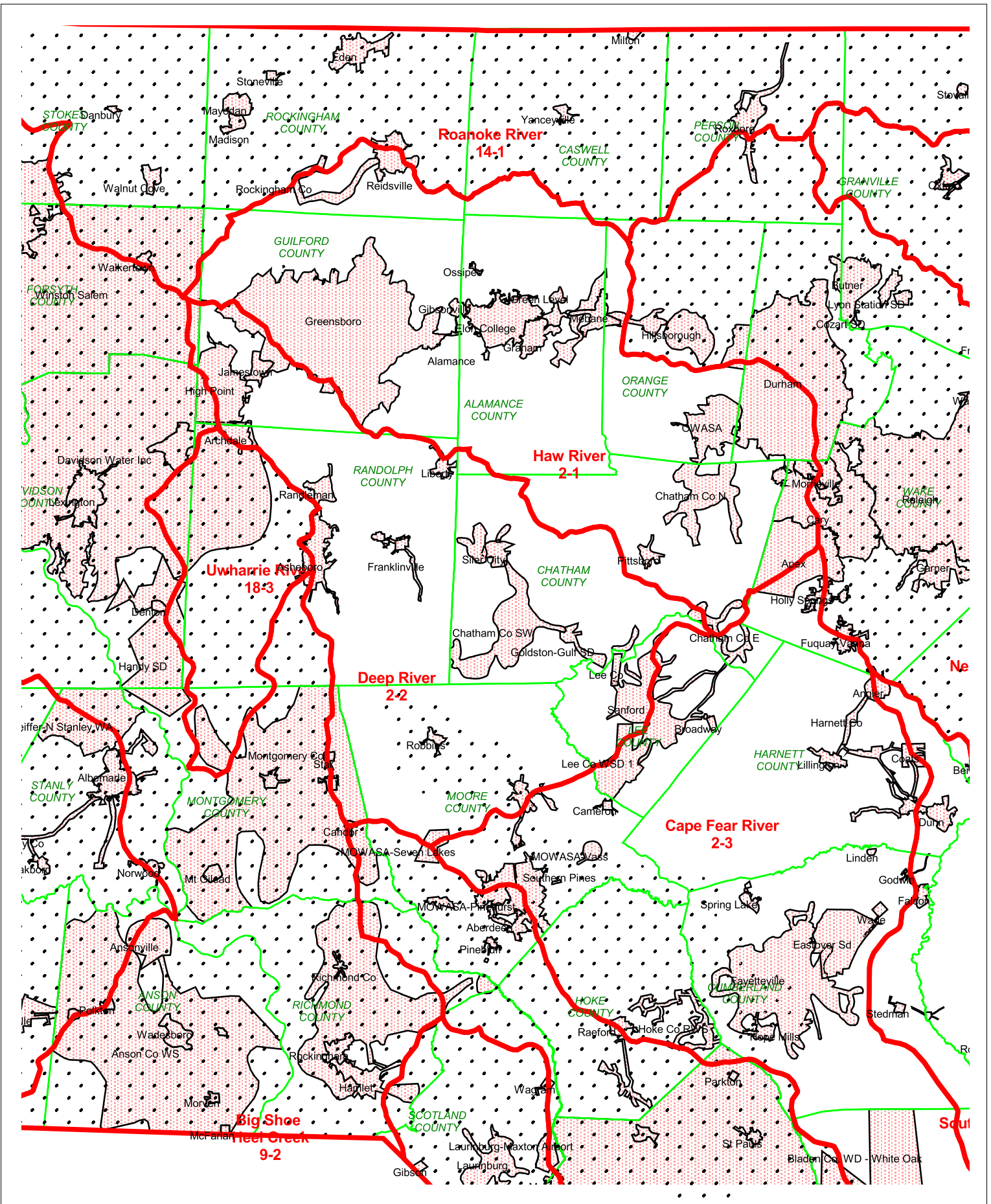
! 32 systems are planning additional water supplies totaling about 116 mgd in their 1997 LWSPs.

! Additional water needed for public water supply to ensure that water demands in 2010 do not exceed 80% of available supply is projected to be about 38 mgd basin-wide, with sub-basin needs as follows:

Deep River	0.1 mgd
Haw River	2.2 mgd
Cape Fear	31.3 mgd
NE Cape Fear	0.1 mgd
New River	3.2 mgd
South River	0.7 mgd

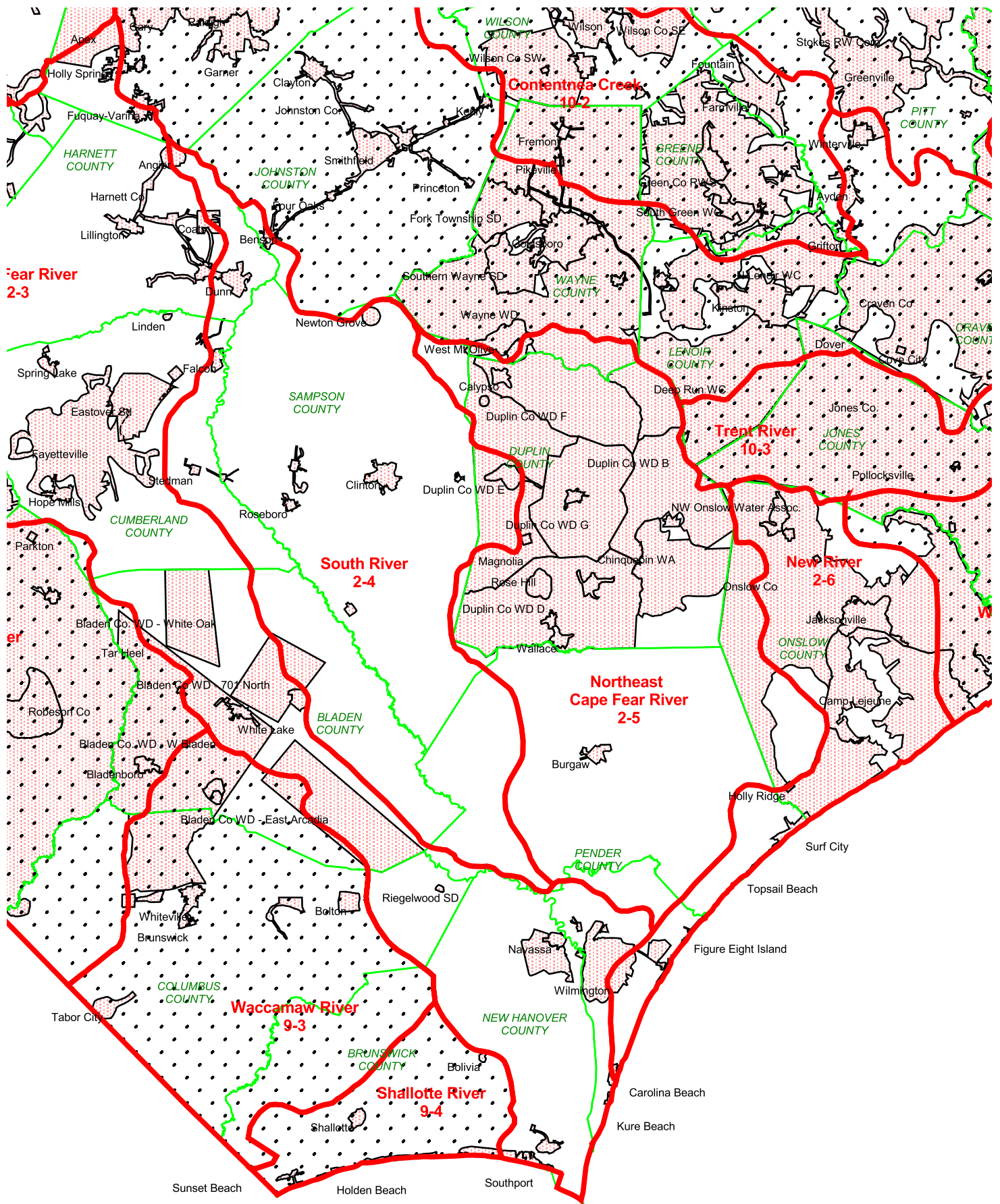
! LWSP systems reporting high Demand-to-Supply Ratios:

	1997	2010
Demand exceeds available supply	8	14
Demand exceeds 80% of available supply	20	34



Basin 2 Cape Fear River (Upper)
(unshaded basin)

LWSP service area
 County Boundary
 Basin Boundary



Basin 2 Cape Fear River (Lower)
(unshaded basin)

LWSP service area
 County Boundary
 Basin Boundary

CAPE FEAR RIVER BASIN (2)									
1997 and 2010 Population and Water Use as reported by LWSP systems using water from this basin.									
Water systems showing "Demand as % of Supply" above 80% should be actively managing demand and pursuing additional supplies.									
mgd = million gallons per day									
Water Systems by County	Water Source or Supplier	Year-round Service Population		Average Daily Demand (mgd)		Available Supply (mgd)		Demand as % of Supply	
		1997	2010	1997	2010	1997	2010	1997	2010
ALAMANCE									
*GREEN LEVEL	GRAHAM MEBANE	1536	1705	0.107	0.119	0.132	0.132	81%	90%
*OSSIPPEE SD	Bedrock Wells	300	425	0.024	0.034	0.03	0.53	80%	6%
ALAMANCE	BURLINGTON	257	313	0.033	0.04	0.5	0.5	7%	8%
BURLINGTON	Lake Mackintosh / Stoney Creek	43200	51967	14.517	18.227	48	48	30%	38%
ELON COLLEGE	Bedrock Wells / BURLINGTON	5045	5710	0.47	0.562	1.123	1.123	42%	50%
GRAHAM	Graham-Mebane Lake / BURLINGTON	11725	14250	7.158	8.211	12	12	60%	68%
HAW RIVER	BURLINGTON / GRAHAM	2183	3345	0.695	0.761	1.8	2.4	39%	32%
MEBANE	GRAHAM MEBANE	5100	11359	1.749	2.83	4	4	44%	71%
BLADEN									
BLADEN CO WD - 701 NORTH	Upper Cape Fear Aquifer	1240	2136	0.067	0.116	0.144	0.144	47%	81%
BLADEN CO WD - EAST ARCADIA	Upper Cape Fear Aquifer	496	1368	0.05	0.139	0.198	0.198	25%	70%
BLADEN CO WD - WHITE OAK	Black Creek Aquifer	1400	2860	0.063	0.129	0.31	0.31	20%	37%
ELIZABETHTOWN	Lower Cape Fear & Upper Cape Fear Aquifers	4181	4602	0.901	0.933	1.368	1.368	66%	68%
WHITE LAKE (s)	Black Creek & Upper Cape Fear Aquifers	1010	1085	0.411	0.575	0.95	0.95	43%	61%
BRUNSWICK									
*NORTH BRUNSWICK WSA (LELAND SD)	BRUNSWICK CO	3464	5000	0.494	0.561	1	1	49%	56%
BRUNSWICK CO (s)	LCFWSA	61959	83175	17.3	23.9	27.418	27.418	63%	87%
CASWELL BEACH (s)	BRUNSWICK CO	220	400	0.121	0.389	0.26	0.26	47%	150%
HOLDEN BEACH (s)	BRUNSWICK CO	910	2060	0.353	1.121	0.822	0.822	43%	136%
LONG BEACH WATER (s)	BRUNSWICK CO	4789	6797	1.044	1.514	1.32	1.32	79%	115%
NAVASSA	N BRUNSWICK SD	520	590	0.047	0.122	0.133	0.133	35%	92%
OCEAN ISLE BEACH (s)	BRUNSWICK CO	689	1057	0.386	1.171	0.92	0.92	42%	128%
SHALLOTTE	BRUNSWICK CO	1250	1380	0	0	0	0	65%	70%
SOUTHPORT	BRUNSWICK CO / Peedee Aquifer	5124	6756	0.607	0.801	0.771	1.116	79%	72%
SUNSET BEACH (s)	BRUNSWICK CO	1908	2350	0.501	1.358	1.085	1.085	46%	125%
YAUPON BEACH (s)	BRUNSWICK CO / Peedee Aquifer	891	1048	0.186	0.26	0.425	0.425	44%	61%
CHATHAM									
CHATHAM CO E	SANFORD	680	1218	0.069	0.116	0.3	1.8	23%	6%
CHATHAM CO N	Jordan Lake	5860	13163	0.759	3.149	6	12	13%	26%
CHATHAM CO SW	SILER CITY / GOLDSTON GULF SD	1793	4218	0.279	0.668	0.55	2.05	51%	33%
GOLDSTON-GULF SD	Deep River	1000	1257	0.387	0.458	2.2	2.2	18%	21%
PITTSBORO	Haw River	2022	3350	0.707	1.042	7.6	7.6	9%	14%
SILER CITY	Rocky River	5541	6929	2.8	3.4	3.8	5.8	72%	59%
COLUMBUS									
RIEGELWOOD SD	Cape Fear River	323	400	0.593	0.564	1	1	59%	56%
CUMBERLAND									
FALCON	DUNN	695	797	0.474	0.489	0.2	0.2	11%	13%
FAYETTEVILLE	Big Cross Cr./ Glenville Lake / Cape Fear River	159225	286500	27.809	47.936	92	92	30%	52%
FT BRAGG WTP	Little River	65000	65000	7.56	7.56	20	20	38%	38%
GODWIN	FALCON	203	237	0.012	0.0141	0.04	0.04	30%	35%
HOPE MILLS	FAYETTEVILLE	10433	14750	0.838	1.2	1.33	1.33	63%	90%
LINDEN	HARNETT CO	800	950	0.058	0.073	0.1	0.1	58%	73%
SPRING LAKE	Surficial Aquifer / FAYETTEVILLE	12050	15375	0.99	1.27	0.757	1.4	131%	90%
STEDMAN	Surficial & Upper Cape Fear Aquifers	668	887	0.108	0.089	0.157	0.157	69%	57%
WADE	Surficial Aquifer / Bedrock Wells	457	532	0.035	0.0611	0.11	0.204	32%	30%

* 1997 LWSP not submitted -1992 data used in analysis

(s) "demand as % of supply" based on seasonal demands

CAPE FEAR RIVER BASIN (2) (continued)									
1997 and 2010 Population and Water Use as reported by LWSP systems using water from this basin.									
Water systems showing "Demand as % of Supply" above 80% should be actively managing demand and pursuing additional supplies.									
mgd = million gallons per day									
Water Systems by County	Water Source or Supplier	Year-round Service Population		Average Daily Demand (mgd)		Available Supply (mgd)		Demand as % of Supply	
		1997	2010	1997	2010	1997	2010	1997	2010
DUPLIN (in proposed Central Coastal Plain Capacity Use Area)									
ALBERTSON WSD	Black Creek Aquifer / DUPLIN CO	1047	1259	0.141	0.1653	0.287	0.287	49%	57%
BEULAVILLE	Peedee & Black Creek Aquifers	1210	1263	0.136	0.151	0.396	0.396	34%	38%
CALYPSO	Upper Cape Fear Aquifer	487	460	0.105	0.106	0.317	0.317	33%	33%
CHINQUAPIN WA	Black Creek & Peedee Aquifers	3800	4500	0.233	0.4	0.648	0.648	36%	62%
DUPLIN CO COMBINED	Black Creek Aquifer / DUBLIN	3976	15079	0.4707	1.682	1.66	2.862	0%	0%
FAISON	Black Crk & U C Fear Aquifers / DUPLIN CO	752	712	0.576	0.594	0.702	0.702	82%	85%
GREENEVERS	Peedee & Black Creek Aquifers	981	1054	0.088	0.095	0.36	0.36	24%	26%
KENANSVILLE	Black Creek Aquifer	1026	1050	0.199	0.233	0.423	0.423	47%	55%
MAGNOLIA	Black Creek Aquifer	815	874	0.092	0.097	0.45	0.45	20%	22%
ROSE HILL	Black Creek Aquifer	1510	1708	0.316	0.36	0.792	0.792	40%	45%
TEACHEY	WALLACE	484	360	0.03	0.034	0.035	0.035	85%	96%
WALLACE	Peedee & Black Creek Aquifers	3386	3642	2.529	0.455	2.531	2.531	100%	18%
WARSAW	Black Creek & Upper Cape Fear Aquifers	3292	3643	0.444	0.463	0.396	0.58	112%	80%
GUILFORD									
*GIBSONVILLE	Bedrock Wells/BURLINGTON	3799	5815	0.399	0.576	1.131	1.381	35%	42%
GREENSBORO	Lake Higgins,Lake Brandt,Lake Townsend	199000	214000	40.3	50.482	36	71	112%	71%
HIGH POINT	City Lake, Oak Hollow Lake	71160	80063	15.519	22.277	21.44	31.44	72%	71%
JAMESTOWN	GREENSBORO / HIGH POINT	4329	6000	0.409	0.547	1.1	2.2	37%	25%
HARNETT									
ANGIER	HARNETT CO	3010	4114	0.349	0.508	2.02	2.02	17%	25%
COATS	HARNETT CO	1800	1900	0.13	0.184	0.72	0.72	22%	26%
DUNN	Cape Fear River	9731	12561	4.643	5.56	8	8	58%	70%
ERWIN	Swift Textiles Reservoir	4265	5373	0.619	0.739	1.5	1.5	41%	49%
HARNETT CO	Cape Fear River / DUNN/JOHNSTON CO	65000	101970	10.05	18.23	13.3	13.3	76%	137%
LILLINGTON	HARNETT CO	3003	4341	0.478	0.742	1.3	1.3	37%	57%
JOHNSTON									
BENSON	DUNN / JOHNSTON CO	4000	5175	1.77	1.98	1.72	1.72	103%	115%
LEE									
BROADWAY	Bedrock Wells / SANFORD	1070	1246	0.093	0.111	0.096	0.162	97%	68%
LEE CO	Deep River	145	213	0.756	0.854	1.5	1.5	50%	57%
LEE CO WSD I	SANFORD	1870	7166	0.179	0.574	2	2	9%	29%
SANFORD	Cape Fear River	21608	33000	8.18	10.3	12.6	12.6	65%	82%
MOORE									
CAMERON	Bedrock Wells	391	524	0.049	0.064	0.109	0.134	45%	48%
CARTHAGE	WTP Pond /Nick's Creek	2175	2400	0.3	0.49	0.5	0.5	60%	98%
MOORE CO (HYLAND HILLS - NIAGRA)	Bedrock Wells	267	277	0.021	0.0222	0.032	0.032	57%	69%
MOORE CO (PINEHURST)	Bedrock Wells/SOUTHERN PINES	7746	13019	1.61	3.492	2.417	4.999	67%	70%
MOORE CO (SEVEN LAKES)	Bedrock Wells	2685	4163	0.314	0.479	0.341	0.773	92%	62%
MOORE CO (VASS)	Little River	736	1000	0.094	0.1255	1.45	1.45	6%	9%
ROBBINS	Bear Cr./Cabin Cr./Brooks Res.	1950	2074	0.822	0.826	1.5	1.5	55%	55%
NEW HANOVER									
APPLE VALLEY	Peedee, Castle Hayne, & Surficial Aquifers	199	254	0.122	0.158	0.166	0.166	73%	95%
BRICKSTONE - MARSH OAKS	Peedee, Castle Hayne, & Surficial Aquifers	535	683	0.059	0.076	0.216	0.216	27%	36%
CAROLINA BEACH	Castle Hayne & Surficial Aquifers	4643	5468	0.841	0.99	0.89	1.322	94%	75%
FIGURE EIGHT ISLAND	Peedee Aquifer	125	169	0.4	0.532	0.564	0.564	71%	94%
KURE BEACH	Surficial & Peedee Aquifers	1251	1518	0.493	0.598	0.396	0.396	124%	151%
LOWER CAPE FEAR WSA	Cape Fear River	0	0	41.15	51.15	50	50	82%	102%
MONTEREY HEIGHTS	Peedee, Castle Hayne, & Surficial Aquifers	1095	1325	0.101	0.117	0.242	0.242	42%	48%

* 1997 LWSP not submitted -1992 data used in analysis

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		1997	2010	1997	2010	1997	2010	1997	2010
NEW HANOVER (continued)									
MURRAYVILLE	Peedee, Castle Hayne, & Surficial Aquifers	7671	10548	1.212	1.67	2.916	2.916	42%	57%
NEW HANOVER CO AIRPORT	WILMINGTON	0	0	0.019	0.024	0.025	0.025	75%	95%
NEW HANOVER CO FLEMINGTON	Surficial Aquifer	187	239	0.283	0.32	0.432	0.432	66%	74%
PRINCE GEORGE	Peedee, Castle Hayne, & Surficial Aquifers	596	760	0.052	0.068	0.18	0.18	29%	38%
RUNNYMEADE	Peedee, Castle Hayne, & Surficial Aquifers	728	929	0.052	0.068	0.144	0.144	36%	47%
WALNUT HILLS	Peedee, Castle Hayne, & Surficial Aquifers	781	997	0.072	0.094	0.148	0.148	48%	63%
WESTBAY	Peedee, Castle Hayne, & Surficial Aquifers	644	822	0.039	0.051	0.648	0.648	6%	8%
WILMINGTON	LCFWSA / Cape Fear River	66686	73200	12.336	19.853	40.5	45.85	30%	43%
WRIGHTSVILLE BEACH	Surficial Aquifer	3146	3580	1.374	1.554	1.222	1.222	112%	127%
ONslow (in proposed Central Coastal Plain Capacity Use Area)									
*HOLLY RIDGE	ONslow CO	723	870	0.09	0.108	0.09	0.09	100%	120%
CAMP LEJEUNE - Combined	Castle Hayne & Surficial Aquifers / ONslow CO	68700	68700	6.547	6.547	15.582	15.582	42%	42%
JACKSONVILLE	Peedee & Black Creek Aquifers	32489	38175	4.01	4.503	3.448	3.448	117%	132%
NW ONslow WATER	Peedee Aquifer	1000	1137	0.085	0.108	0.216	0.216	39%	50%
ONslow CO	Black Creek, Peedee, Castle Hayne, & Surficial Aquifer	81041	115000	6.07	9.455	9.286	13.286	64%	70%
RICHLANDS	Black Creek Aquifer	1250	2048	0.174	0.212	0.324	0.324	54%	65%
ORANGE									
OWASA	University Lake / Cane Creek	65000	80300	8.978	11.693	10.4	20.4	86%	57%
PENDER									
BURGAW	Peedee & Black Creek Aquifers	3519	4682	0.449	0.65	0.81	0.81	55%	80%
SURF CITY	Peedee Aquifer	910	1162	0.407	0.488	0.63	0.936	65%	52%
TOPSAIL BEACH	Peedee Aquifer	450	650	0.324	0.459	0.497	0.497	65%	92%
RANDOLPH									
ARCHDALE	HIGH POINT / DAVIDSON WS	8500	15000	0.564	1.359	1	2.75	56%	49%
FRANKLINVILLE	RAMSEUR	831	1200	0.047	0.065	0.09	0.09	52%	73%
LIBERTY	Bedrock Wells	2200	2598	0.297	0.3452	0.365	0.581	82%	59%
RAMSEUR	Sandy Creek	2524	2970	0.628	0.904	6.6	6.6	10%	14%
RANDLEMAN	Polecat Creek / ASHEBORO	3526	4398	1.226	1.51	2.5	3.5	49%	43%
ROCKINGHAM									
REIDSVILLE	Troublesome Cr./Lake Reidsville	14085	15200	3.36	8.058	19	19	18%	42%
ROCKINGHAM CO	REIDSVILLE	0	2082	0	0.176	0	0.55	0%	32%
SAMPSON									
AUTRYVILLE	STEDMAN	400	457	0.037	0.042	0.04	0.04	94%	104%
CLINTON	Black Creek, U Cape Fear, & L Cape Fear Aquifers	9211	11461	1.836	2.962	2.221	3.034	83%	98%
GARLAND	Black Creek & Upper Cape Fear Aquifers	766	950	0.094	0.614	0.173	0.569	55%	108%
HARRELLS WC	Black Creek Aquifer	1134	1306	0.097	0.113	0.306	0.306	32%	37%
NEWTON GROVE	Black Creek Aquifer	614	820	0.091	0.146	0.244	0.244	37%	60%
ROSEBORO	Black Creek & Upper Cape Fear Aquifers	1617	1842	0.297	0.329	0.54	0.54	55%	62%
SALEMBURG	Surficial Aquifer	660	763	0.12	0.14	0.24	0.24	50%	58%
SAMPSON CO WSD I	CLINTON / ROSEBORO / TURKEY / AUTRYVILLE	2988	3416	0.134	0.194	0.22	0.22	61%	88%
SAMPSON CO WSD II	CLINTON / DUNN / GARLAND	0	7425	0	0.919	0	1.6	0%	57%
TURKEY	Upper Cape Fear Aquifer	290	340	0.071	0.071	0.432	0.432	16%	16%
WAKE									
APEX	Jordan Lake	12000	58398	1.795	5.58	3.68	9.2	49%	61%
CARY	Jordan Lake / RALEIGH	82700	120900	11.99	11.77	15.82	18.57	76%	63%
FUQUAY-VARINA	HARNETT CO / GARNER	6249	18268	0.719	2.192	1.75	1.75	41%	125%
HOLLY SPRINGS	APEX	5492	35000	0.518	4.3	0.75	5	69%	86%
MORRISVILLE	CARY	2200	18700	0.46	3.8	1	3	46%	126%
WAYNE (in proposed Central Coastal Plain Capacity Use Area)									
MOUNT OLIVE	Upper Cape Fear Aquifer	6200	6755	1.183	1.432	1.872	1.872	63%	76%
WEST MOUNT OLIVE	MOUNT OLIVE	875	937	0.078	0.086	0.081	0.113	96%	76%

* 1997 LWSP not submitted -1992 data used in analysis