BASIN 9 LUMBER

BASIN DESCRIPTION

The Lumber Basin runs along the South Carolina border from the Sandhills to the Atlantic Ocean in Brunswick County. The basin is divided into four sub-basins. Despite its name the basin is actually four separate basins, three of which form headwaters of larger basins that are mostly in South Carolina.

Drainage from the Big Shoe Heel Creek sub-basin joins the Little Pee Dee River in Dillon County SC and continues flowing southeast. The Lumber River, which originates in Moore and Montgomery counties, flows southeasterly past Lumberton and turns southwesterly dividing Robeson and Columbus counties. The Lumber flows into South Carolina and merges with the Little Pee Dee east of Mullins, SC. The Little Pee Dee joins the Yadkin River, forming the Great Pee Dee River that later empties into the Atlantic Ocean near Georgetown, SC. The Waccamaw River is a Coastal Plain waterway flowing southwesterly from Columbus and Brunswick counties before merging with the same estuarine system as the Great Pee Dee River system. Streams in the Shallotte River sub-basin flow into the Atlantic Ocean, primarily through the Shallotte River and Lockwood's Folly River drainages.

WATER USE

Factors Affecting Water Demand

This basin has about 4% of the state's residents and contains all or part of 51 municipalities in ten counties. Two of the state's 12 major metropolitan areas depend on this basin for water supply. From 1990 to 1997 year-round population in three counties in this basin grew by 10% or more. Brunswick County (28%) and Hoke County (26%) ranked third and fifth, respectively, in population growth from 1990 to 1997. Most of the water supplying the rapidly growing coastal communities in Brunswick County comes from the Cape Fear River.

Total Water Use in Basin

The U.S. Geological Survey's (USGS) 1995 summary of water use estimated total water use in the basin at 69 million gallons per day (mgd), with slightly less than half coming from surface water sources. USGS estimated total basin population at 277,390. Residential demand was estimated at 19 mgd with about three quarters of this demand being supplied by public water systems. Overall, public water systems supplied 10.7 mgd from surface water and 17.7 mgd from ground water for both residential and non-residential uses. The remaining residential water demand was met by five mgd of self-supplied ground water. In addition, about 35 mgd of self-supplied water were withdrawn for non-residential water uses.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 37 public water systems using water from this basin. (Raeford has not submitted a 1997 LWSP, so its 1992 LWSP data was used in these summaries.) These systems supplied 32.5 mgd of water to 169,685 persons. The following table summarizes the LWSP population served with water from this basin and its water use for 1997.

1997 LWSP System Water Use from Basin (mgd)

Sub-basin	LWSP Population	Residential Use	Non-residential Use	Total Use*
Lumber River	129,357	8.43	13.22	25.3
Big Shoe Heel Cr.	22,506	2.41	1.95	4.8
Waccamaw River	17,822	1.36	0.63	2.4
Shallotte River	systems in this basin get water from Cape Fear River			
Total	169,685	12.2	15.8	32.5

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

For these systems non-residential water use accounted for 49% of total use with residential use consuming 37% and 11% was unaccounted-for water.

LWSP systems that use water from this basin expect to supply water to over 254,257 persons by the year 2020, a 50% increase over 1997 levels. Their demand for water is projected to grow 68% to 55 mgd by 2020.

In the 1997 LWSPs, five of the 37 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 indicates that four of the 37 LWSP systems addressed in this basin summary had average demand above this threshold. By 2020, 11 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 52 mgd of the 169 mgd total of water used from this basin, as shown in the table below. Irrigation use comprised 50% of the self-supplied uses, followed by industrial (21%), livestock (16%), domestic (13%), and commercial (<1%).

1995 USGS Estimated Self-supplied Water Use in mgd

Sub-basin	Domestic	Livestock	Industrial	Commercial	Irrigation	Total
Lumber River	2.61	4.39	5.59	0.13	10.64	23.4
Big Shoe Heel C	1.17	0.94	2.95	0.01	1.14	6.2
Waccamaw R.	0.70	0.95	0.00	0.14	1.20	3.0
Shallotte River	0.58	0.06	0.00	0.05	6.98	7.7
Basin Total	5.1	6.3	8.5	0.3	20.0	40.2

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
Lumber River	1	0.676	10	14.914	11	15.59
Big Shoe Heel Creek	0	0	2	1.082	2	1.082
Waccamaw River	0	0	0	0	0	0
Shallotte River	0	0	1	0.614	1	0.614
Total	1	0.676	13	16.61	14	17.286

The registered non-agricultural users listed above include eight golf courses, four industrial users, and one private water supply system. The four industrial users averaged nearly 11 mgd of water use in 1997.

WATER AVAILABILITY

LWSPs indicate that two water systems in these sub-basins withdraw about 10.9 mgd of surface water from river intakes in 1997. The available supply from these river intake sources, based on information reported in local water supply plans, is about 20 mgd.

There are 30 systems in this basin using ground water. They have an overall supply of 40.35 mgd of ground water based on the 12-hour yields supplied in their LWSPs. Some ground water level declines are occurring in portions of the southern Coastal Plain in response to increased pumping. DWR will continue to monitor this situation, since decreases in ground water availability can occur.

INTERBASIN TRANSFERS OF SURFACE WATER

Across the state many water users and systems move water between sub-basins to meet their needs. 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
Lumber River	4	0	0.21
Big Shoe Heel Creek	2	0	0
Waccamaw R.	0	0	0
Shallotte River	6	0	1.89

Water sales from Brunswick County to Long Beach, Holden Beach, Sunset Beach, Shallotte, and Carolina Blythe resulted in the transfers into the Shallotte Basin. Wastewater transfers from Carthage and Vass to Moore County account for most of the transfer into the Lumber Basin. Two minor transfers into Big Shoe Heel Creek involving Hamlet and Richmond County were not quantified.

SUMMARY OF INFORMATION FROM 1997 LWSPs

! Total per capita water use for the basin was 192 gallons per day (gpd) in 1997 and is projected to increase to 204 gpd by 2010.

! 16 systems are not connected to another water supply system capable of supplying water in an emergency.

! 23 water systems purchased 8.7 mgd of water from this basin. Eight of these systems had no purchase contract.

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

! The systems used 10.9 mgd from surface water and 21.6 mgd from ground water.

! The reported raw water supply was 20 mgd of surface water and a 12-hour ground water supply of 40.4 mgd.

! There are five county-wide systems and two regional water supply systems, Hoke County RWS and Brunswick County. The Brunswick County water system provides water to ten systems in the Lower Lumber River Basin region. The Robeson County water system has the potential for a regional system with current connections between eight other systems in the county.

! Nine systems were planning additional supplies totaling 13 mgd in the 1997 LWSPs, including 3 systems planning to connect to other systems.

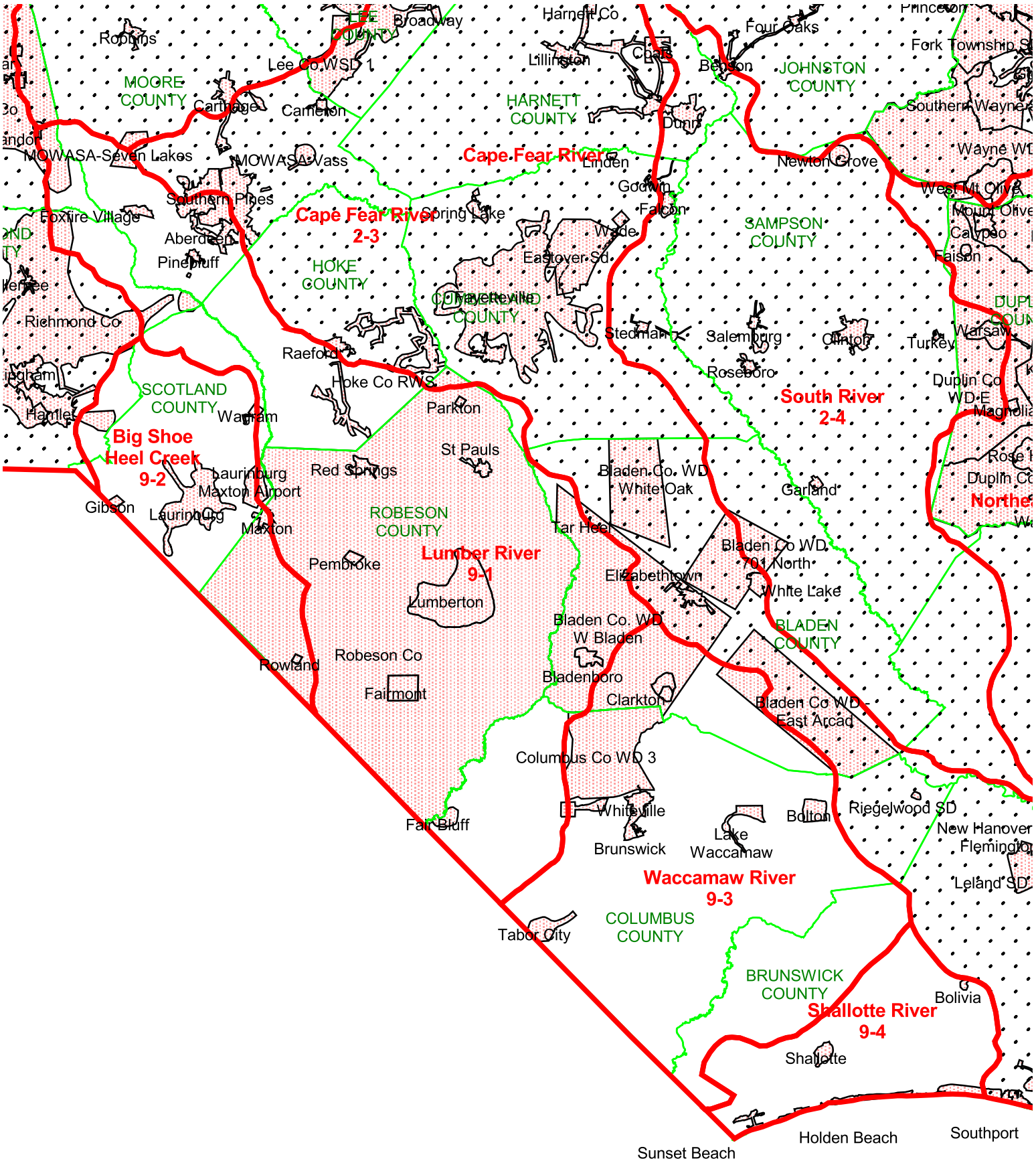
! The systems are projecting significant growth, 50% in population and 76% in water demand, by 2020.

! About 2.1 mgd of additional water supply will be needed by water systems to ensure that water demands in 2010 do not exceed 80% of available supply.

! Systems reporting high Demand-to-Supply Ratios:

	1997	2010
Demand exceeds available supply	1	4
Demand exceeds 80% of available supply	4	5

January 2001
State Water Supply Plan
Division of Water Resources, DENR



Basin 9 Lumber River

(unshaded basin)

LWSP service area | County Boundary | Basin Boundary

LUMBER RIVER BASIN (9)

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
BLADEN									
BLADEN CO WD - W BLADEN	Upper Cape Fear Aquifer / ELIZABETHTOWN	4282	6158	0.351	0.5	0.667	0.667	53%	75%
BLADENBORO	Peedee Aquifer	1980	2100	0.208	0.261	0.611	0.611	34%	43%
CLARKTON	Peedee & Black Creek Aquifers	757	782	0.13	0.162	0.378	0.378	34%	43%
DUBLIN	Upper Cape Fear Aquifer	447	450	0.05	0.051	0.05	0.05	100%	103%
SOUTH BLADEN WA	CLARKTON	554	529	0.069	0.068	0.069	0.1	100%	68%
TAR HEEL	Black Creek Aquifer	204	225	0.027	0.0314	0.21	0.21	13%	15%
COLUMBUS									
BOLTON	Black Creek & Surficial Aquifers	535	550	0.041	0.042	0.144	0.144	29%	29%
BRUNSWICK	Peedee & Black Creek Aquifers	306	280	0.043	0.047	0.18	0.18	24%	26%
CHADBOURN	Black Creek & Peedee Aquifers	2500	2760	0.499	0.574	0.933	0.933	53%	61%
COLUMBUS CO WD III	Unspecified ground water source	0	4623	0	0.578	0	0.864	0%	67%
FAIR BLUFF	Peedee & Black Creek Aquifers	1076	1105	0.126	0.131	0.468	0.828	27%	16%
LAKE WACCAMAW	Peedee & Black Creek Aquifers	1270	1440	0.194	0.288	0.255	0.255	76%	113%
TABOR CITY	Peedee & Black Creek Aquifers / GRAND STRAND	4100	4600	0.494	0.373	1.19	1.19	42%	31%
WHITEVILLE	Peedee & Black Creek Aquifers	7800	9290	1.191	1.805	2.26	2.726	53%	66%
HOKE									
*RAEFORD	Black Creek Aquifer	3910	4800	1.725	2.461	2.15	2.69	80%	91%
HOKE CO RWS	Bedrock Wells/ NC DEPT. OF CORRECTIONS	12700	23800	0.902	2.327	1.857	2.181	49%	107%
MOORE									
ABERDEEN	Bedrock Wells	3648	6074	0.897	1.278	1.764	1.764	51%	72%
FOXFIRE VILLAGE	Bedrock Wells	403	489	0.055	0.0588	0.152	0.17	36%	35%
MOORE CO (ADDOR)	SOUTHERN PINES	0	59	0	0.002	0	0.75	0%	0%
MOORE CO (THE CAROLINA)	SOUTHERN PINES	0	0	0	0	0	0	0%	0%
PINEBLUFF	Bedrock Wells / SOUTHERN PINES	979	1400	0.099	0.155	0.592	0.582	17%	27%
SOUTHERN PINES	Drowning Creek	12175	14456	2.69	4.92	4	8	67%	62%
ROBESON									
FAIRMONT	Black Creek Aquifer	2550	2746	0.285	0.644	1.116	1.116	26%	58%
LUMBERTON	Lumber River	23112	29898	8.423	12.553	19.6	19.6	43%	64%
MAXTON	Black Creek Aquifer	3135	3452	0.338	0.457	0.324	0.684	104%	67%
PARKTON	Black Creek Aquifer / ROBESON CO	531	604	0.205	0.213	0.288	0.688	71%	31%
PEMBROKE	Black Creek Aquifer	2660	3906	0.434	0.663	0.792	1.36	55%	49%
RED SPRINGS	Black Creek & Upper Cape Fear Aquifers / ROBESC	4000	4580	0.783	0.933	1.02	1.32	77%	71%
ROBESON CO	Black Creek Aquifer / LUMBERTON / RED SPRINGS MAXTON / ROWLAND / PARKTON / SAINT PAULS	49700	66200	9.302	10.928	12.5	14	71%	78%
ROWLAND	Black Creek Aquifer	1180	1400	0.25	0.282	0.576	0.576	43%	49%
ST. PAULS	Black Creek & Upper Cape Fear Aquifers	2900	3160	0.434	0.4988	0.818	0.818	53%	61%
SCOTLAND									
GIBSON	Bedrock Wells	787	820	0.096	0.099	0.295	0.295	33%	34%
LAURINBURG	Bedrock Wells	15907	18104	2.841	4.659	3.59	6.19	79%	75%
LAURINBURG/MAXTON AIRPORT	Bedrock Wells	31	31	1.436	2.29	2.03	2.03	72%	113%
SCOTLAND CO N	LAURINBURG / MAXTON AIRPORT AUTH.	2100	2235	0.007	0.034	0.3	0.3	2%	11%
SCOTLAND CO S	LAURINBURG	643	685	0.022	0.033	1	1	2%	3%
WAGRAM	Bedrock Wells	823	953	0.07	0.0883	0.165	0.165	43%	54%

* 1997 LWSP not submitted -1992 data used in analysis