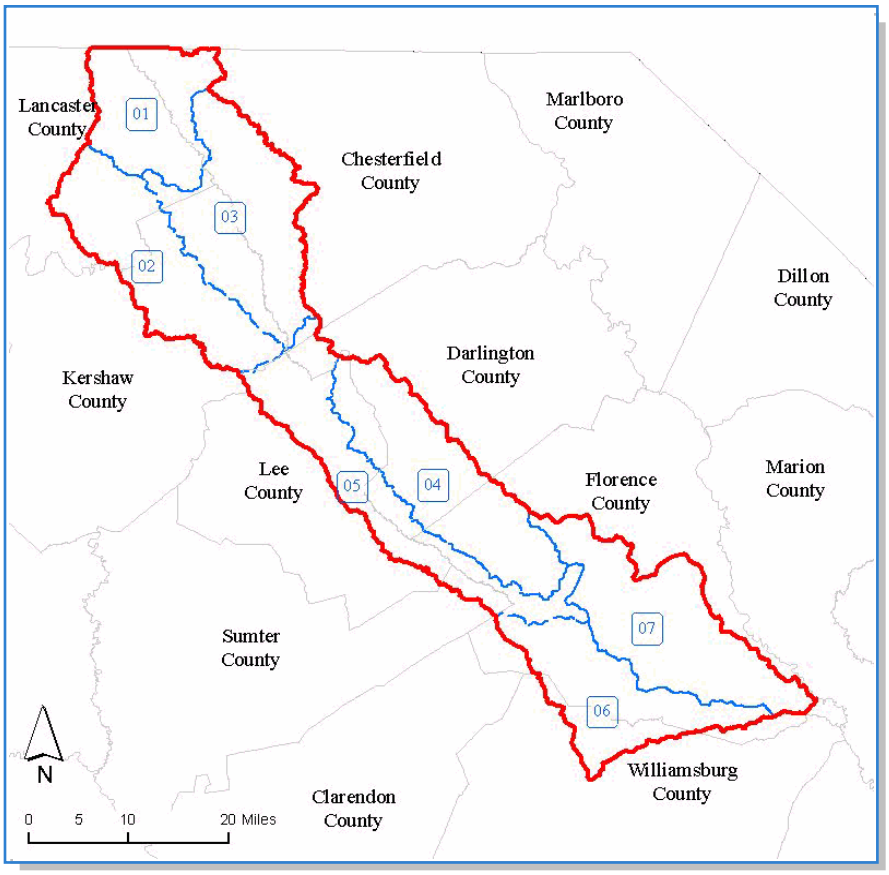
LYNCHES Subbasin

August 31, 2007

An Assessment of the Lynches Subbasin

Hydrologic Unit Code (8 Digit): 03040202



WATERSHED (10-digit HUC)
(E.g., 01 = 0304020201)

- 01 Headwaters Lynches River
- 02 Little Lynches River
- 03 Upper Lynches River
- 04 Sparrow Swamp
- 05 Middle Lynches River
- 06 Lake Swamp-Lynches River
- 07 Lower Lynches River

NRCS
Natural Resources Conservation Service

EXECUTIVE SUMMARY

Watershed Description

The watershed originates in the Piedmont near Waxhaw, North Carolina, and drains approximately 1385 square miles (887,000 ac) in South Carolina. The Lynches River is joined by the Little Lynches Creek (which becomes Bell Branch), Sparrow Swamp, Big Swamp Branch and Lake Swamp before it drains into the Pee Dee River, (about 25 miles south of Marion, SC) to form the Lower Pee Dee subbasin.

The Lynches subbasin lies in the Piedmont (45), Southeastern Plains (65), and Middle Atlantic Coastal Plain (63) ecoregions (Figure 1). A brief description of the Level III ecoregions in this watershed is available in this document's appendix. A more detailed description of the Level III and Level IV Common Resource Areas (Ecological Regions) is available online (See Griffith *et al.* 2002 in References section.).

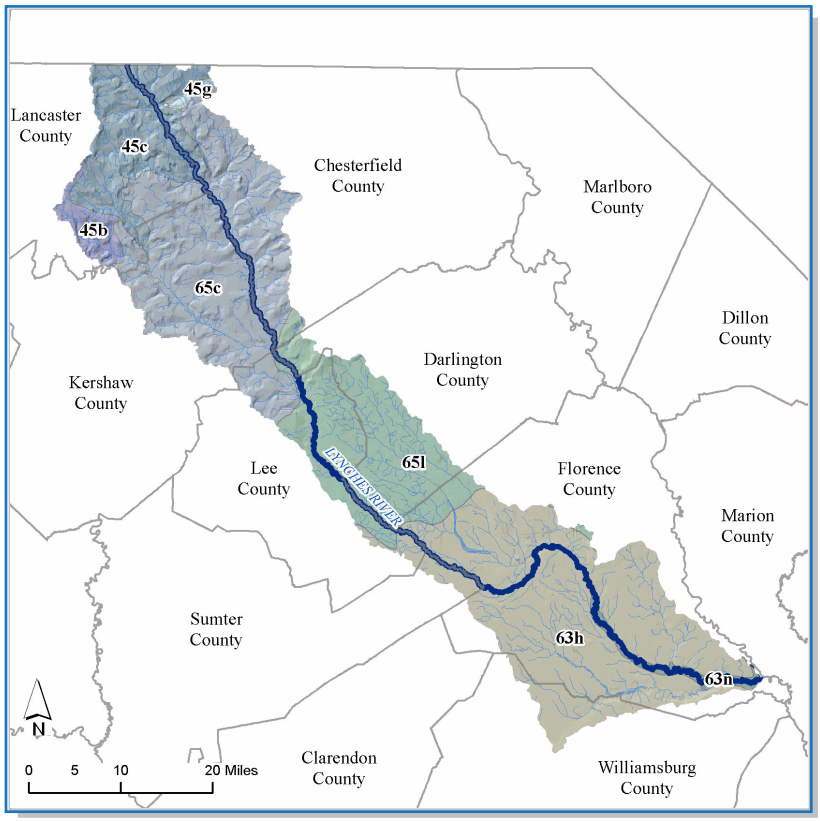


FIGURE 1:
LEVEL IV ECOLOGICAL REGIONS

	45b	Southern Outer Piedmont
	45c	Carolina Slate Belt
	45g	Triassic Basins
	63h	Carolina Flatwoods
	63n	Mid-Atlantic Floodplains and Low Terraces
	65c	Sand Hills
	65l	Atlantic Southern Loam Plains

EXECUTIVE SUMMARY

Land Use/Land Cover

The watershed is rural with no major urban centers; the largest urban clusters in the watershed are Lake City and Bishopville. Based on NASS data, agricultural land use in the Piedmont (Lancaster, Chesterfield and Kershaw counties) tends to be mixed (rowcrops, pasture and hay) while agricultural land is predominantly in crops (grains, oilseeds, and tobacco, amongst others) in the lower reaches of the watershed.

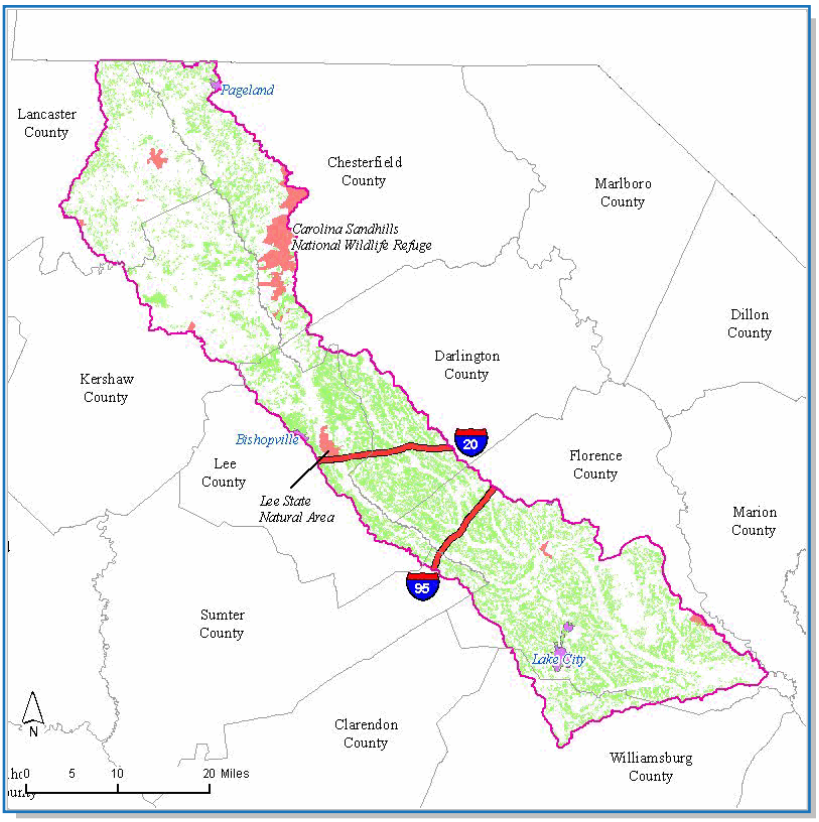


FIGURE 2:
MAJOR LAND USE/LAND COVER CATEGORIES

- FSA Farm Fields
- Urban Areas
- Parks & Land Under Easement
- Other Land

Table 1:
MAJOR LAND USE/LAND COVER CATEGORIES

	Acres	% of Watershed
Watershed (Total)	887,128	-
Urban Area	6,047	1%
Parks/Land Under Easement (not NRCS)	24,495	3%
Farm Service Agency Designated Farm Fields	256,693	29%

EXECUTIVE SUMMARY

Table 2:
AGRICULTURAL LAND USE: FSA ACREAGE AND ESTIMATED FARM FIELD USE FROM THE 2002 AG CENSUS
(NASS Whole County Data Used. Cropland includes: Field Crops, Orchards, and Specialty Crops.)

County	FSA Fields (Acres)	% Pasture (Estimated)	% Cropland (Estimated)	% Hayland (Estimated)
Chesterfield	26,350	18%	62%	20%
Darlington	39,942	2%	94%	3%
Florence	101,906	4%	94%	3%
Kershaw	19,489	21%	54%	25%
Lancaster	18,866	37%	22%	41%
Lee	38,119	3%	94%	4%
Sumter	3,392	7%	88%	5%
Williamsburg	8,629	5%	92%	3%

Summary of Resource Concerns

The following is a summary of resource concerns for the watershed. Each resource concern has a more detailed analysis provided in its corresponding section.

EXECUTIVE SUMMARY

Soils
This is a large and diverse subbasin. Primary limitations on farmland are related to water (hydric soils) in the southeastern counties (Darlington, Lee, Florence, Sumter and Williamsburg Counties). Highly erodible lands are mostly limited to the Piedmont and some Sand Hills ecoregions in Lancaster and Chesterfield Counties. Droughty soils will generally be concentrated in the Sand Hills ecoregion (Chesterfield, Kershaw, Lancaster, and Lee Counties).

Water Quantity
Awaiting SCDNR's 2007 state water assessment.

Water Quality
Fecal coliform, biological (aquatic community), pH and dissolved oxygen impairments.

Plant Condition
The most prominent crops in the subbasin include cotton, corn, wheat and rye for grain, soybeans and tobacco.

Fish, Wildlife, and Native Plants
According to SC DNR's "Comprehensive Wildlife Conservation Strategy: 2005 - 2010" (see SCDNR 2005 in References section), the following applies to this subbasin: Biologists have identified habitat protection as one of the most important actions to ensure the protection of South Carolina priority species. Loss and fragmentation of habitat have been identified as a major threat to many of the species listed as threatened and endangered in South Carolina.

Domestic Animals
Significant grazing populations are located in the Piedmont. Confined livestock is dominated by turkey and is mainly in the upper half of the subbasin.

Economic and Social Factors
Despite the subbasin being fairly rural, cropland loss between 1997 and 2002 was well above the state average.

There is increasing development pressure in this basin in Lancaster County due to single-family homes. As land values and prices in the northern part of the county skyrocket, people are building and moving into this area. The excellent reputation of the school districts in this area is fueling the move. Also, as children of families in the county move home and older generations who lived in the northern US during their working years retire, more and more single-family homes are being built in this basin, resulting in scattershot development and a move toward more mini-farms.

EXECUTIVE SUMMARY

Progress on Conservation

Table 3:
A SUMMARY OF NRCS APPLIED CONSERVATION TREATMENTS (ACRES)
(See Appendix for NRCS Conservation Practices used for Conservation Treatment Categories.)
(Applied practice data is reported on a fiscal year basis commencing on October 1st)

Conservation Treatments	2004	2005	2006	Total
Buffers and Filter Strips	153	127	73	353
Conservation Tillage	1,457	-	447	1,904
Erosion Control	893	1,812	1,392	4,097
Irrigation Water Management	-	314	91	405
Nutrient Management	1,509	1,058	3,053	5,620
Pest Management	1,003	871	900	2,774
Prescribed Grazing	442	264	190	896
Trees and Shrubs	2,389	1,150	522	4,061
Wetlands	3,624	93	516	4,233
Wildlife Habitat	1,211	512	1,547	3,270

Table 4:
LANDS REMOVED FROM PRODUCTION BY FARM BILL PROGRAMS (WHOLE COUNTY DATA SHOWN)

County	Conservation Reserve Program (ac) 2005	Conservation Reserve Program (ac) 1986 - 2005	Grassland Reserve Program (ac) 2005	Farmland & Ranch Protection Program (ac) 2005	Wetland Reserve Program (ac) 2005
Chesterfield	17,622	390,359	267	-	81
Darlington	3,126	85,065	-	-	2,251
Florence	3,545	60,525	-	-	19
Kershaw	5,139	136,864	-	-	-
Lancaster	2,061	53,475	-	-	-
Lee	13,138	231,561	-	-	2,490
Sumter	10,246	138,931	83	921	4,649
Williamsburg	20,532	293,154	-	-	2,405

Table 5:
APPROVED TOTAL MAXIMUM DAILY LOAD (TMDL)
(See SCDHEC 2007 (a) in Reference Section.) - SCDHEC Contact: Matt Carswell - (803) 898-3609

TMDL Document	Numberof Stations	Parameter of Concern	Status	WQMS ID Standard Attained
Big Swamp	1	Fecal Coliform	Approved & Implementing	-
Fork Creek	2	Fecal Coliform	Approved & Implementing	-
Hanging Rock - Lick Creek	2	Fecal Coliform	Completed & Approved	-
Pee Dee Basin	6	Fecal Coliform	Completed & Approved	PD-113

Table 6:
OTHER PLANS, ASSESSMENTS, AND PROJECTS IN THE WATERSHED

Organization	Description	Contact	Telephone
SCDNR	Lynches Scenic River Project	Lynches Scenic River Project Manager	843-953-9335
NRCS	Conservation Security Program Priority Watershed (2005)	Craig Ellis	803-253-3930
SCDHEC	Watershed Water Quality Assessment: Pee Dee River Basin (2000)	Roger Hall	803-898-4142

RESOURCE CONCERNS

Other Watershed Considerations

A portion of the Carolina Sandhills National Wildlife Refuge/Sandhills State Forest is situated in the subbasin. The 2,839-acre Lee State Area (about 4 miles southeast of Bishopville) also lies in the subbasin.

The Lynches River is designated as a Scenic River between US 15 in Lee County and the eastern boundary of Lynches River County Park in Florence County. This 54-mile scenic section flows through four counties (Darlington, Florence, Lee and Sumter). The Scenic River Council is currently working on getting a scenic designation for an additional length of the river.

RESOURCE CONCERNS

Soils

The Lynches subbasin contains two major land resource areas: the Piedmont, which makes up about 20% of the area and occurs only in Lancaster and Chesterfield counties, and the Coastal Plain, which comprises the remaining 80% of the subbasin. About half (44%) of land has limitations due to wetness (Table 7). Almost all of the wetness occurs in soils in the Coastal Plain portion of the subbasin and is associated with hydric soils on upland flats (Figure 5, Table 10). Droughtiness is a major concern in about 28% of the area (Table 7) and occurs mostly in the sandy soils of the Sand Hills in the upper part of the subbasin (Figure 1). Low soil organic matter in these sandy soils is a soil health concern. Erosion is a major resource concern in the upper portion of the subbasin especially in Lancaster and Chesterfield counties (Figure 4). Nearly all of the acreage in the Piedmont portion of the subbasin, and about 50% of the acreage in Sand Hill portion of Chesterfield County is highly erodible. In the Coastal Plain portion of the subbasin in the Sand Hills area of Kershaw County, only about 10% of the land is classified as potentially highly erodible (Figure 4, Table 9). Over 60% of the land in the Lynches subbasin is either prime farmland (31%) or statewide important farmland (30%) and occurs mostly in the middle and lower parts of the subbasin (Figure 3, Table 8).

Table 7:
LAND CAPABILITY CLASSES (See NRCS 2007 [a] and [b] in References section.)

Percentages are based on the whole watershed (887,128 ac).

Land Capability Class 1	Acres	Percent
1 - Slight limitations	63,302	7%

	% Land by Subclass Limitation					
	Erosion (e)		Wetness(w)		Droughtiness (s)	
Land Capability Classes 2-8	Acres	Percent	Acres	Percent	Acres	Percent
2 - Moderate limitations	49,188	6%	148,260	17%	40,411	5%
3 - Severe limitations	35,754	4%	151,762	17%	77,757	9%
4 - Very severe limitations	42,017	5%	13,763	2%	100,745	11%
5 - No erosion hazard, but other limitations	-	-	6,872	1%	-	-
6 - Severe limitations; unsuitable for cultivation; limited to pasture, range, forest	14,047	2%	25,702	3%	18,204	2%
7 - Very severe limitations; unsuitable for cultivation; limited to grazing; forest, wildlife habitat	8,176	1%	38,255	4%	7,351	1%
8 - Miscellaneous areas; limited to recreation, wildlife habitat, water supply	-	-	-	-	416	0%

RESOURCE CONCERNS

Prime Farmland

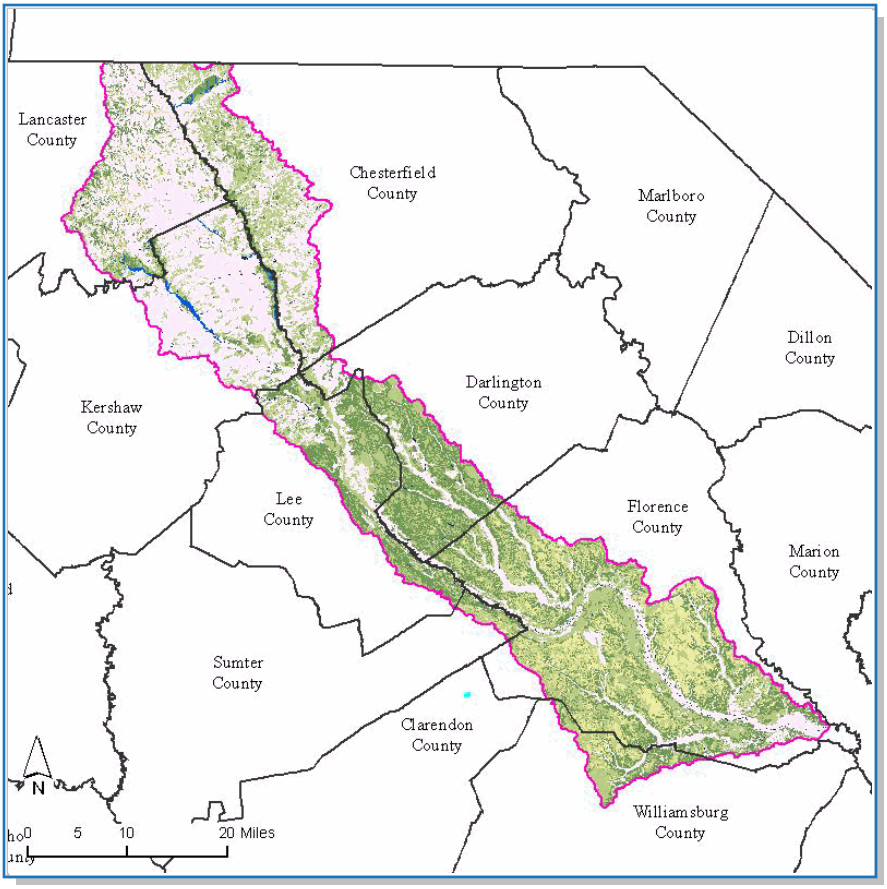


FIGURE 3:
PRIME FARMLAND
(See NRCS 2007 [a] and [b] in References section.)

Table 8:
PRIME FARMLAND

Prime Farmland Categories	Acres	Percent of Land
All areas are prime farmland	198,022	22%
Farmland of statewide importance	267,257	30%
Not prime farmland	344,518	39%
Prime farmland if drained	65,875	7%
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	5,469	1%
Prime farmland if irrigated	0	0%
Prime farmland if irrigated and drained	0	0%
Prime farmland if protected from flooding or not frequently flooded during the growing season	5,909	1%

RESOURCE CONCERNS

Highly Erodible Land

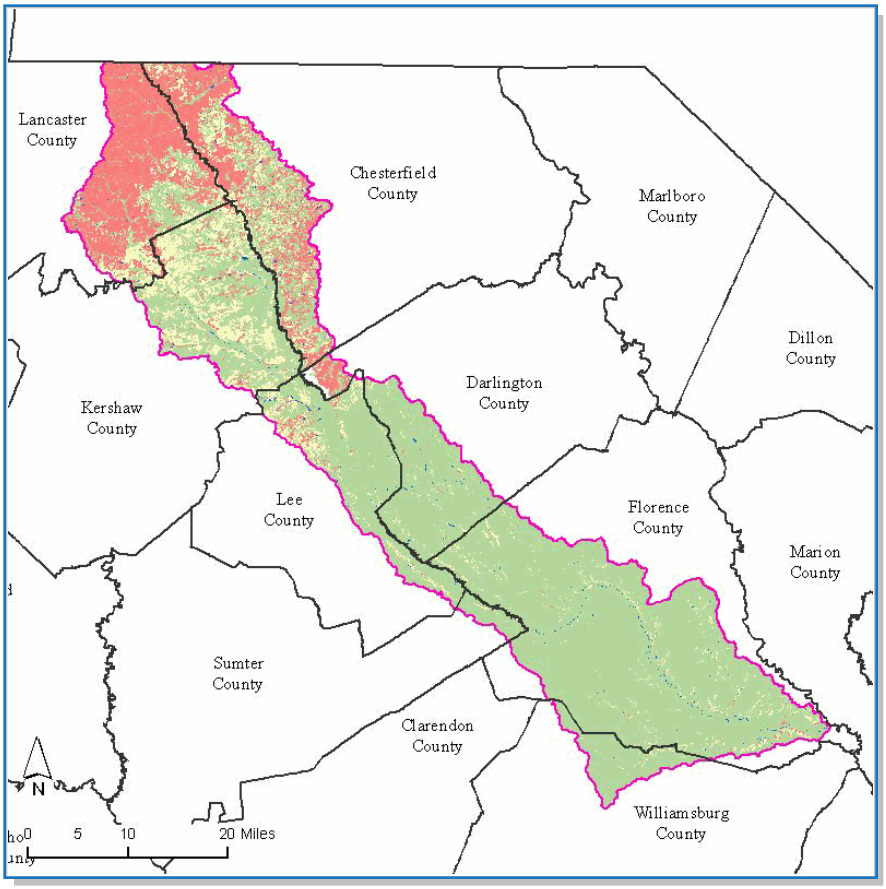


FIGURE 4:
HIGHLY ERODIBLE LAND
(See NRCS 2007 [a] and [b] in References section.)

Table 9:
HIGHLY ERODIBLE LAND

Highly Erodible Land Categories	Acres	Percent of Watershed
Highly erodible land	156,195	18%
Not highly erodible land	623,876	70%
Potentially highly erodible land	101,130	11%

RESOURCE CONCERNS

Hydric Soils

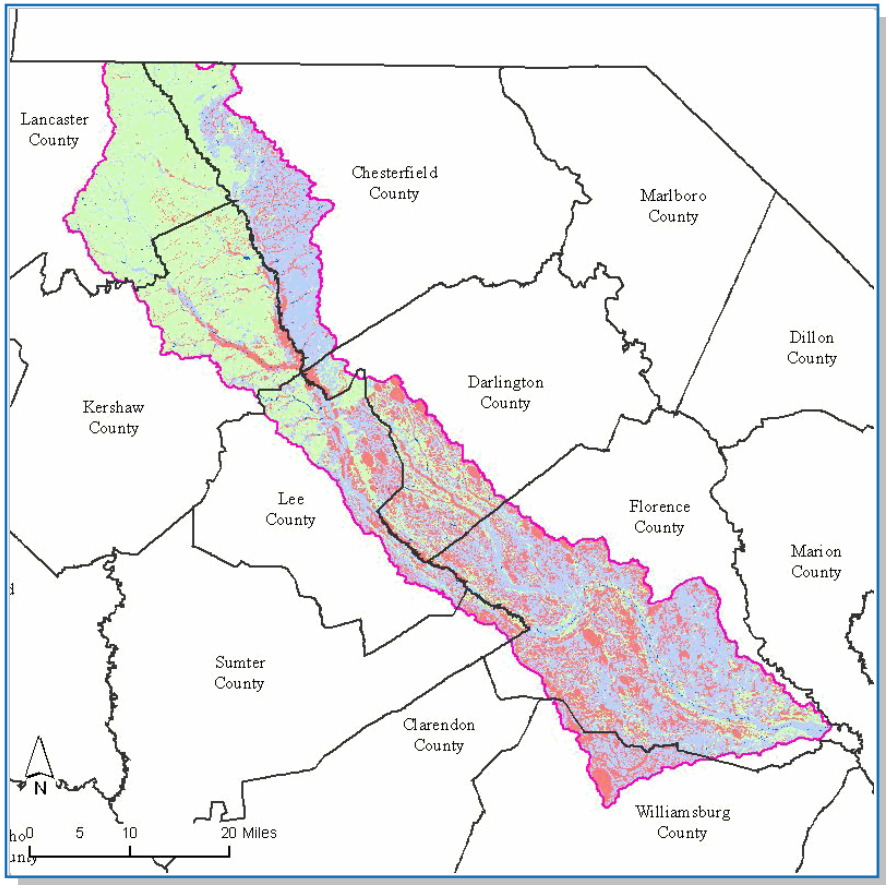


FIGURE 5:
HYDRIC SOILS
(See NRCS 2007 [a] and [b] in References section.)

Table 10:
HYDRIC SOILS

Hydric Soils Categories	Acres	Percent of Watershed
All Hydric	187,584	21%
Not Hydric	356,787	40%
Partially Hydric	342,681	39%

RESOURCE CONCERNS

Water Quantity

A segment of the subbasin lies in the SCDHEC Notice of Intent Area while the other lies in the more restrictive Capacity Use Area. More importantly, the watershed lies over two cones of depression in the lower reaches of the Lynches River. Irrigation demand is strongest in Sumter and Florence counties, coinciding with the Southern Atlantic Loam plains (Figure 1). Another agricultural use for water is for confined-livestock and grazing-livestock watering and, while this use is less intensive that for irrigation, it is typically more widespread. Livestock concentrations are greatest in the upper reaches of the watershed (Figure 9).

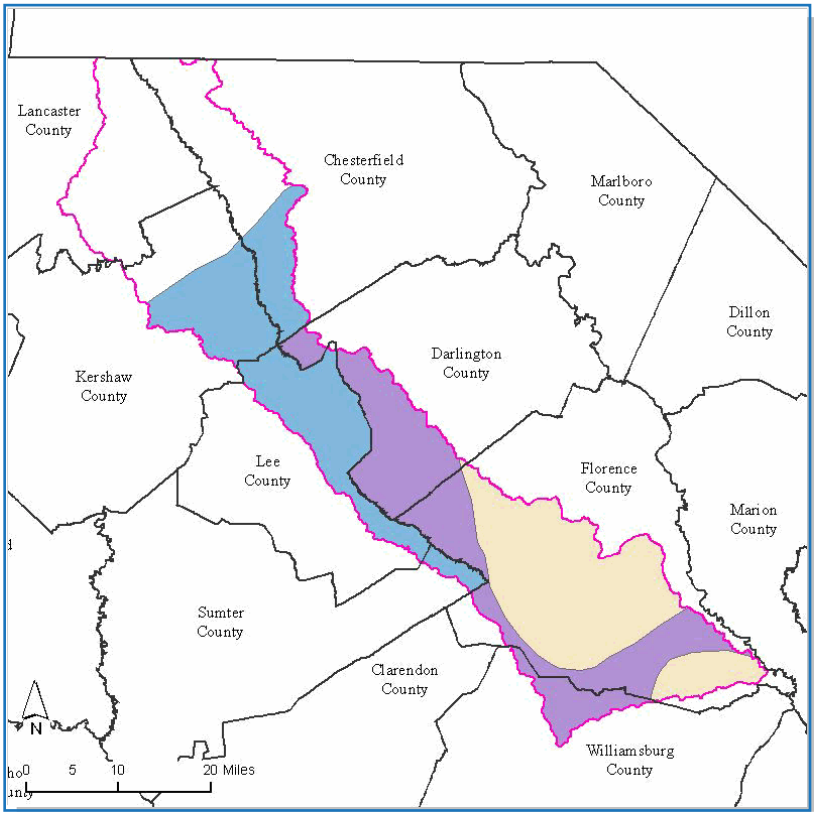


FIGURE 6:
WATERSHED RELATIVE TO CAPACITY USE AREAS, NOTICE OF INTENT AREAS, AND CONES OF DEPRESSION

Table 11:
CAPACITY USE, NOTICE OF INTENT, AND CONES OF DEPRESSION AREA IN WATERSHED
(See SCDHEC 2007 [c] and SCDNR 2004 in Refrerences Section.)

Area	Percent of Watershed
% Watershed in Cone of Depression and Capacity Use (CU) Area	23%
% Watershed in SCDHEC Capacity Use (CU) Area	24%
% Watershed in SCDHEC Notice of Intent (NOI) Area	23%

RESOURCE CONCERNS

Water Quantity Cont.

Table 12:
INDICATORS OF IRRIGATION WATER USAGE (WHOLE COUNTY DATA ARE USED)
(See NASS 2002 and SCDNR 2004 in References Section)

County	Total Irrigated Water Used MGD	Total NASS Cropland (ac)	Cropland Under Irrigation (ac)	Percent Cropland Under Irrigation	Water Use Gal/Ac/Day for Irrigated Land
Chesterfield	1.50	50,579	1,269	2.5	1,182
Darlington	3.53	96,968	948	1.0	3,724
Florence	5.29	103,576	2,505	2.4	2,112
Kershaw	0.45	23,510	903	3.8	498
Lancaster	0.95	31,049	443	1.4	2,144
Lee	0.77	84,966	1,072	1.3	718
Sumter	13.18	85,223	5,537	6.5	2,380
Williamsburg	2.31	100,908	758	0.8	3,047

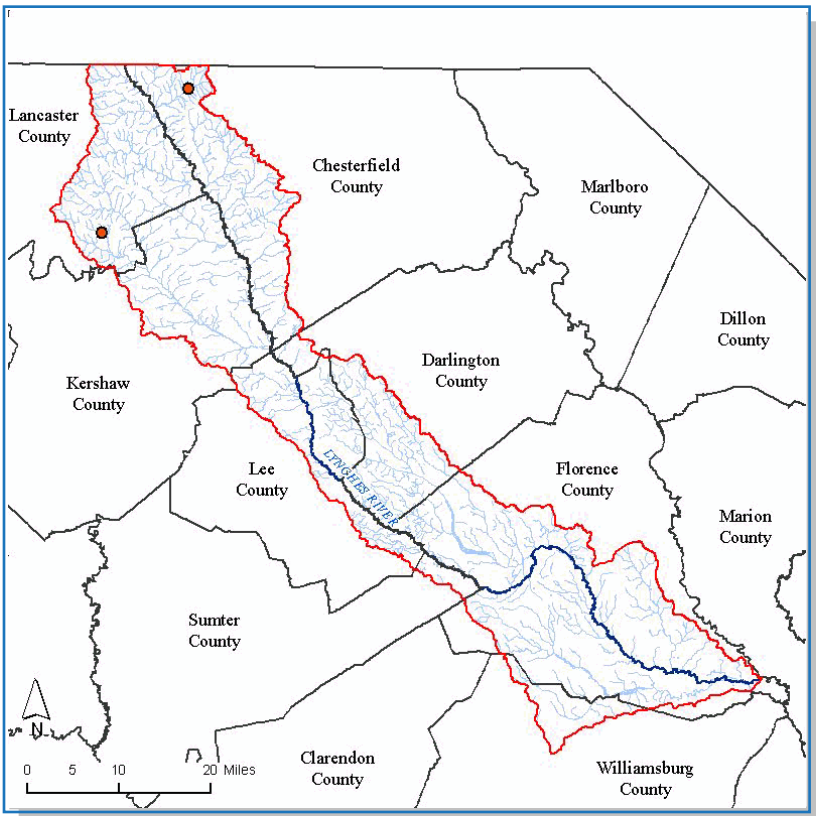


FIGURE 7:
NRCS ASSISTED FLOOD CONTROL STRUCTURES IN WATERSHED

- Flood Control Structure
- Main River
- Hydrography

Table 13:
NRCS IMPLEMENTED FLOOD CONTROL STRUCTURES

Number of Structures (in Watershed)	Maximum Storage (AcFt)	Number of Structures by Hazard Class			
		High	Low	Significant	Unclassified
2	3,655	0	2	0	0

RESOURCE CONCERNS

Water Quality

The number of surface water quality impairments is shown in Table 15 resulting in a "303(d)" listing of that Water Quality Monitoring Site (WQMS). Table 5 indicates what progress has been made to address surface water quality through the Total Maximum Daily Load (TMDL) process. Once a TMDL plan is approved, the WQMS is removed from the 303(d) list even though the standard may not have been attained. Note that standards for total nitrogen, total phosphorus, and chlorophyll-a only exist for lakes; therefore, no stream in the state can be listed for any of these three parameters.

The primary concern in the subbasin is fecal coliform. This concern will be addressed through ongoing TMDLs (Table 5). Other impairments of biological (aquatic community) criteria are accompanied by aquatic life impairments of the pH, dissolved oxygen, and heavy metal criteria (Table 15).

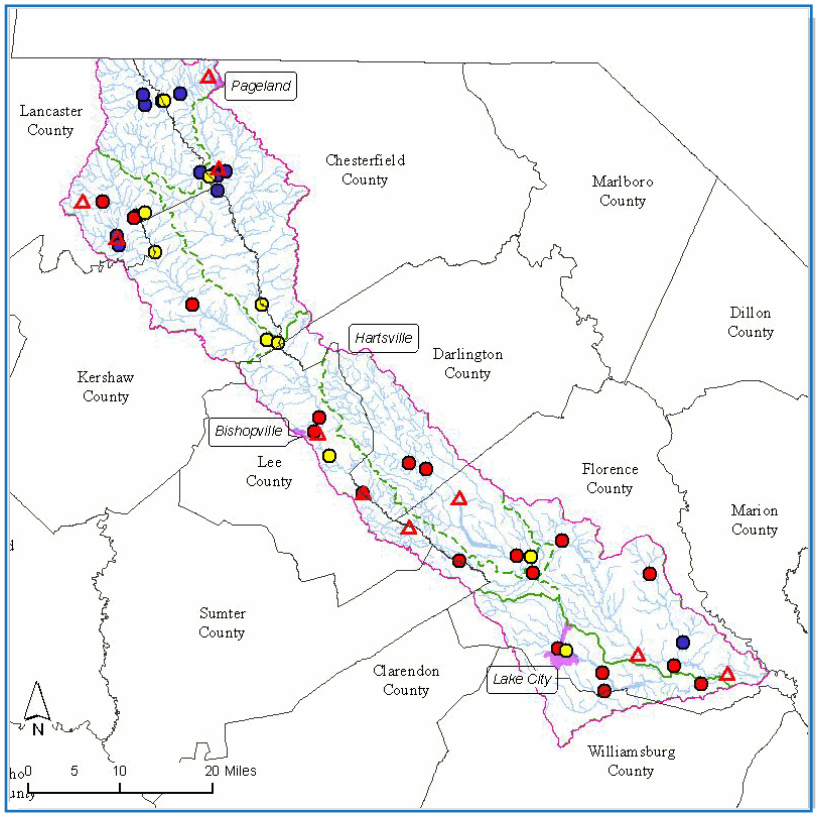


Table 14:
WATER QUALITY MONITORING SITES

Permanent Water Quality Monitoring Sites (WQMS)	41
Random Water Quality Monitoring Sites (WQMS)	10

FIGURE 8:
PERMANENT WATER QUALITY MONITORING SITES

- WQMS (No Impairment)
- WQMS (303d Listed)
- WQMS (Approved TMDL)
- Waste Water Treatment Plant
- Hydrography
- Hydrologic Unit Code 10 Boundary

RESOURCE CONCERNS

Table 15:

NUMBER OF MONITORING SITES SHOWING SURFACE WATER QUALITY IMPAIRMENTS

(See SCDHEC 2006 in References for the state 303(d) list.)

Recreational Use Standard

Parameter	Impairments
Fecal Coliform	9

Fish Tissue Standard

Parameter	Impairments
Mercury	4
PCB's	0

Shellfish Harvest Standard

Parameter	Impairments
Fecal Coliform	NA

Aquatic Life Use Standard

Parameter	Impairments	Parameter	Impairments	Parameter	Impairments
Biological	10	Dissolved Oxygen	6	Total Phosphorus	0
Chlorophyll A	0	Ammonia Nitrogen	0	pH	7
Chromium	2	Nickel	4	Turbidity	0
Copper	7	Total Nitrogen	0	Zinc	0

RESOURCE CONCERNS

Plant Condition

Plants of Economic Importance

Plants of economic importance are shown in Table 16. The crops shown in this table are from NASS data where the top five crops, by acres, in each county are displayed. The timber statistics (see Clemson Extension Forest Services 2003 in References) indicate the relative importance of the timber industry within the state and the importance of the timber industry compared to agriculture within the county.

The most prominent crops in the subbasin include cotton, corn, wheat and rye for grain, soybeans and tobacco.

Native Plant Species

According to SC DNR's "Comprehensive Wildlife Conservation Strategy: 2005 - 2010" (see SCDNR 2005 in References section), the following applies to this subbasin: the Piedmont ecoregion plant community historically consisted of oak and hickory-dominated forest with associated tree species varying by slope and soil moisture. This was the primary potential vegetation type in the Piedmont. Due to land disturbances, however, the majority of these sites today exist mostly in closed canopy pine-dominated forests.

In the Sandhills, plants are a complex of xeric pine and pine-hardwood forest types, adapted to sandy soils, and are typically found fluvial sand ridges. Historically, a canopy of longleaf pine and a sub-canopy of turkey oak prevailed, and are interspersed with scrub oak species and scrub-shrub cover. Management that includes burning encourages the development of longleaf pine-wiregrass communities.

Upland areas consist of forests dominated by hardwoods, primarily with oaks and hickories, and typically on fire-suppressed upland slopes near river floodplains or between rivers and tributaries. Vegetation composition is similar to oak-hickory forest in the Piedmont, where it is a major vegetation type. Representative canopy trees are: white oak (*Quercus alba*), black oak (*Quercus velutina*), post oak (*Quercus stellata*), mockernut hickory (*Carya tomentosa*), pignut hickory (*Carya glabra*), loblolly pine (*Pinustaeda*), flowering dogwood (*Cornus florida*) and black gum (*Nyssa sylvatica*).

In the river bottoms on the coastal plains, one frequently finds hardwood-dominated woodlands with moist soils that are usually associated with major river floodplains and creeks. Characteristic trees include: sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), water oak (*Quercus nigra*), willow oak (*Quercus phellos*), laurel oak (*Quercus laurifolia*), cherrybark oak (*Quercus pagoda*) and American holly (*Ilex opaca*).

RESOURCE CONCERNS

Table 16:
WHOLE COUNTY DATA OF PLANTS OF ECONOMIC IMPORTANCE IN SUBBASIN
(See: USDA NASS 2002 & Clemson University Forest Extension Services 2003 in References section)

Plant	Counties
All Cotton	Sumter, Florence, Williamsburg, Darlington, Lee
All Wheat for grain	Darlington, Sumter, Lee, Florence, Williamsburg, Kershaw, Lancaster, Chesterfield
Corn for grain	Florence, Sumter, Lee, Chesterfield, Darlington, Williamsburg, Kershaw, Lancaster
Forage - land used for all hay and haylage, grass silage, and greenchop	Chesterfield, Lancaster, Sumter, Darlington, Lee, Williamsburg, Kershaw
Rye for grain	Chesterfield
Short-rotation woody crops	Kershaw, Lancaster
Soybeans	Sumter, Lee, Darlington, Florence, Kershaw, Lancaster, Williamsburg, Chesterfield
Tobacco	Florence
Timber Revenues Exceed Ag. Revenues	Williamsburg

Table 17:
FEDERALLY LISTED THREATENED AND ENDANGERED PLANT SPECIES IN WATERSHED
(See USFW 2006 in References section.)

Common Name	Latin Name	Status
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered
Smooth coneflower	*Echinacea laevigata*	Endangered
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Endangered
Michaux's sumac	*Rhus michauxii*	Endangered
Little amphianthus	*Amphianthus pusillus*	Threatened
Chaff-seed	*Schwalbea americana*	Endangered
Black-spored quillwort	*Isoetes melanospora*	Endangered
Canby's dropwort	*Oxypolis canbyi*	Endangered
Georgia aster	*Aster georgianus*	Supported Proposals to List

ECONOMIC & SOCIAL FACTORS

Fish and Wildlife

Part of Lynches River has been designated by the U.S. Fish and Wildlife Service as critical habitat for the federally endangered Carolina Heelsplitter, *Lasmigona decorata*, a median sized mussel.
Part of the Lynches River has been designated by the U.S. Fish and Wildlife Service as critical habitat for the federally endangered Carolina Heelsplitter mussel, *Lasmigona decorata*. The species has been reduced to a few streams in the state, primarily as a result of impoundments and channelization projects and the general deterioration of water quality resulting from siltation and other pollutants contributed as a result of poor land use practices.

For additional information, the SC Department of Natural Resources has completed a "Comprehensive Wildlife Conservation Strategy: 2005 - 2010" (see SCDNR 2005 in References section).

In 2005, mercury advisories were issued for 57 water bodies in South Carolina. Higher concentrations of mercury in fish tissue tend to occur in the Coastal Plain of South Carolina with relatively lower concentrations (and therefore fewer advisories) in the Piedmont. For more details on fish advisories, please refer to the SCDHEC fish advisory website at: **http://www.scdhec.gov/environment/water/fish/**

Table 18:
FEDERALLY LISTED THREATENED AND ENDANGERED WILDLIFE SPECIES IN WATERSHED
(See USFW 2006 in References section.)

Common Name	Latin Name	Status
Red-cockaded woodpecker	*Picoides borealis*	Endangered
Wood stork	*Mycteria americana*	Endangered

Table 19:
FEDERALLY LISTED THREATENED AND ENDANGERED AQUATIC SPECIES IN WATERSHED
(See USFW 2006 in References section.)

Common Name	Latin Name	Status
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered
Carolina heelsplitter	*Lasmigona decorata*	Endangered, Critical Habitat

* Weighted averages are estimated based on agricultural land use area.

ECONOMIC & SOCIAL FACTORS

Domestic Animals

Grazing animal populations tend to be more concentrated in Chesterfield and Lancaster counties (Table 20), coinciding with the Piedmont ecoregion (Figure 1). Confined livestock operations are more concentrated in the upper subbasin, but the largest concentration and type of operations are the turkey operations in Kershaw, Lancaster and Chesterfield counties, which rank 1, 2 and 3 in turkey production in the state (NASS 2002). Kershaw County also ranks number 4 in terms of hog production in the state (NASS 2002). In Lee County, expansion of existing poultry operations have either been proposed or are in operation. Additionally, it is expect that within the next two years a few additional brooder or broiler operations will be permitted.

Table 20:
WHOLE COUNTY GRAZING ANIMAL POPULATION DATA FROM 2002 AG. CENSUS
(See NASS 2002 in References section. "D" in table = "Cannot be disclosed".)

County	Cows/Calves	Grazing/Forage (ac)	County Rank in State
Chesterfield	9,307	9,357	19
Darlington	4,462	2,358	(D)
Florence	4,268	3,769	36
Kershaw	4,886	4,965	(D)
Lancaster	12,520	11,433	11
Lee	3,265	2,313	(D)
Sumter	5,680	6,023	32
Williamsburg	4,868	4,710	(D)

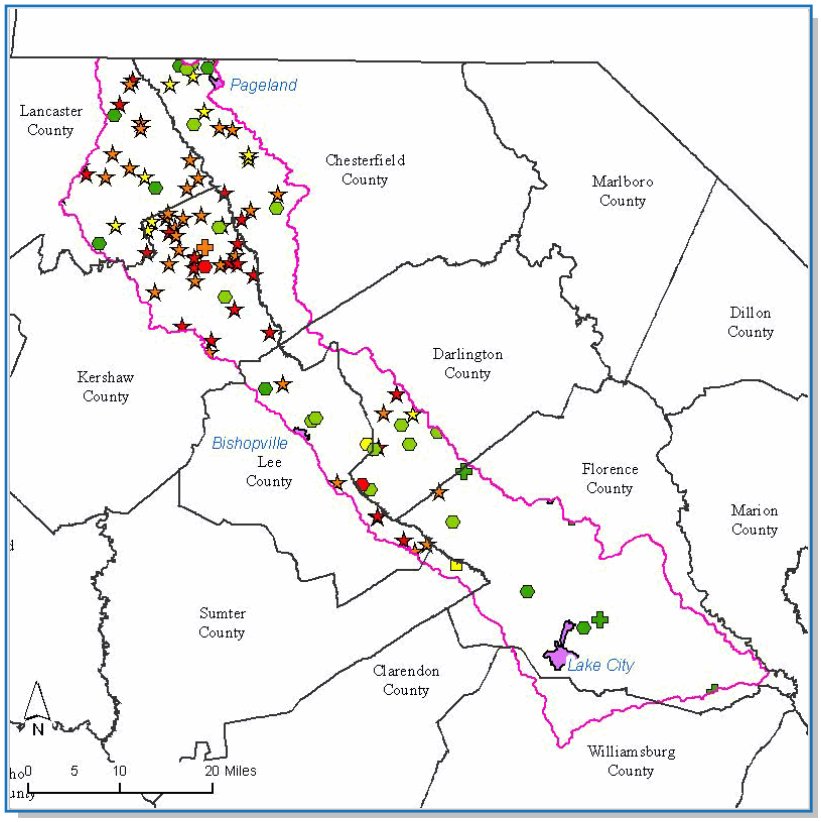


Table 21:
CONFINED ANIMAL POPULATION [As given by SCDHEC] (Au = Animal Unit = 1,000 lbs)

Beef Live Weight (Au)	-
Dariy Live Weight (Au)	420
Horse Live Weight (Au)	-
Poultry Live Weight (Au)	15,188
Swine Live Weight (Au)	1,556
Turkey Live Weight (Au)	68,728

FIGURE 9:
TYPE AND SIZE OF CONFINED ANIMAL OPERATION

Permit Design Count (Live Weight AU)
- 0 - 163
- 164-372
- 373 - 680
- 681 - 1360
- 1361 - 7076

- Beef
- Dairy
- Other
- Poultry
- Swine
- Turkey

REFERENCES

The number of full-time farmers is *higher* than the state average of 47% and farm sizes are *larger* than the state average of 197 ac (Table 22); both parameters suggest above average levels of participation in conservation programs. Farm sizes have *decreased* by an estimated 9% between 1997 and 2002 a little lower than the 13% across the state for the same period. Loss of cropland between 1997 and 2002 is estimated at 15%, somewhat higher than the SC average cropland loss of 8%.

The relative importance of crop and livestock commodity groups in the watershed is shown in Tables 24 and 25; a *qualitative* indication of the relative importance of timber is provided on Table 16.

For more economic and farm information from the 2002 Agricultural Census, more detailed reports for all South Carolina counties can be found at:
http://www.nass.usda.gov/census/census02/profiles/sc/index.htm

Table 22:
2002 FARM CENSUS DATA (WHOLE COUNTY DATA SHOWN) (SC average farm size = 197 ac)

County	Total Number of Farms	% Full Time Farmers	% Farms > 180 (ac)	Average Farm Size (ac)
Chesterfield	595	43%	29%	216
Darlington	361	53%	37%	447
Florence	612	57%	29%	280
Kershaw	479	46%	18%	146
Lancaster	637	48%	18%	128
Lee	324	42%	39%	378
Sumter	537	46%	28%	253
Williamsburg	681	44%	39%	302
Weighted Avg*	**519**	**51%**	**30%**	**294**

Table 23:
2002 FARM CENSUS ECONOMIC DATA (WHOLE COUNTY DATA SHOWN) (Results in $1,000)

County	Market Value of Ag Products Sold	Market Value of Crops Sold	Market Value of Livestock, Poultry, and Their Products	Farms with sales < $10,000
Chesterfield	62,417	7,714	54,702	460
Darlington	39,579	18,866	20,712	219
Florence	35,055	29,761	5,294	400
Kershaw	84,475	2,081	82,394	379
Lancaster	45,710	1,660	44,050	532
Lee	33,675	10,413	23,262	233
Sumter	55,146	15,274	39,872	402
Williamsburg	27,644	22,367	5,277	506
Weighted Avg*	**42,986**	**18,363**	**24,623**	**363**

REFERENCES

Table 24:
VALUE OF CROP COMMODITY GROUPS - COUNTY RANK IN STATE
(See NASS 2002 in References section. "D" in table = "Cannot be disclosed".)

County	Value of All Crops	Grains & Oilseeds	Tobacco	All Cotton	Vegetables & Melons	Fruits, Nuts, & Berries	Nursery, Etc.	Christmas Trees & Woody Crops	Hay & other Crops
Chesterfield	28	14	(D)	22	16	(D)	37	(D)	21
Darlington	12	8	6	3	26	24	20	(D)	(D)
Florence	6	7	2	10	7	(D)	26	(D)	19
Kershaw	38	27	-	(D)	24	(D)	30	(D)	14
Lancaster	41	36	-	-	35	(D)	(D)	15	18
Lee	20	6	10	6	34	(D)	32	(D)	11
Sumter	16	4	8	11	(D)	(D)	15	(D)	2
Williamsburg	10	10	5	4	12	(D)	17	(D)	31

Table 25:
VALUE OF LIVESTOCK AND POULTRY COMMODITY GROUPS - RANK IN STATE
(See NASS 2002 in References section. "D" in table = "Cannot be disclosed".)

County	Value of Livestock, poultry	Poultry, Eggs	Cattle & Calves	Milk & Dairy	Hogs & Pigs	Sheep & Goats	Horses, etc.
Chesterfield	4	3	19	30	33	16	26
Darlington	17	16	(D)	(D)	(D)	37	30
Florence	27	25	36	(D)	15	(D)	33
Kershaw	1	1	(D)	(D)	(D)	29	2
Lancaster	8	6	11	20	43	15	19
Lee	14	13	(D)	(D)	(D)	44	39
Sumter	11	8	32	(D)	16	19	(D)
Williamsburg	28	(D)	(D)	-	7	(D)	15

APPENDIX

Clemson University Extension Forest Service. 2001. *Cash Receipts from Timber Harvests - 2001 Ag and Timber Comparison.*. Compiled by A. Harper. Available at:
http://www.clemson.edu/extfor/forest_data/

Griffith, G.E., Omernik, J.M., Comstock, J.A., Schafale, M.P., McNab, W.H., Lenat, D.R., MacPherson, T.F., Glover, J.B., and Shelburne, V.B., 2002, Ecoregions of North Carolina and South Carolina, (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,500,000). Available at:
http://www.epa.gov/wed/pages/ecoregions/ncsc_eco.htm

National Resource Inventory (NRI) 1997. Estimates of water erosion from Cropland by 8-digit HUC. Available at:
http://www.nrcs.usda.gov/technical/land/erosion.html

NatureServe 2006. Distribution of native fish species by watershed. NatureServe. Available at:
http://www.natureserve.org/getData/

South Carolina Department of Health and Environmental Control (SCDHEC) 2006. Listing of Impaired Waters (or 303(d) list). Available at:
http://www.scdhec.gov/environment/water/docs/06_303d.pdf

South Carolina Department of Health and Environmental Control (SCDHEC) 2007 (a). Total Maximum Daily Load Documents. Available at:
http://www.scdhec.gov/environment/water/tmdl/tmdlsc.htm

South Carolina Department of Health and Environmental Control (SCDHEC) 2007 (b). Watershed Water Quality Assessments. Available at:
http://www.scdhec.gov/environment/water/shed/

South Carolina Department of Health and Environmental Control (SCDHEC) 2007 (c). Water use and reporting Program (Capacity Use) SCDHEC. Available at:
http://www.scdhec.net/environment/water/capuse.htm

South Carolina Department of Natural Resources (SCDNR) 2005. Comprehensive Wildlife Conservation Strategy (2005 - 2010). Columbia, SC. SCDNR. Available at:
http://www.dnr.sc.gov/cwcs

South Carolina Department of Natural Resources (SCDNR) 2002. SC GAP Analysis and Dynamic Mapping. Columbia, SC. SCDNR. Available at:
http://www.dnr.sc.gov/GIS/gap/mapping.html

South Carolina Department of Natural Resources (SCDNR) 2004. South Carolina Water Plan, Second Edition (January 2004). Columbia, SC. SCDNR. Available at:
http://www.dnr.sc.gov/water/hydro/wtrplanerrata.html

USDA Farm Services Agency in South Carolina (FSA-SC) 2006. CRP Data. Columbia SC. USDA/FSA

USDA Natural Resources Conservation Services (NRCS) 2007 (a). National Soil Information System (NASIS). USDA/NRCS. County Soils Data (tabular) information available at:
http://soildatamart.nrcs.usda.gov/

APPENDIX

USDA Natural Resources Conservation Services (NRCS) 2007 (b). Soil Survey Geographic (Ssurgo) Database. USDA/NRCS. County Soils Data (spatial). Available at:
http://soildatamart.nrcs.usda.gov/

USDA Natural Resources Conservation Services in South Carolina (NRCS-SC) 2006. GRP, FRPP, and WHP. Columbia, SC. USDA/NRCS.

USDA National Agricultural Statistical Service (NASS) 2002. 2002 Census of Agriculture. Washington, DC: USDA/NASS.

US Fish and Wildlife Service (USFWS) 2007. USFWS Threatened and Endangered Species System (TESS). Available at:
http://ecos.fws.gov/tess_public/StartTESS.do

US Fish and Wildlife Service (USFWS) 2006. South Carolina Distribution Records of Endangered, Threatened, Candidate and Species of Concern, October 2006. Available at:
http://www.fws.gov/charleston/docs/etcountylist_10_06.htm

APPENDIX

Level III Common Resource Area (Ecological Region) Descriptions

Piedmont (45)

The Piedmont is an erosional terrain with some hills; the soils are generally finer-textured than those found in coastal plain regions with less sand and more clay. Piedmont soils are moderately to severely eroded; most of this region is now in planted pine or has reverted to successional pine and hardwood woodlands, with some pasture; spreading urban- and suburbanization is apparent. The Piedmont of South Carolina is divided into five level IV ecoregions: Southern Inner Piedmont (45a), Southern Outer Piedmont (45b), Carolina Slate Belt (45c), Triassic Basins (45g) and Kings Mountain (45i).

Middle Atlantic Coastal Plain (63)

The Middle Atlantic Coastal consists of low elevation, flat plains, with many swamps, marshes, and estuaries. Forest cover in the region, once dominated by longleaf pine in the Carolinas, is now mostly loblolly and some shortleaf pine, with patches of oak, gum, and cypress near major streams. Pine plantations for pulpwood and lumber are typical, with some areas of cropland. In South Carolina, the Middle Atlantic Coastal Plain is divided into three level IV ecoregions Carolinian Barrier Islands and Coastal Marshes (63g), Carolina Flatwoods (63h), Mid-Atlantic Floodplains and Low Terraces (63n).

Southeastern Plains (65)

The Southeastern Plains are irregular with broad interstream areas have a mosaic of cropland, pasture, woodland, and forest. In the past centuries, human activities (logging, agriculture and fire suppression) removed almost all of the longleaf pine forests. Elevations and relief are greater than in the Southern Coastal Plain (75), but generally less than in much of the Piedmont (45). The ecoregion has been divided into three level IV ecoregions within South Carolina: Sand Hills (65c), Atlantic Southern Loam Plains (65l), and Southeastern Floodplains and Low Terraces (65p). Note: The Atlantic Southern Loam Plains (65l) is a major agricultural zone, with deep, well-drained soils, and is characterized by high percentages of cropland.

NRCS Conservation Practices used for Conservation Treatment Categories in Table 3

Report Category	Practice Codes
Buffer and Filter Strips	332, 391, 393, 412
Conservation Tillage	324, 329, 329A, 329B, 344, 484
Erosion Control	327, 328, 330, 340, 342, 561, 585, 586
Irrigation Water Management	441, 449
Nutrient Management	590
Pest Management	595
Prescribed Grazing	528, 528A
Trees and Shrubs	490, 612, 655, 656, 66
Wetlands	657, 658, 659
Wildlife Habitat	644, 645

APPENDIX

Hydrologic Unit Numbering System

In 2005, the NRCS in cooperation with the U.S. Geological Survey, the South Carolina Department of Health and Environmental Control, and the U.S. Forest Service updated the South Carolina part of the USGS standard hydrologic unit map series. The report, "Development of a 10- and 12- Digit Hydrologic Unit Code Numbering System for South Carolina, 2005", describes and defines those efforts. The following is from the Abstract contained in that report: "A hydrologic unit map showing the subbasins, watersheds, and subwatersheds of South Carolina was developed to represent 8-, 10-, and 12-digit hydrologic unit codes, respectively. The 10- and 12-digit hydrologic unit codes replace the 11- and 14-digit hydrologic unit codes developed in a previous investigation. Additionally, substantial changes were made to the 8-digit subbasins in the South Carolina Coastal Plain. These modifications include the creation of four new subbasins and the renumbering of existing subbasins." The report may be obtained at **http://www.sc.nrcs.usda.gov/technical/HUC_report.pdf**. See Table 2 in the report for a cross-reference of old to new 8-digit HUC.

This subbasin profile uses the new HUC 8 numbering system with its modified and newly created subbasins. The NRCS reports implemented practices by 8-digit Hydrologic Unit Code. All NRCS reported Conservation Practices were reported using the older numbering system. 2005 and 2006 data were converted to the new HUC 8 numbering system through the Latitude and Longitude data reported with the applied practice. The use of these differing numbering systems has resulted in some NRCS implemented practices being credited in this report to an 8-digit HUC as reported by the NRCS but not correctly credited in the new numbering system. Likewise, the newly created 8-digit HUC will not be credited with the 2004 applied practices.