Chapter 3 Little Pee Dee Subbasin

Part of Hydrologic Unit Code: 03040204

General Description

The headwaters of this subbasin are within the sandhills ecoregion, characterized by sandy streams with year-round flow. Over 23 square miles of this 393 square mile subbasin are managed by the North Carolina Wildlife Resource Commision as part of the Sandhills Game Land. This subbasin is split into two areas by the border between North and South Carolina. Most of the subbasin is to the west of the Lumber River but a small portion lies along the western portion of Tabor City. Gum Swamp Creek and Shoe Heel Creek merge to form the Little Pee Dee River in South Carolina.

Watershed at a Glance

COUNTIES
Columbus, Richmond, Robeson, Scotland

MUNICIPALITIES
East Laurinburg, Gibson, Laurinburg, Maxton, Rowland, Tabor City, Wagram

PERMITTED FACILITIES

NPDES Discharge	
Major:	1
Minor:	8
NPDES Nondischarge:	3
NPDES Stormwater	
General:	26
Animal Operations:	29

AQUATIC LIFE SUMMARY

Monitored:	120 Miles
	0 Acres
Total Supporting:	112 Miles
	0 Acres
Total Impaired:	0 Miles
	0 Acres
Total Not Rated:	8 Miles
	0 Acres

Current Status and Significant Issues

All monitored waters in this subbasin are meeting all water quality standards (Figure 3-1).

Population and Land Use

Population for this subbasin is estimated at 43,476 or 111 people per square mile based on the 2000 census. Laurinburg is the only municipality in this subbasin with a population greater than 5,000. This area is predicted to experience very slow growth between now and 2020.

About 30 percent of the subbasin is agricultural land and approximately a quarter is covered by forest. It is estimated that around 20 percent of the subbasin is composed of wetlands.

Ambient Water Quality

There are two ambient monitoring sites located in the subbasin. One monitoring site is on Leith Creek downstream from Laurinburg and the other is on Shoe Heel Creek downstream from Maxton. Both stations are less than 4 miles from the South Carolina border. Neither site exceeded any of the measured water quality parameters in more than 10 percent of the samples, except the Leith Creek station for iron. Leith Creek was not impaired for iron because it was determine to be natural.

General Biological Health

During the last assessment period, six sites were sampled for benthic macroinvertebrates and five sites were sampled for fish community health. Two of the six benthic locations were sampled twice. Currently all streams in this subbasin are rated Supporting for Aquatic Life. None of the fish communities sampled were rated because presently there are no criteria developed to evaluate them. Although not rated, all streams sampled for fish community health had pollution intolerant species.

Figure 3-1: Little Pee Dee Subbasin (03040204)

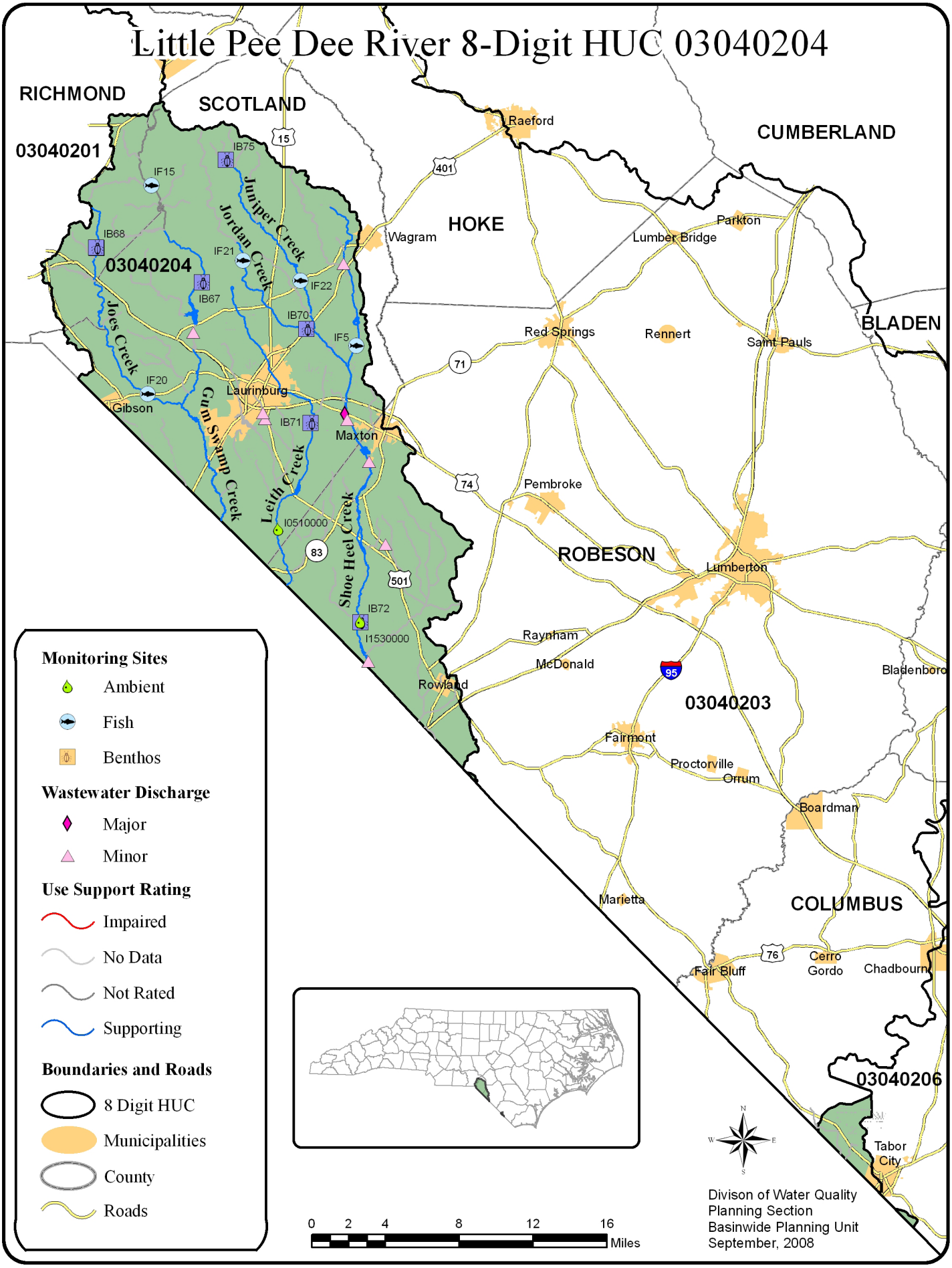


Table 3-1: Number of Benthic and Ambient Site in the Little Pee Dee Subbasin by 10-Digit Watershed

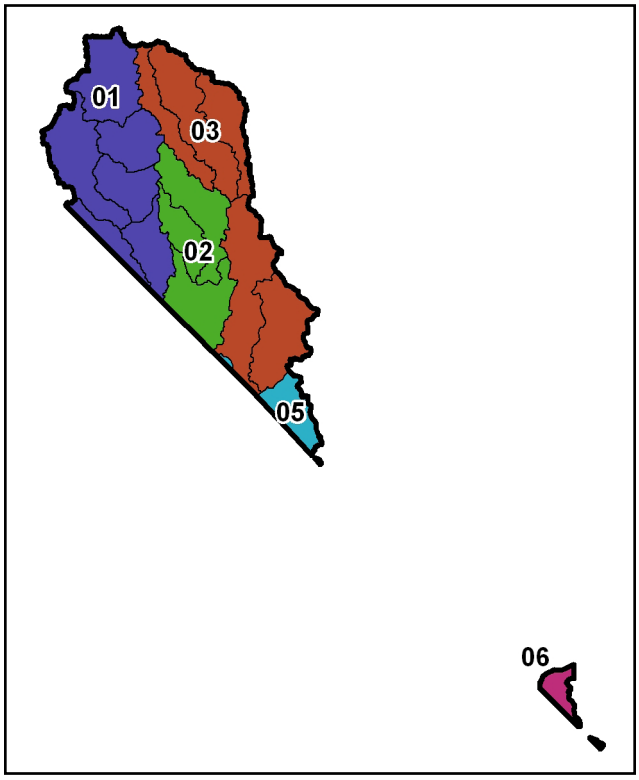
10-Digit HUC	Name	Square Miles	Benthic Sites	Ambient Sites
0304020401	Upper Little Pee Dee River	*138.1	2	0
0304020402	Leith Creek	*75.5	1	1
0304020403	Shoe Heel Creek	*156.1	3	1
0304020405	Middle Little Pee Dee River	*17.9	0	0
0304020406	Lake Swamp	*8.3	0	0

*Denotes HUC is only partially in North Carolina and the area was only calculated for that portion.

Local Water Quality

Table 3-1 list the number of benthic and ambient monitoring sites that were sampled for the 2002-2006 assessment period by watershed (10-digit HUC). There are 5 watersheds and 17 subwatersheds (12-digit HUCs) within the Little Pee Dee subbasin. Figure 3-2 shows the location of these watersheds labeled with the last two digits of the 10-digit HUC.

Figure 3-2: Watersheds (10-Digit HUCs) in the Little Pee Dee Subbasin



Upper Little Pee Dee River (0304020401)

This watershed includes the municipality of Gibson and the southeastern part of Laurinburg (Figure 3-3). Over 10,000 acres of this watershed have been placed into conservation as part of the Sandhills Gameland. There is one NPDES permitted wastewater discharger with a maximum daily flow of 0.3 MGD.

Gum Swamp Creek Headwaters (030402040101)

Fish community sampling site IF15, located at State Road 1344 on Gum Swamp Creek AU# 14-32-(1), was sampled in 2006. All species present in 2001 were also found in 2006 plus three new species not noted in 2001. The most common species was the Pinewoods Darter, a species of Special Concern. This site was not rated but provides an excellent habitat for fish and currently has a diverse population.

Richmond Mill Lake-Upper Gum Swamp Creek (030402040102)

Benthic macroinvertebrate sampling site IB67, located at State Road 1323 on Gum Swamp Creek AU# 14-32-(7), was given a bioclassification of Good-Fair. This is lower than the Good rating received in 2001 and the same as it was assigned in 1996 and 1991. The lower rating is a reflection of a reduction in the variety of intolerant taxa. Since this area is rural and there are no permitted dischargers upstream nonpoint sources are likely the cause of the reduction.

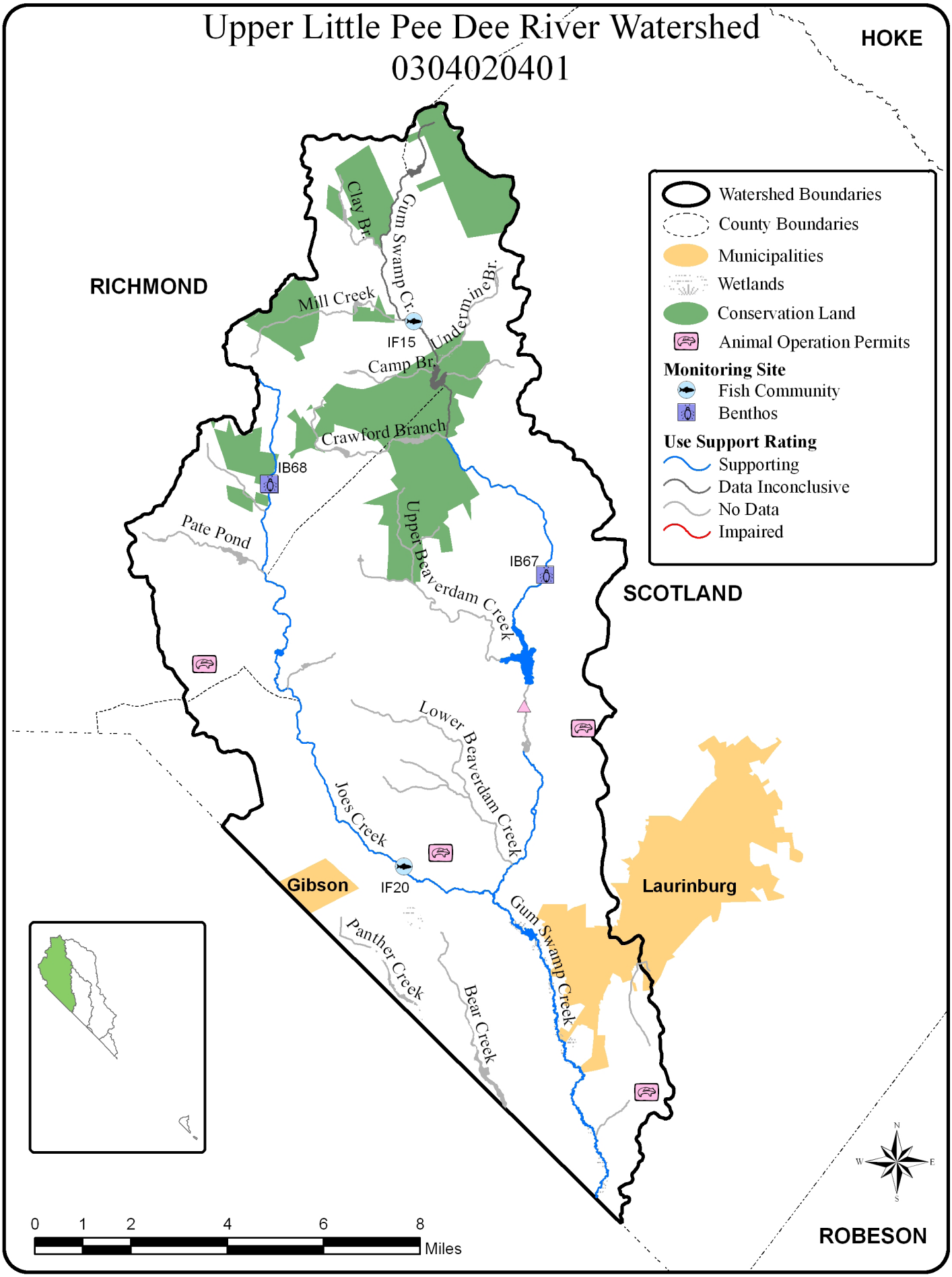
Joes Creek (030402040103)

Fish community sampling site IF20, located at NC Highway 79 on Joes Creek AU# 14-32-14, was given a habitat score of 96 out of 100. There was a 43 percent increase in the number of fish at this site and a slight increase in variety, however the Dusky Shiner accounted for 65 percent of the fish.

Middle Gum Swamp Creek (030402040104)

In 2007, Scotland County was awarded grants from the CWMTF and from the NC Rural Center to connect Springfield Village to the City of Laurinburg-Leith Creek WWTP, thus eliminating the Springs Industries WWTP.

FIGURE 3-3: UPPER LITTLE PEE DEE RIVER WATERSHED (0304020401)



This project has eliminated the discharge of 10,500 gallons per day of treated wastewater to Gum Swamp Creek AU # 14-32-(12). This wastewater will now be sent to the Leith Creek WWTP. Despite its name the Leith Creek WWTP actually discharges to Shoe Heel Creek AU# 14-34.

No samples were collected in *Lower Gum Swamp Creek subwatershed (030402040105).*

Beaverdam Creek-Gum Swamp Creek (030402040106)
This subwatershed is the Ecosystem Enhancement Program's Targeted Local Watershed (03040204010060). It only has 12 miles of streams but has a high concentration of Carolina bays in need of restoration.

Leith Creek (0304020402)

Leith Creek watershed contains all of East Laurinburg and most of Laurinburg, as well as, 2 permitted NPDES wastewater dischargers (Figure 3-4). The 2 dischargers have a combined maximum daily flow of 0.03 MGD. There are three subwatersheds in this watershed.

Leith Creek Headwaters (030402040201)
Benthic macroinvertebrate sampling site IB71, located at State Road 1609 on Leith Creek AU# 14-33a, was sampled in 2006 for the first time since 1991. This site was sampled as part of a special study and received a rating of Moderate.

No samples were collected in *Bridges Creek subwatershed (030402040202).*

Leith Creek subwatershed (030402040203).
Ambient monitoring site I0510000, located at State Road 1615 on Leith Creek AU # 14-33b, did not exceed any water quality standards in greater than 10 percent of the samples, except for Iron. This waterbody was rated supporting because the iron levels were deemed to be at natural levels.

Shoe Heel Creek (0304020403)

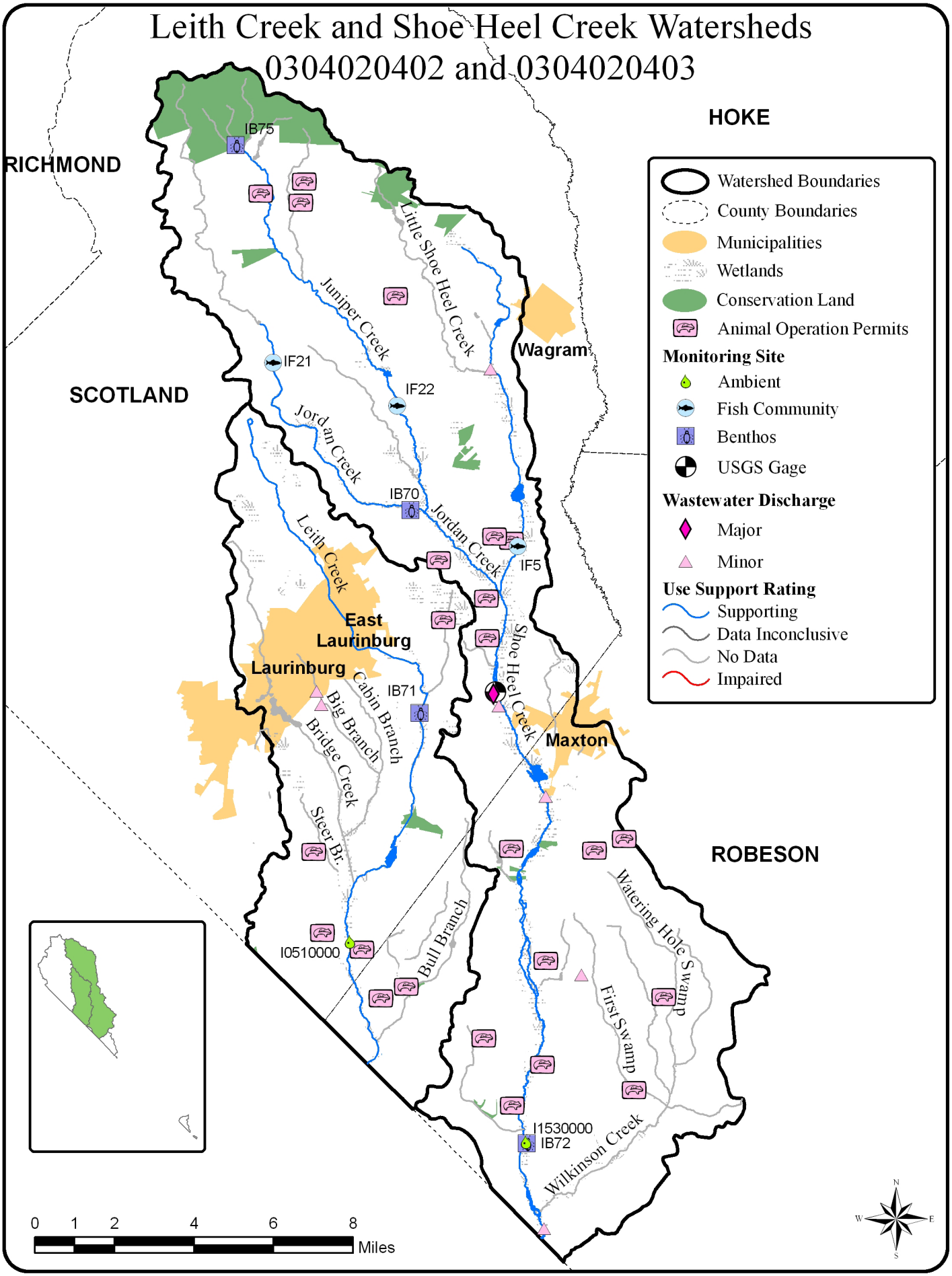
This watershed contains part of two municipalities, Maxton and Wagram (Figure 3-4). There are 6 permitted NPDES wastewater dischargers with a maximum daily flow of 4.935 MGD. It has five subwatersheds.

Jordan Creek (030402040301)
Fish community sampling site IF21, located at State Road 1324 on Jordan Creek AU# 14-34-4-(2), provides excellent habitat for aquatic life. The diversity of species increased in 2006 from the 2001 assessment by five species. The intolerant Pinewoods Darter was present in both years.

Benthic macroinvertebrate sampling site IB70, located at US Highway 401 on Jordan Creek AU# 14-34-4-(2), has slightly less suitable habitat than the fish community sampling site on Jordan Creek but is still adequate. This location has been sampled three times in the last twelve years and has rated Good-Fair every time. Water quality on Jordan Creek has remained stable since monitoring began.

Juniper Creek (030402040302)
Fish community sampling site IF22, located at NC Highway 144 on Juniper Creek AU# 14-34-4-3, is extrememly healthy with a habitat score of 97 out of 100. There was a net gain of 5 species from 2001 to 2006, including the intolerant Pinewoods Darter, and the total number of fish increased by 84 percent. It was also noted during sampling that the riparian buffers were of high quality on both side of the stream.

Figure 3-4: Leith and Shoe Heel Creek Watersheds (0304020402 and 0304020403)



Shoe Heel Creek Headwaters (030402040303)
Fish community sampling site IF5, located at State Road 1433 on Shoe Heel Creek AU# 14-34, received a habitat score of 97 out of 100. It gained ten new species since the 2001 assessment of which five were pollution intolerant species. This represents an enormous improvement in the fish population during a period of only five years.

Wilkinson Creek (030402040304)
This subwatershed is the Ecosystem Enhancement Program's Targeted Local Watershed (03040204048010). This subwatershed was selected as a TLW by EEP because 59 percent of the land use is agriculture and 55 percent of the streams lack buffers.

Maxton Pond-Shoe Heel Creek (030402040305)
In 2006, there was an incident in this watershed where an employee of the Maxton-Laurinburg Airport WWTP was dumping sludge into wetlands that drain to Shoe Heel Creek AU # 14-34. It is believed that the dumping occurred over a period of months forcing the responsible employee to resign under criminal charges of violating the Clean Water Act. The facility has been fined $95,000 for the illegal dumping.

In 2007, the Town of Maxton was awarded a grant from the CWMTF to reduce inflow and infiltration to the town's wastewater collection system. This project will prevent unnecessary treatment of stormwater and reduce leaking of wastewater from the system to local streams and groundwater.

Benthic macroinvertebrate sampling site IB72, located at State Road 1101 on Shoe Heel Creek AU# 14-34, has been sampled seven times since 1985. In that time it has fluctuated between an Excellent and Good rating although the last sample was rated Good. Overall species richness and intolerant species richness remains high but the number of intolerant species has declined slightly which accounts for the Good rating. Elevated conductivity at the site was attributed to the Maxton WWTP an upstream NPDES discharger.

Ambient monitoring site I0510000

Middle Little Pee Dee River (0304020405)
The town of Rowland is located in the Middle Little Pee Dee watershed, as well as, two permitted animal operations. There are no permitted wastewater dischargers in this watershed. It has two subwatersheds.

Carolina Branch-Little Pee Dee River (030402040501)
Less than 1 square mile of this subwatershed is located within North Carolina and there are no assessment units in this watershed.

Hayes Swamp (030402040503)
This subwatershed is the Ecosystem Enhancement Program's Targeted Local Watershed (03040204010060). EEP administered a mitigation project on two UT of Conrary Swamp AU # 14-35-2 and five acres of wetlands that is currently in the monitoring stage. The project which is know as the Brown Marsh project, restored 5,004 feet of linear streams, 5 acres of nonriverine wetlands, as well as, reforested approximately 20 acres of floodplain, stream bank, upland slopes and nonriverine wetlands.

Lake Swamp-Little Pee Dee River (0304020406)
This watershed only has one 12-Digit HUC that is in North Carolina, Mitchell Swamp subwatershed (030402040601)**.** All waters draining from this watershed empty into the Little Pee Dee River after its confluence with the Lumber River. The watershed is mostly agricultural fields but the southwestern part of Tabor City can be found here.

Incentive Programs

Clean Water Management Trust Fund

Created in 1996, the Clean Water Management Trust Fund (CWMTF) makes grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. These projects include land acquisitions, capital improvements to wastewater and stormwater infrastructure, and stream restorations. A list of CWMTF Grants that have been funded through 2007 is provided in Table 3-2.

Table 3-2: CWMTF Grants Funded through 2007 in the Little Pee Dee Subbasin*

Project ID	Applicant	Purpose	Amount Funded	Total Cost
1997B-506	Town of Gibson	Wastewater	$286,500	$903,000
2000B-012	NC WRC	Buffer Acquisition	$46,000	$170,000
2003A-510	Town of Maxton	Wastewater	$154,000	$154,000
2005B-806	Town of Maxton	Planning	$40,000	$45,000
2007-817	Scotland County	Planning	$42,000	$45,000
2007-525	Town of Maxton	Wastewater	$2,524,000	$3,019,370
2007-538	Scotland County	Wastewater	$28,000	$1,050,000
Total	--	--	$3,120,500	$5,386,370

*Does not include statewide or regional grants.

North Carolina Agriculture Cost Share Program

Nonpoint source pollution is a significant source of stressors that lead to stream degradation. The approach taken in North Carolina for addressing agriculture's contribution to the nonpoint source water pollution problem is to primarily encourage voluntary participation by the agricultural community. This approach is supported by financial incentives, technical and educational assistance, research, and regulatory programs.

Table 3-3: BMP Installed through NCACSP between 2002 and 2006

BMP Implemented	Amount	Units	Cost
Conservation Tillage (3 years)	3099	Acres	$182,408
Cover Crop	400	Acres	$10,000
Cropland Conversion - Grass	164	Acres	$40,637
Cropland Conversion - Trees	33	Acres	$4,515
Nutrient Scavenger Crop	1,170	Acres	$26,773
Conservation Tillage	193	Acres	$10,917
Grassed Waterway	2	Acres	$2,969
Water Control Structure	1	Units	$14,137
Trough or Tank	2	Units	$3,798
Livestock Exclusion	739	Feet	$4,397
Incinerater	5	Units	$27,893
Waste Application Equipment	4	Units	$25,909
Total	--	--	$354,353

Financial incentives are provided through North Carolina's Agriculture Cost Share Program. The Division of Soil and Water Conservation within the DENR administers this program. It has been applauded by the U.S. Environmental Protection Agency and has received wide support from the general public as well as the state's agricultural community. Table 3-3 shows the number of projects implemented and in the Little Pee Dee Subbasin and the dollar amount invested. Table 3-4 shows the water quality benefits realized from that investment.

Table 3-4: Benefits Resulting from BMPs Installed through NCACSP between 2002 and 2006

Benefits	Amount	Units
Acres Affected	7,343	Acres
Soil Saved	31,015	Tons
Nitrogen Saved	631,513	Pounds
Phosphorous Saved	16,500	Pounds
Waste - Nitrogen Managed	87,885	Pounds
Waste - Phosphorus Mananged	40,853	Pounds

Recommendations

Stormwater regulation is essential to preventing pollution from reaching waterbodies. It is more expensive to retrofit developed areas with stormwater controls than to install them during the initial development. It is recommended that local governments consider developing and implementing stormwater management regulations as soon as possible.