Cape Fear
River Basin Restoration
Priorities 2009

Ecosystem Enhancement Program

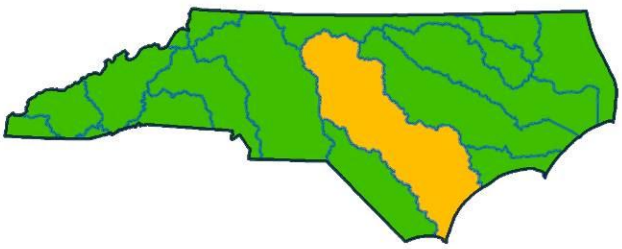

TABLE OF CONTENTS

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Cover Photo: Jumping Run Creek Restoration Project, Harnett County

Introduction

This document, prepared by the North Carolina Ecosystem Enhancement Program (EEP), presents a description of Targeted Local Watersheds within the Cape Fear River Basin. This is an update of the original document developed in 2001 by the Wetlands Restoration Program (NCWRP), *Watershed Restoration Plan for the Cape Fear River Basin.*

The 2001 plan selected 46 Hydrologic Units (HUs) to be targeted for stream, wetland, and riparian buffer restoration and protection and watershed planning efforts (i.e., Targeted Local Watersheds or TLWs). In this update, 25 TLWs are detailed as additional targets for restoration and preservation efforts in the Cape Fear River Basin along with 3 HUs identified as TLWs in 2001 that will have that status removed.

In addition to updating the *Watershed Restoration Plan for the Cape Fear River Basin* (2001), this report complements information found in the *2005 Cape Fear River Basinwide Water Quality Plan*. These two reports provide much of the justification for selection of HUs by detailing water quality conditions, resource management activities, and restoration and preservation needs in the Cape Fear Watershed.

In past documents, North Carolina's Division of Water Quality (DWQ) "subbasin" units were used to organize the document and discussion of the selected TLWs. This document, however, uses the US Geological Survey (USGS) 8-digit Cataloging Units as the framework for organization and discussion of TLWs.

What is a River Basin Restoration Priority?

EEP develops River Basin Restoration Priorities (RBRPs) to guide its mitigation activities within each of North Carolina's 17 major river basins. The RBRPs delineate specific watersheds that exhibit a need for restoration and protection of wetlands, streams and riparian buffers. These priority watersheds, TLWs, are the USGS delineated 14-digit HUs which receive priority for EEP planning and project funds. The designation may also benefit stakeholders writing watershed improvement grants (e.g., Section 319 or Clean Water Management Trust Fund) by giving added weight to their proposals.

North Carolina General Statute 143-214.10 charges EEP to pursue wetland and riparian restoration activities in the context of basin restoration plans, one for each of the 17 major river basins in the State, with the goal of protecting and enhancing water quality, fisheries, wildlife habitat, recreational opportunities and preventing floods.

Criteria for Selecting a Targeted Local Watershed

EEP evaluates a variety of GIS data and resource and planning documents on water quality and habitat conditions to select TLWs. Public comment and the professional judgment of local resource agency staff also play a critical role in targeting local watersheds. TLWs are chosen based on an evaluation of three factors—problems, assets, and opportunities. Problems reflect the need for restoration; assets reflect the ability for a watershed to recover from degradation and the need for land conservation; and opportunities indicate the potential for local partnerships in restoration and conservation work. Methods for evaluation of these three factors are outlined below:

Problems: EEP evaluates DWQ use support ratings, the presence of impaired /303(d)-listed streams, and DWQ Basinwide Plans to identify streams with known problems. EEP also assesses the potential for degradation by evaluating land cover data, riparian buffer condition, impervious cover, road density, and projected population change.

Assets: In order to gauge the natural resource value of each watershed, EEP considers the forest and wetland area, land in public or private conservation, riparian buffer condition, high quality resource waters, and NC Natural Heritage Program data.

Opportunity: EEP reviews restoration and protection projects that are already on the ground, such as Clean Water Management Trust Fund projects, US Clean Water Act Section 319 initiatives, and land conservation efforts. EEP also considers the potential for partnership opportunities by consulting with local, state, and federal resource agencies and conservation organizations to assess the potential to partner in their priority areas.

In addition to these factors, local resource professional feedback is an important element in selecting TLWs. Comments and recommendations of local resource agency professionals, including staff with Soil & Water Conservation districts, the Natural Resources Conservation Service (NRCS), county planning staff, NCDENR regional staff (e.g., Wildlife Resources Commission), local/regional land trusts and watershed organizations are considered heavily in the selection of TLWs. Local resource professionals often have specific and up-to-date information regarding the condition of local streams and wetlands. Furthermore, local resource professionals may be involved in water resource protection initiatives that provide good partnership opportunities for EEP restoration and preservation projects and EEP Local Watershed Planning initiatives.

Finally, TLWs that were chosen for the last Watershed Restoration Plan or RBRP document are reevaluated. If new information reveals that a

watershed is not a good TLW candidate, then it will be removed from the TLW list. An explanation of the reasons for its removal from the list is provided in the last section of this document, which provides descriptions of each TLW chosen and those whose TLW status has been removed.

Cape Fear River Basin Overview

The Cape Fear is one of four river basins entirely contained within North Carolina's borders. The Cape Fear River is formed by the Deep, Rocky and Haw Rivers, which converge in Chatham County just below the B. Everett Jordan Dam. The river ends in 32,000 acres of estuary near Southport. A number of large North Carolina cities are located within the basin including, Greensboro, High Point, Burlington, Durham, Fayetteville, and Wilmington.

The Cape Fear Basin covers over 9,300 square miles making it the State's largest. The Basin encompasses 281 HUs that range in size from 2 to 139 square miles, falling within six Catalog Units (8-digit watershed delineations). The Basin includes all or portions of 26 counties and North Carolina's Office of State Budget and Management released figures for these counties estimates a year 2000 population of 3.6 million people that is projected to grow to 5.2 million by 2020.

Cape Fear River Basin Restoration Goals

Based on an assessment of existing watershed characteristics and resource information, EEP has developed restoration and protection goals for the Basin's six Catalog Units (CUs). These goals are outlined below:

03030002

The Haw River is the major River in this CU that includes a number of large communities (i.e., Greensboro, Burlington, and Durham). The Haw and a number of smaller tributaries flow to B. Everett Jordan Lake, a drinking water supply that has been designated a Nutrient Sensitive Water. NC DWQ has developed a set of proposed rules to reduce NPS pollution to Jordan Lake and restore its designated uses. Posted online at http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm, these rules seek challenging nutrient reductions for waters draining to Jordan Lake. Communities in the CU will need to develop creative strategies for improving water quality flowing to Jordan Lake.

03030003

The Deep River is the main river in this CU whose major communities includes High Point, Asheboro, Slier City and Sanford. The Deep flows into Randleman Reservoir, a newly created drinking water reservoir with stream buffer protections for communities in its watershed. The Deep has a number of mussel species recognized by the Wildlife Resource Commission as priority for protection along with the Cape Fear Shiner, a

federally endangered species and a US Fish and Wildlife priority protection species. Protection of these species and improvement in water quality to waters draining to Randleman Reservoir are recommendations for the CU.

03030004

This CU contains Upper Little River, Little River and Rockfish Creek, with the Cape Fear River along the eastern boundary. Major developing municipalities include Fayetteville, Fuquay-Varina, Holly Springs and Fort Bragg. This CU contains a lot of High Quality Waters and Significant Natural Heritage Areas that should be protected but also has a fast growing population in the above named municipalities. Goals for this CU are to promote Low Impact Development, stormwater management, restoration and buffer protection in urbanizing areas and preservation elsewhere.

03030005

This CU follows the Cape Fear River from Cumberland County down to Brunswick County. The upper portion of this CU has received focus from the Sandhills Area Land Trust as well as EEP. This upper portion is an area to continue focus as 40,000 additional people will be moving into the area due to military expansion. The central portion of the watershed remains rural at this time. The lower portion of this CU contains New Hanover and Brunswick Counties, with urban and urbanizing impacts. Recommendations for the lower portion of the CU include a new EEP Local Watershed Plan, focus on NPS pollution-especially fecal coliform, and urban stormwater pollution. Restoration and preservation efforts should also focus on Town Creek, Orton Creek and Boiling Springs Lake.

03030006

This watershed contains the South River and Great Coharie Creek, which form the Black River. South River and Great Coharie Creek is on the 303(d) list for low dissolved oxygen but could be do to natural swamp conditions. However, both feed into the Black River where NCWRC has reported lower levels of dissolved oxygen than can support the species of concern in this river. This watershed also contains a significant number of animal operations. Goals for this watershed include completion of a Local Watershed Plan in the Great Coharie Creek headwaters, focus on water quality improvement in the South and Black River, and continued protection of the Outstanding Resource Waters.

03030007

This watershed contains the Northeast Cape Fear River and its tributaries beginning in Sampson and Duplin and ending in Pender and New Hanover Counties. The upper portion of the watershed is agricultural with a significant number of hog farms. The lower portion is urban or

urbanizing, with impacts to streams including channelization, nonpoint source pollution and extensive stormwater pollution in the Wilmington area. Goals for the CU should include working with Pender, Duplin and New Hanover Counties along with Burgaw, Wallace and Wilmington to address restoration and stormwater BMP needs.

Cape Fear River Basin TLW Overview

In 2001, 46 HUs were targeted in the *Watershed Restoration Plan for the Cape Fear River Basin.* In this 2009 update, an additional 25 HUs are newly identified TLWs. Three HUs have their TLW status removed. In total, 68 HUs are highlighted as TLWs by EEP in this 2009 RBRP.

Table 1 provides a summary of information used to select TLWs and highlights in blue those that are newly added. Additionally, Figures 2 and 3 are maps of the Cape Fear River Basin showing TLWs as well as those whose TLW status been removed.

Figure 1. Cross Creek Stream Restoration (Fayetteville, NC).

Targeted Local Watershed Summary Table

Table 1. Cape Fear River Basin TLW Summary Table (HUs in Blue indicate newly added TLWs).

HUCODE	HU_Name	HU Area[1] (mi)	Stream Length[2] (mi)	Ag Area[3] (%)	Forest Area[4] (%)	HQW or ORW Length[5] (%)	WSW Length[6] (%)	SNHA Area[7] (%)	NHEO[8] (#)	Conserved Area[9] (%)	303(d) Length[10] (%)	Impervious Area[11] (%)	Animal Operations[12] (#)	Non-forested Stream Buffer[13] (%)
Jordan Lake Watershed (CU 03030002)														
03030002010010	Troublesome Creek	56.1	115.4	40	47	0	94	0	1	0.4	1%	2%	16	24%
03030002010020	Haw River Headwaters	83.0	198.1	39	53	0	0	5	16	1.0	3%	1%	10	22%
03030002010030	Little Troublesome Creek	12.7	27.6	24	37	0	0	0	1	0.7	21%	12%	1	32%
03030002020010	Reedy Fork Headwaters	70.0	159.1	23	38	0	100	2	7	0.4	7%	9%	11	36%
03030002020040	North Buffalo Creek	43.7	93.5	9	19	0	0	0	3	0.1	14%	24%	6	70%
03030002020050	South Buffalo Creek	45.2	99.9	10	19	0	0	0	1	0.6	21%	28%	10	72%
03030002030010	Travis/Tickle Creeks	34.8	99.1	38	40	0	0	0	1	0.0	12%	4%	11	35%
03030002040110	Little Alamance Creek-North	15.9	38.5	7	15	0	0	0	0	0.7	25%	26%	1	72%
03030002060070	Phils Creek	30.0	76.2	19	73	0	100	7	13	5.8	0%	1%	12	15%
03030002060080	Morgan Creek	19.9	42.4	7	59	0	86	23	34	35.4	18%	8%	3	34%
03030002060100	Little Creek	24.6	54.2	6	43	0	45	7	16	15.5	19%	9%	2	46%
03030002060110	New Hope Creek Headwaters	51.8	139.4	11	63	0	0	7	53	22.0	0%	6%	3	25%
03030002060130	New Hope Creek-Middle	18.9	73.3	9	60	0	98	28	17	56.9	24%	6%	0	41%
03030002060160	Beaver Creek	41.8	124.2	16	66	0	90	5	7	52.0	3%	3%	8	28%
03030002060140	Northeast Creek	47.1	140.4	10	57	0	64	4	11	18.8	6%	8%	0	30%
03030002060090	Jordan Lake western shore	35.8	76.7	10	77	0	100	14	19	31.9	10%	2%	1	22%
03030002050010	Varnals/Haw Creeks	55.6	159.9	34	55	0	0	2	0	0.1	2%	2%	25	27%
03030002050050	Cane Creek	70.3	213.3	46	49	0	0	1	2	1.1	0%	1%	51	35%
03030002050090	Dry Creek	24.1	54.6	25	72	0	78	4	1	1.2	14%	0%	8	18%
03030002060030	Roberson Creek	28.5	72.0	17	73	0	70	4	3	2.5	8%	1%	4	19%
Deep & Rocky rivers (CU 03030003)														
03030003010010	Deep River-West Fork	31.5	67.1	21	28	0	100	0	1	1.3	0%	13%	6	51%
03030003010020	Deep River-East Fork	29.9	64.3	11	21	0	100	0	1	4.1	24%	24%	1	64%
03030003010030	Deep River/Bull Run	17.7	49.3	11	36	0	100	0	1	0.2	14%	14%	0	50%
03030003010040	Richland Creek (High Point)	16.1	44.0	12	23	0	100	0	1	0.1	14%	26%	1	58%

HUCODE	HU_Name	HU Area[1] (mi)	Stream Length[2] (mi)	Ag Area[3] (%)	Forest Area[4] (%)	HQW or ORW Length[5] (%)	WSW Length[6] (%)	SNHA Area[7] (%)	NHEO[8] (#)	Conserved Area[9] (%)	303(d) Length[10] (%)	Impervious Area[11] (%)	Animal Operations[12] (#)	Non-forested Stream Buffer[13] (%)
03030003010050	Randleman Reservoir / Hickory Creek	29.5	77.1	28	42	0	100	0	3	0.0	10%	7%	5	37%
03030003060050	Big Buffalo Creek	41.2	104.9	16	56	0	19	2	5	3.6	5%	5%	6	28%
03030003060080	Deep River-Lower	22.9	56.1	17	74	0	40	8	19	7.1	20%	1%	3	14%
03030003070010	Rocky River Headwaters	54.2	163.9	44	47	0	100	0	2	1.3	0%	2%	38	35%
03030003070020	Tick Creek/Rock River	70.9	190.3	33	57	0	0	1	6	1.2	6%	2%	55	31%
03030003070040	Rocky River-Middle	23.4	59.6	17	81	0	0	3	16	0.2	0%	0%	7	14%
03030003020010	Sandy Creek	60.2	177.5	39	54	0	99	1	0	1.5	0%	1%	59	25%
03030003040010	Falls Creek	53.9	174.4	31	64	59	0	1	29	0.2	2%	0%	51	27%
03030003060010	Smith/Line creeks	27.3	67.9	24	70	51	49	3	12	3.8	9%	0%	11	13%
03030003070050	Bear Creek	51.8	134.6	33	62	0	0	0	23	0.0	0%	0%	56	28%
03030003070060	Rocky River-Lower	9.9	24.4	12	82	0	0	7	18	2.0	0%	0%	0	10%
Catalog Unit 03030004														
03030004020010	Harris Lake	80.0	180.5	19	66	0	0	2	17	28.3	0%	1%	10	18%
03030004030010	Parker Creek	53.8	170.2	28	66	77	17	5	9	4.4	0%	1%	21	22%
03030004040010	Kenneth Creek	46.3	156.9	44	42	0	68	1	4	0.3	7%	3%	10	39%
03030004070010	Crane Creek	58.2	169.0	41	50	0	100	0	9	0.0	0%	1%	30	34%
03030004070020	Crane Creek	42.5	85.0	36	53	0	100	1	6	0.0	0%	1%	16	34%
03030004100030	Cross Creek	6.1	10.9	11	61	0	100	11	38	95.6	0%	9%	0	17%
03030004100040	Little Cross Creek	3.2	4.3	11	43	0	100	12	3	77.1	57%	16%	0	16%
03030004100050	Cross & Little Cross Creek	31.5	48.3	7	23	0	48	2	13	5.2	7%	24%	1	55%
03030004070050	Lower Little River	25.8	84.7	34	56	97	3	0	7	3.0	6%	1%	8	31%
03030004070080	Lower Little River	3.0	10.4	13	82	100	0	0	13	57.4	40%	0%	0	8%
03030004100020	Carvers Creek	24.1	50.2	17	59	0	98	17	63	16.3	0%	6%	4	27%
03030004130010	Cape Fear River	40.6	123.2	49	41	0	72	5	24	1.4	0%	1%	14	48%
03030004150011	Rockfish Creek	28.1	53.1	33	52	0	0	18	21	14.0	7%	3%	13	26%
03030004150012	Rockfish Creek	45.8	104.2	39	43	0	0	6	15	0.1	13%	3%	9	35%
03030004150013	Rockfish Creek	19.5	32.8	30	46	0	0	10	19	0.8	29%	7%	1	33%
Catalog Unit 03030005														
03030005070010	Cape Fear River Estuary	117.7	187.7	11	60	13	0	64	592	24.6	8%	3%	4	35%
03030005050010	Barnard Creek & Greenfield Lake	63.9	62.9	6	31	0	0	52	283	28.2	13%	14%	0	52%
03030005010020	Harrisons Creek	92.9	156.6	33	64	0	0	9	33	4.5	8%	0%	28	33%
03030005040010	Brunswick River	78.3	133.7	16	65	0	1	17	74	16.4	10%	3%	0	33%
03030005060010	Town Creek	123.6	243.6	21	76	0	0	17	150	10.9	8%	0%	19	19%

HUCODE	HU_Name	HU Area[1] (mi)	Stream Length[2] (mi)	Ag Area[3] (%)	Forest Area[4] (%)	HQW or ORW Length[5] (%)	WSW Length[6] (%)	SNHA Area[7] (%)	NHEO[8] (#)	Conserved Area[9] (%)	303(d) Length[10] (%)	Impervious Area[11] (%)	Animal Operations[12] (#)	Non-forested Stream Buffer[13] (%)
Catalog Unit 03030006														
03030006110040	Stewarts Creek	55.3	148.6	40	54	0	0	1	1	0.3	0%	1%	90	36%
03030006090010	Great Coharie Creek	35.3	90.1	58	33	0	0	1	0	1.4	11%	1%	35	78%
03030006090015	Great Coharie Creek	1.9	2.9	50	44	0	0	0	0	0.0	0%	0%	0	52%
03030006090020	Great Coharie Creek	16.2	43.6	55	37	0	0	0	1	2.3	0%	1%	9	53%
03030006090060	Great Coharie Creek	62.1	173.4	41	46	0	0	1	5	0.8	21%	3%	75	30%
Catalog Unit 03030007														
03030007060010	Muddy Creek	47.5	105.9	52	43	4	0	0	2	0.0	13%	1%	98	50%
03030007090010	Rockfish Creek	45.7	110.5	40	56	0	0	0	5	1.3	1%	0%	96	35%
03030007090040	Rockfish Creek	19.3	49.8	42	43	0	0	0	2	0.1	6%	4%	10	48%
03030007090060	Rockfish Creek	13.0	32.4	35	57	0	0	0	0	0.0	1%	1%	12	32%
03030007100010	Angola Creek	104.2	96.7	15	83	0	0	53	15	53.6	0%	0%	55	29%
03030007110020	Burgaw Creek	39.5	74.2	31	61	0	0	4	15	3.6	8%	1%	9	35%
03030007140010	Burnt Mill & Smith Creek	79.5	78.3	16	49	0	0	19	75	4.3	15%	10%	5	36%
03030007110030	NE Cape Fear	38.1	23.4	12	59	0	0	13	26	9.0	7%	1%	4	29%

[1]Hydrologic Unit (HU) Area estimate based on USGS 14-digit HU boundaries (USDA NRCS 1998).
[2]Stream Length estimate derived from blue line streams on USGS 1:24,000 scale maps (NC CGIA 2008).
[3]Agricultural Area estimate based on 2001 National Land Cover Database (NLCD) (Homer et al., 2004).
[4]Forest Area estimate based on 2001 NLCD (Homer et al., 2004).
[5]High Quality Waters (HQW) and Outstanding Resources Waters (ORW) (NC CGIA 2008).
[6]Water Supply Watershed (WSW) length (NC GIA 2008).
[7]Significant Natural Heritage Areas (SNHA) estimates (NC NHP 2007[1]).
[8]Natural Heritage Element Occurrences (NHEO) (NC NHP 2007[2]).
[9]Conserved Area estimate based on federal, state, and local land under protection (NC GIA 2008).
[10]303(d) List of impaired waters (NC DWQ 2006).
[11]Impervious Area Estimates based on 2001 NLCD (Homer et al., 2004).
[12]Animal Operations estimates based on NC estimates for pork, poultry, cattle and bovine operations in 2007 (NCDA, 2007).
[13]Non-forested Stream Buffer estimate based on 2001 NLCD and a 100 foot buffer distance from USGS blue line streams.

Cape Fear River Basin Targeted Local Watershed Maps

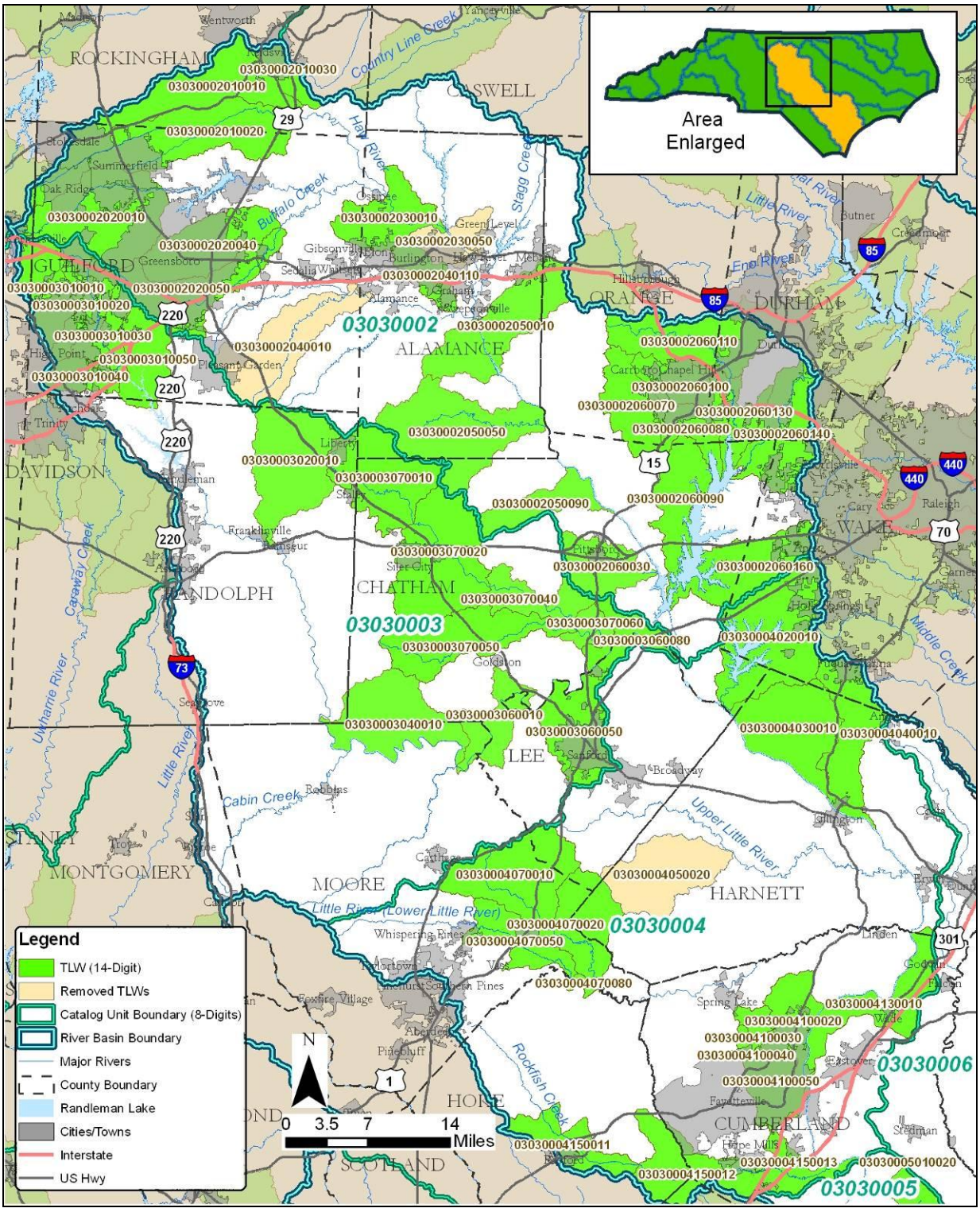


Figure 2. TLWs, Upper Cape Fear.

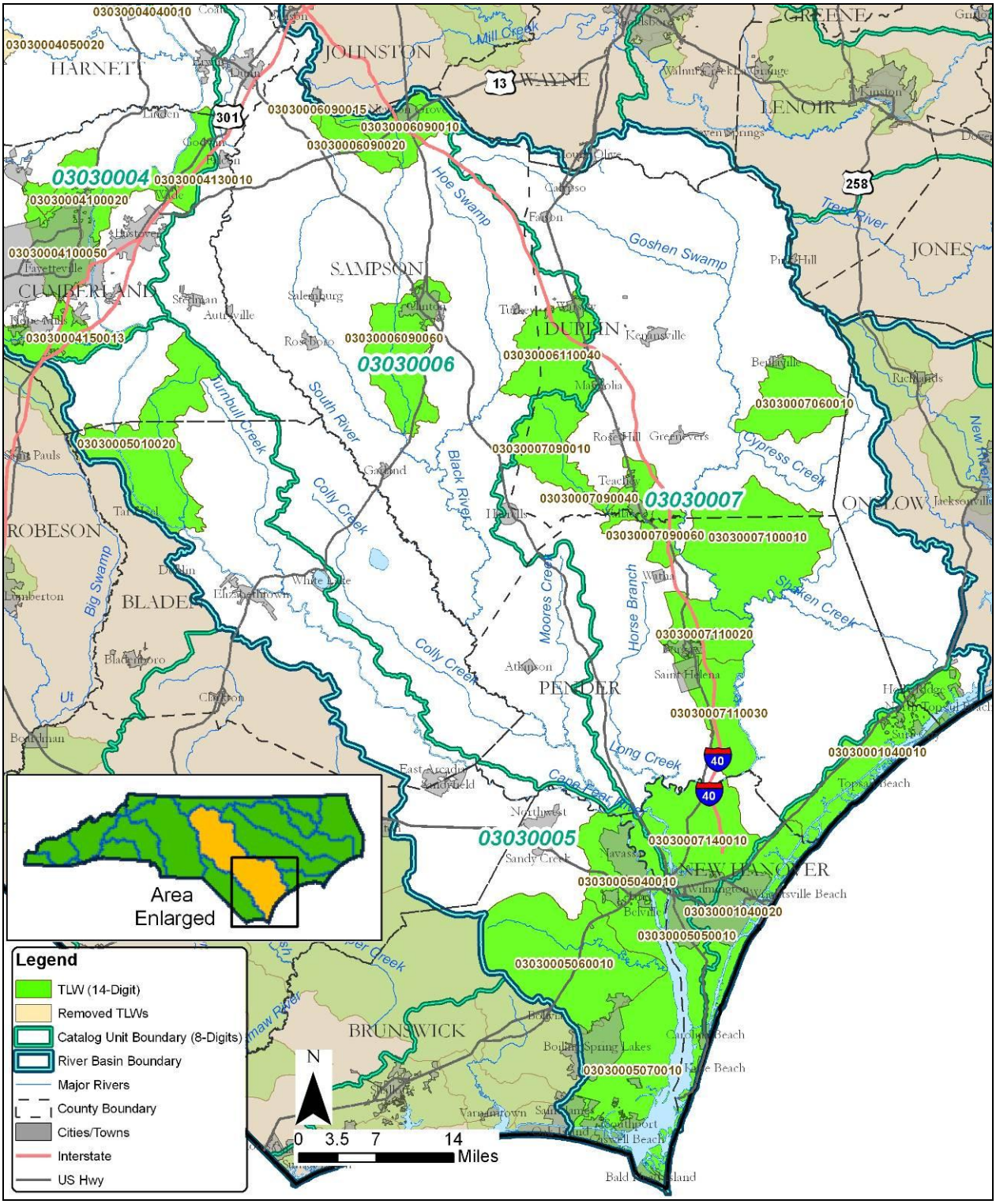


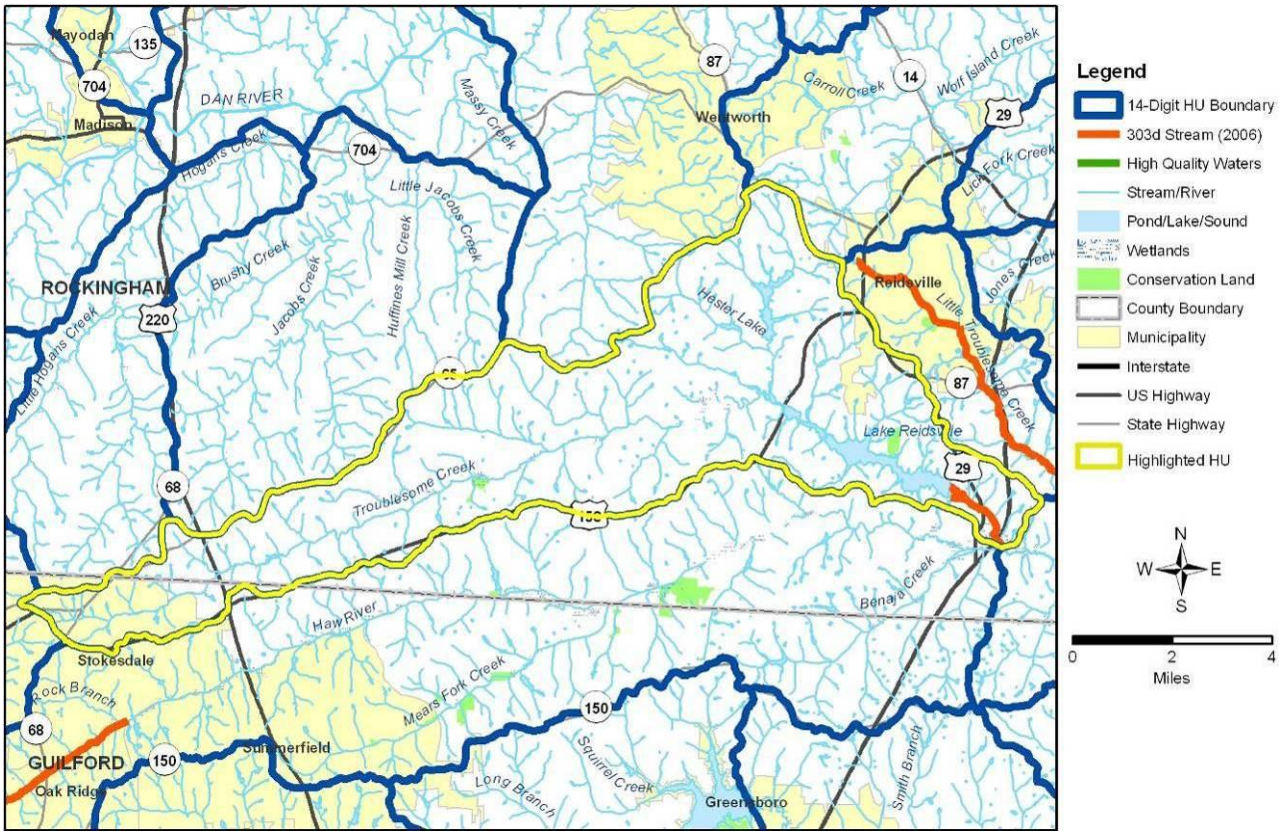
Figure 3. TLWs, Lower Cape Fear.

Discussion of Cape Fear River Basin Targeted Local Watersheds

The following section provides maps and descriptions of TLWs and a discussion of the environmental conditions and activities that lead to their selection.

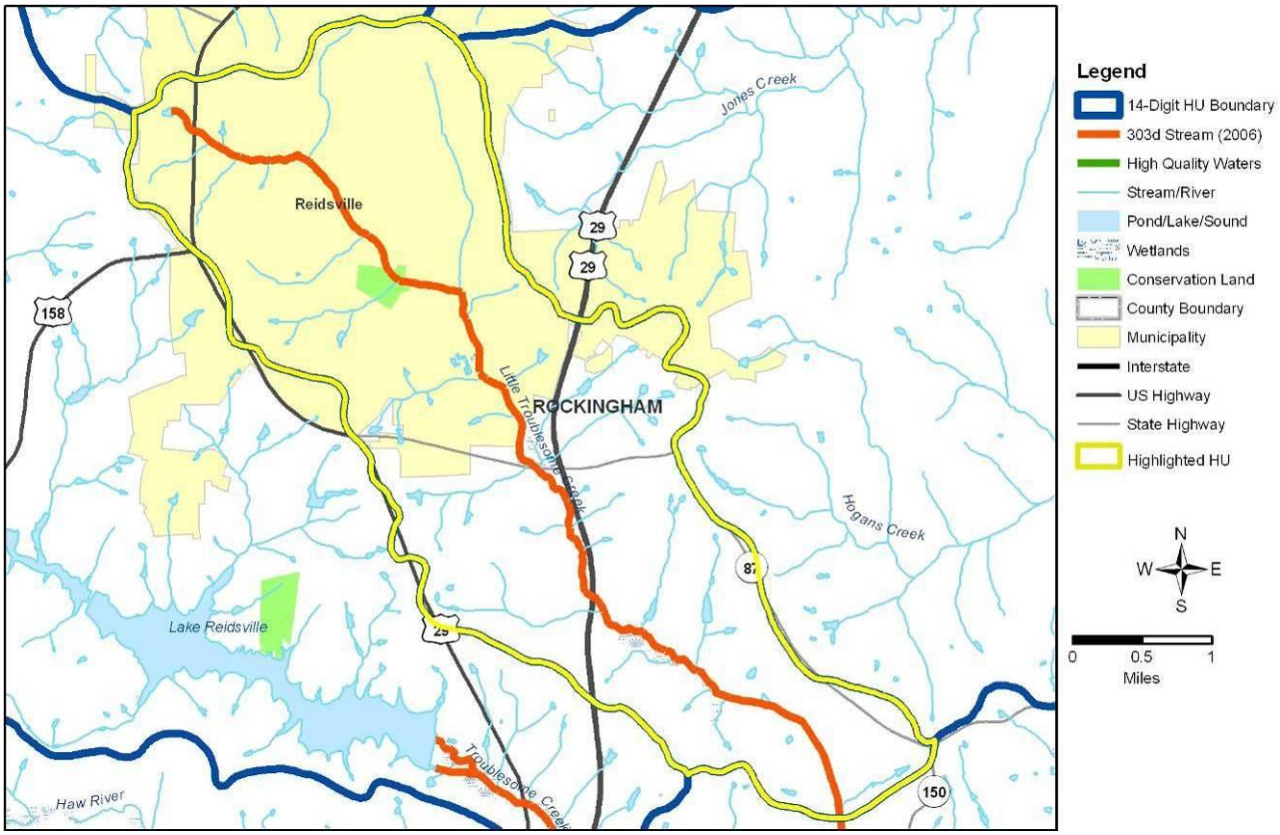
Troublesome Creek: 03030002010010

In 2004, EEP completed a LWP in this HU along with Little Troublesome Creek. Information on this LWP can be found online at www.nceep.net/services/lwps/Troublesome_Creek/Troublesome.pdf. Troublesome Creek is predominantly rural and includes the Reidsville Lake water supply reservoir. The area is growing, however, due to development from nearby Greensboro. Given forecasted growth, LWP recommendations include alleviating two stressors in the HU; stream channel erosion from stormwater runoff and upland sediment delivery from land disturbance activities. Limiting sediment inputs to the stream are particularly import to maintain water quality in Lake Reidsville, the City of Reidsville's water supply which is fed by Troublesome Creek. EEP has been active in the HU with one stream restoration project (5,000 ft.) on a tributary to Troublesome Creek and a preservation project on the mainstem of Troublesome Creek (7,100 ft.) and wetlands (37 ac). Because of growth pressures, this HU will continue to be a priority for stream and wetland preservation and, to a smaller degree, restoration.



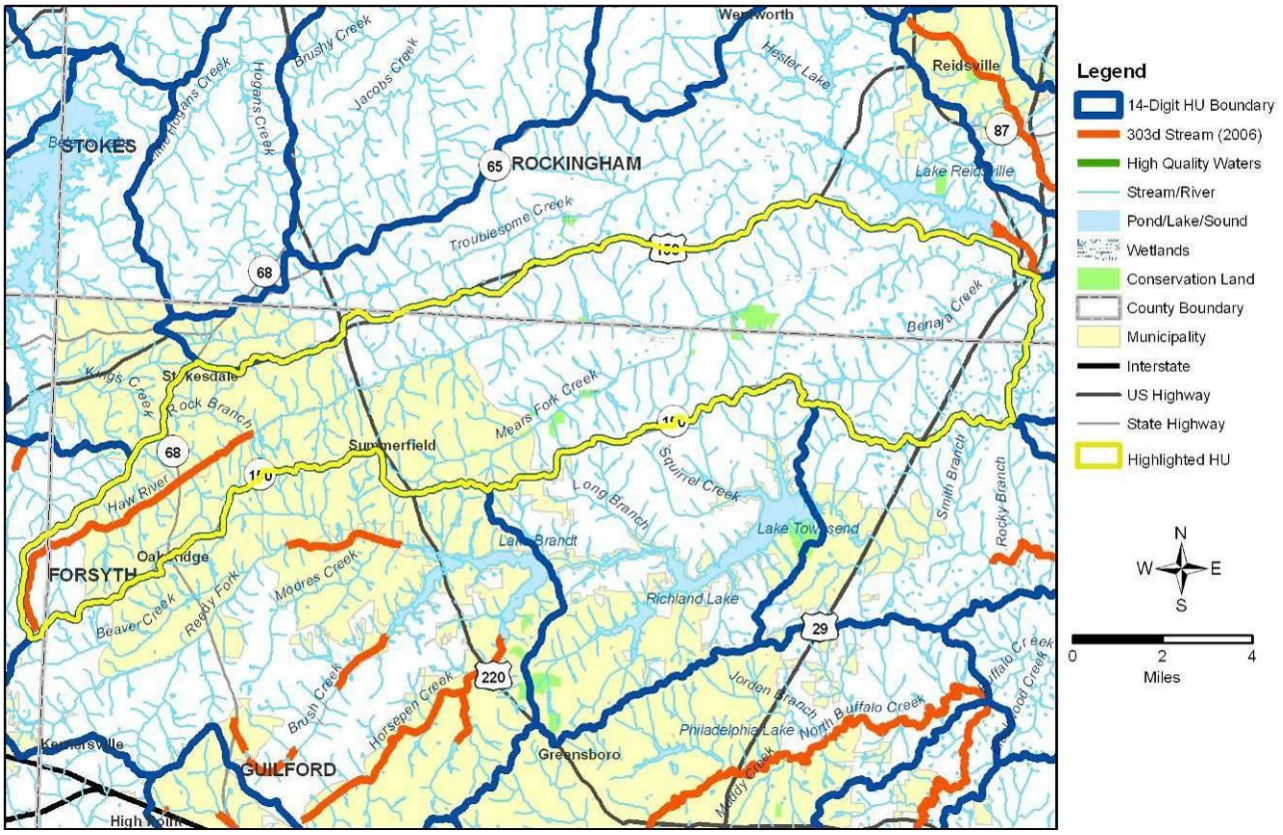
Little Troublesome Creek: 03030002010030

In 2004, EEP completed a LWP in this HU along with Troublesome Creek. Information on this LWP can be found online at www.nceep.net/services/lwps/Troublesome_Creek/Troublesome.pdf. Little Troublesome contains portions of Reidsville and, consequently, had a 2001 NLCD estimated impervious coverage of 12%, relatively high for the region and potentially impacting aquatic resources. Indeed, the 2006 NC DWQ list of impaired waters (i.e., 303(d) list), lists the entire length of Little Troublesome Creek's mainstem as impaired for failing to meet its designated use of supporting aquatic life. Further, downstream of Reidsville's waste water treatment plant (WWTP), waters have failed to meet state fecal coliform standards. EEP has plans to restore a section of stream of Little Troublesome Creek (2200 ft.) and preserve additional stream (2700 ft.). Further opportunities to control stormwater runoff and restore streams should continue in this HU.



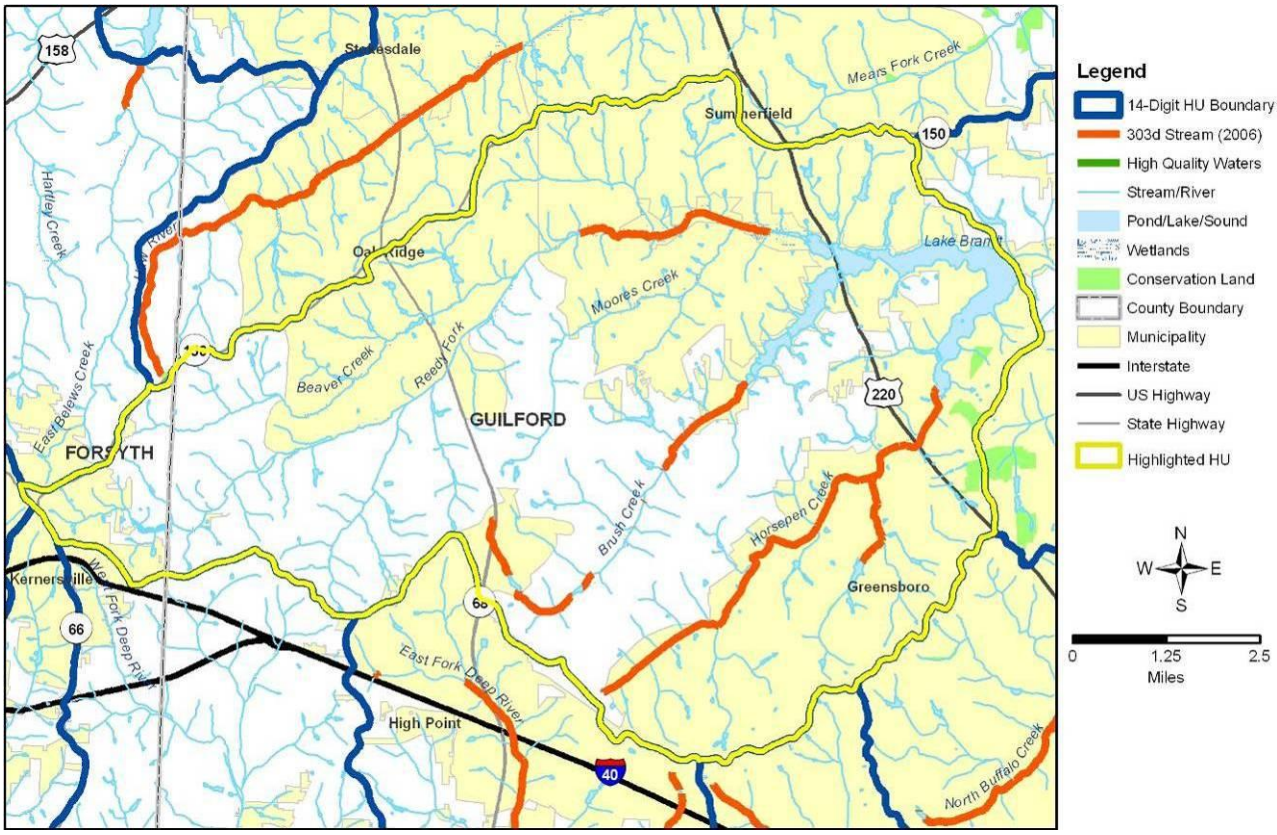
Haw River Headwaters: 03030002010020

This watershed contains the origins of the Haw River. Two large tributaries, Benaja Creek and Mears Fork are also located in this HU. Riparian forest along the Haw River mainstem and its tributaries is nearly 80%, relatively high compared with other HUs in the area. A number of bottomland hardwood forests in the HU have been identified as SNHAs by NC Natural Heritage Program (NHP) including those in Haw River State Park. Nearly 8 miles of stream starting at the headwaters of the Haw have been listed by DWQ as impaired due to poor biological community ratings from a variety of sources (i.e., WWTP discharge, runoff from agriculture and impervious surfaces). EEP has two wetland preservation projects (35 ac. and 12 ac.) along with a stream preservation project (3600 ft.) Due to the mix of ecological assets and environmental stressors, EEP recommends a mix of restoration and preservation measures for this HU.



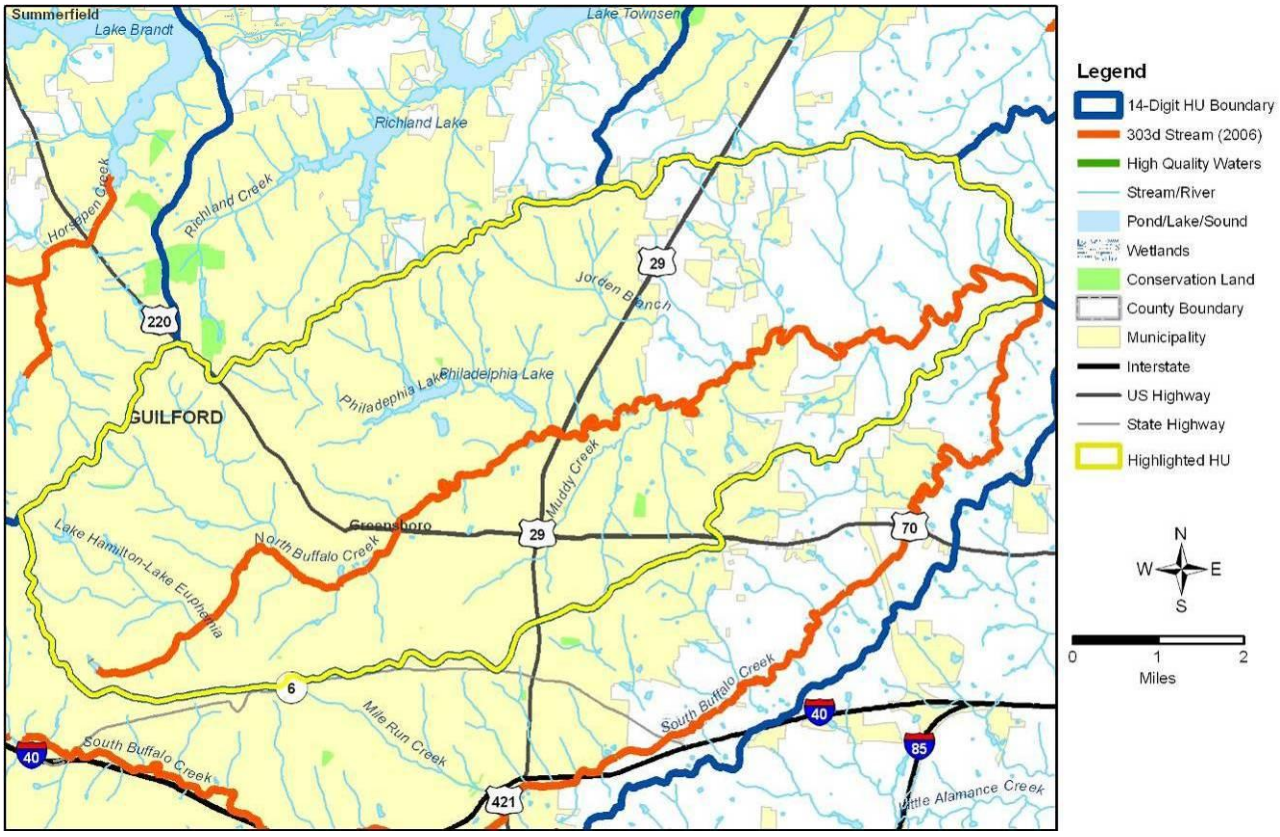
Reedy Fork: 03030002020010

Reedy Fork and its tributaries face a number of water quality challenges. In 2006, 16 miles of streams in the HU were listed as impaired for not meeting their designated use to support aquatic life. Impaired streams included Brush Creek (4 miles), Horsepen Creek (6.8 miles), Reedy Creek (4.2 miles) and an Unnamed Tributary (UT) at Guilford College (1.3 miles). Stormwater runoff from Greensboro, Summerfield and Oak Ridge are likely sources for the impairment to these streams. Coordination of these communities to reduce stormwater impacts is critical to improving riparian habitat and instream conditions. EEP has completed a 1.8 acre wetland restoration project on Horsepen Creek and stream restoration project in Price Park (1,800 ft.) on the impaired section of the Guilford College UT. These waters flow into Lake Brandt, a water supply for Greensboro making improvement of water quality in the watershed a priority.



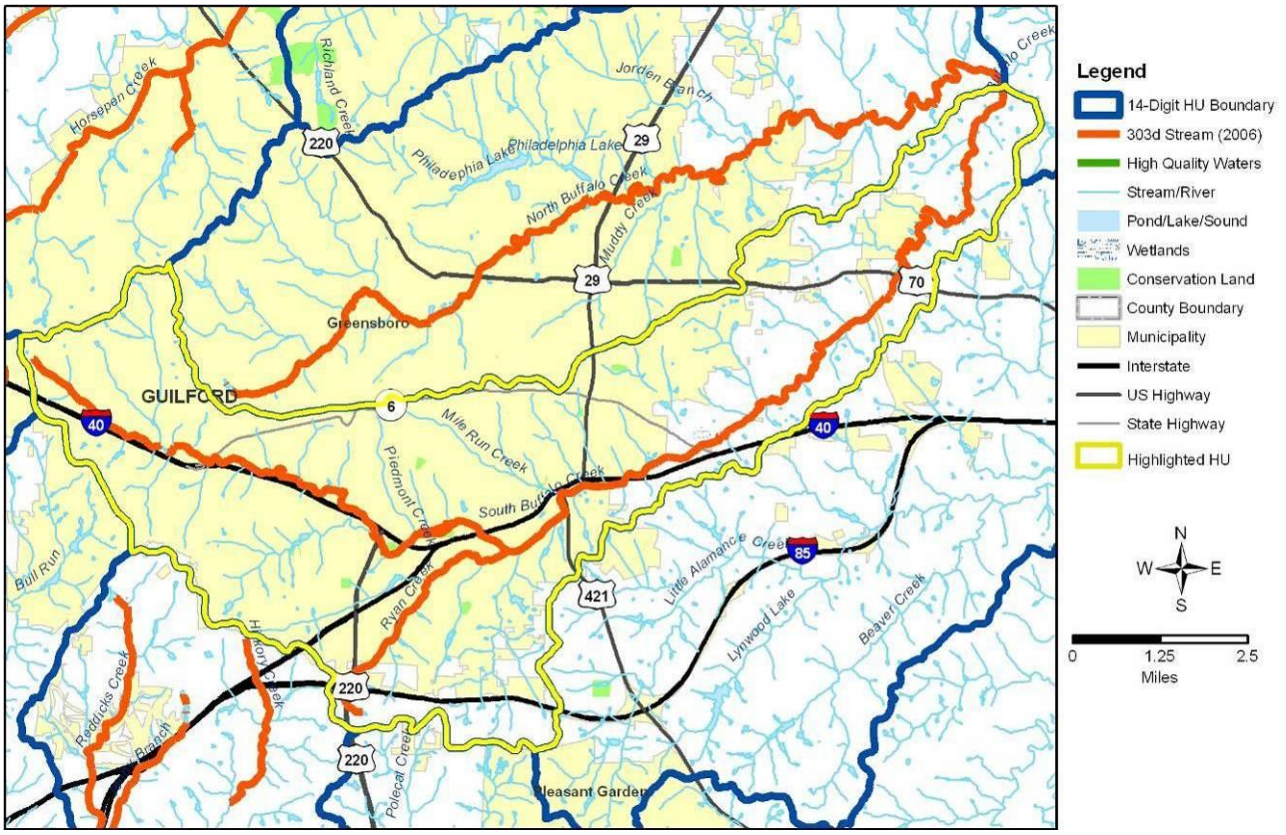
North Buffalo Creek: 03030002020040

The majority of the North Buffalo Creek HU falls in Greensboro with impervious cover estimated at over 24%. The entire length of the North Buffalo Creek (17.2 miles) is impaired based on poor biological ratings and elevated bacteria levels. NC DWQ has completed a Total Maximum Daily Load (TMDL) outlining management measures needed reduce instream fecal coliform concentrations by over 60%. The plan can be downloaded from the web (http://h2o.enr.state.nc.us/tmdl/TMDL_list.htm). EEP has completed 2 projects to help improve stresses to North Buffalo Creek: Starmount Park stream restoration (5,600 ft.) and Brown Bark Park stream restoration of over 2000 feet with an additional 750 ft. of preservation. Implementation of the TMDL combined with efforts to reduce impacts from stormwater runoff are the main goals for improvement in the HU.



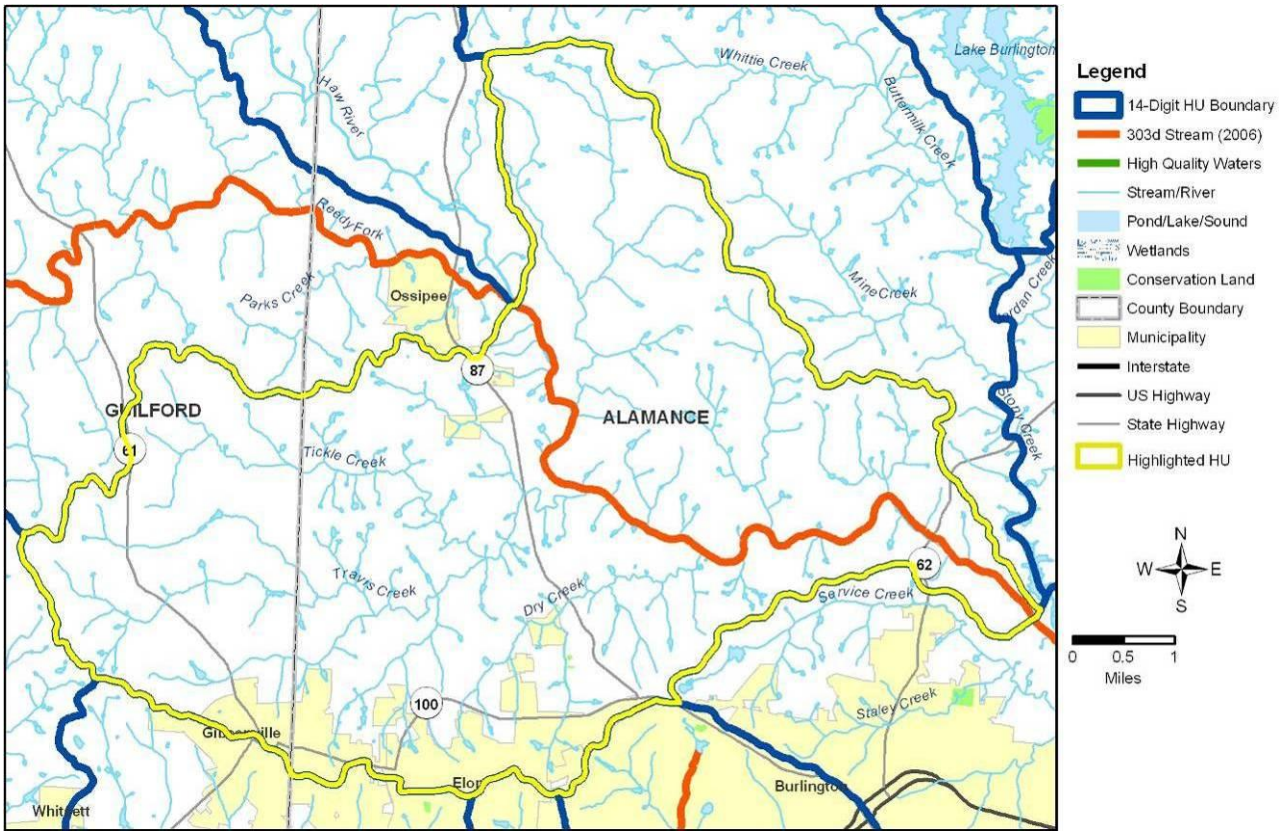
South Buffalo Creek: 03030002020050

Much of Greensboro drains to South Buffalo Creek and its entire length (24.9 miles) has been rated as impaired for failing to meet its designated use of supporting aquatic life. Poor biological community ratings, high turbidity, and elevated ammonia levels are the reasons for this listing. With over 29% impervious cover in the HU, stormwater runoff is the major stressor to streams. EEP has been actively involved in restoration efforts in the watershed. Stream restoration projects have been completed at Hillsdale Park (5,400 ft.), Spring Valley Park (1,000 ft.), Gillespie Golf Course (5,800 ft.), and Benbow Park (1,900 ft.) along with a wetland restoration (4 ac.) and preservation (2.2 ac) project adjacent to South Buffalo Creek. Based on EEP's significant investment in the watershed and its continued impairment listing, continued efforts to reduce stressors to streams, including stormwater runoff, remain a goal for the HU.



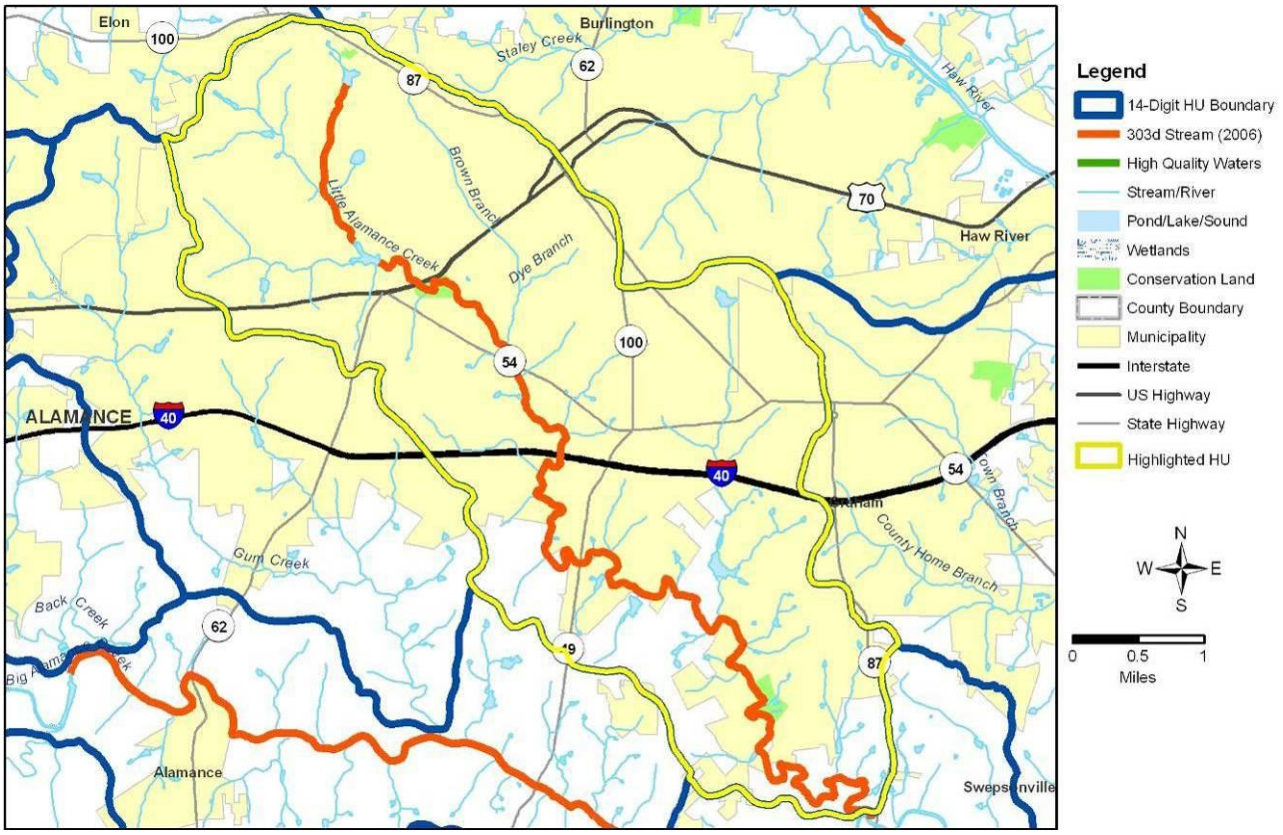
Travis Creek and Tickle Creek: 03030002030010

This HU is part of the 2008 completed EEP LWP that includes Little Alamance Creek in Burlington. Information on the project can be viewed online at www.nceep.net/services/lwps/Little_Alamance/Alamance.pdf. Monitoring data collected during the LWP indicate that the Travis and Tickle creeks are not meeting their designated use of supporting aquatic life. A third creek in the HU, Altamahaw lies to the east side of the Haw River. The watersheds are largely rural making it likely that agricultural sources are the main source of stress to in the HU. Areas of land clearing and poor riparian management were also observed during the LWP. EEP has been active in pursuing projects in the HU. Stream restoration projects include Glen Raven (4,000 ft.), two projects on UTs to the Haw River (10,100 ft. and 2,000 ft.), and two projects on UTs to Altamahaw Creek (3,200 ft. and 1,500 ft.). Improved riparian management and targeted preservation of streams and wetlands are highlighted recommendations in the LWP.



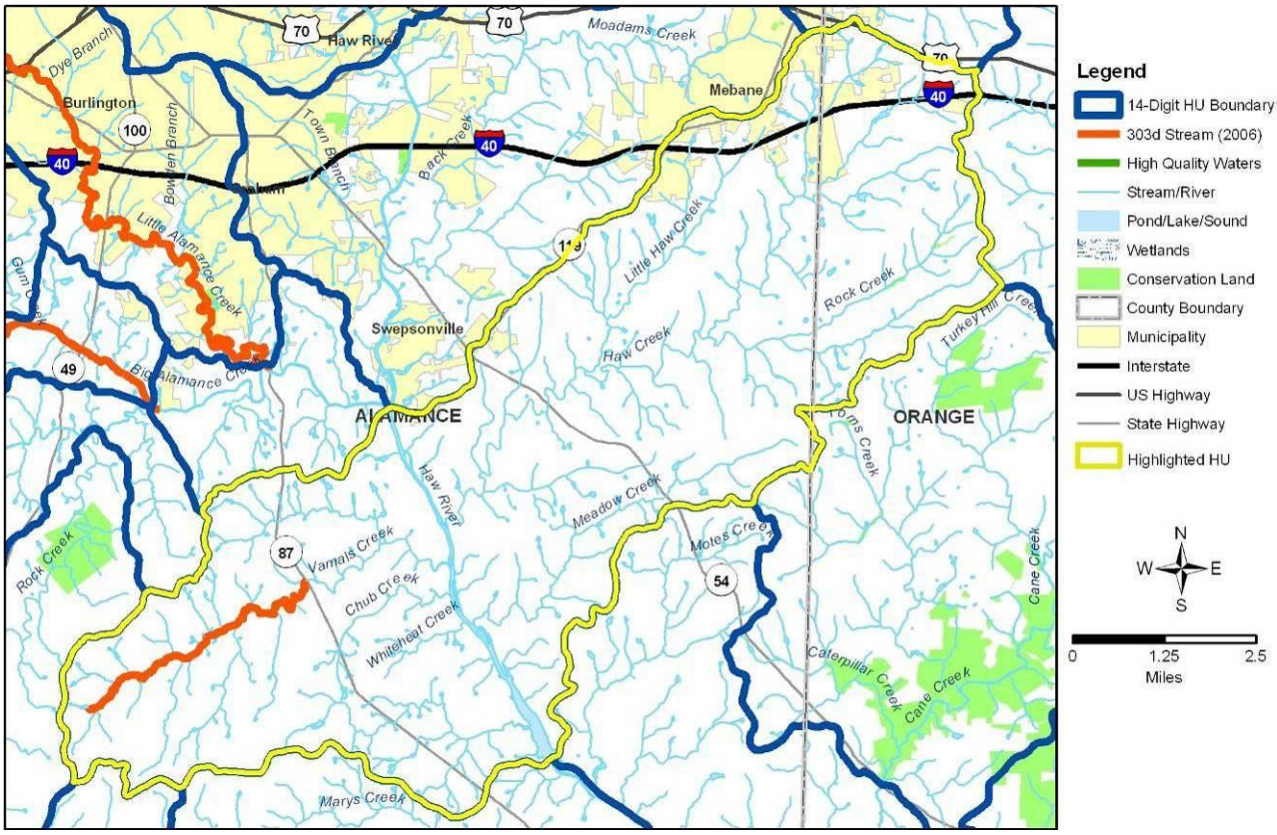
Little Alamance Creek-North: 03030002040110

This HU was a focus of the 2008 EEP completed Tickle, Travis, and Little Alamance LWP. Information on the project can be viewed online at www.nceep.net/services/lwps/Little_Alamance/Alamance.pdf. The watershed includes portions of Burlington and Graham, is largely developed, and has a 2001 estimated impervious cover over 26%. Stormwater runoff in the HU resulted in 12.6 miles being listed as impaired for not supporting aquatic life. Creek monitoring showed indications of nutrient enrichment from urban nonpoint source (NPS) pollution. EEP has proposed a restoration project at Burlington's City Park of 2,800ft. Other projects have also been highlighted in the LWP. Due to the urban setting, it is recommended that Burlington and Graham continue their efforts to reduce stormwater impacts in the HU.



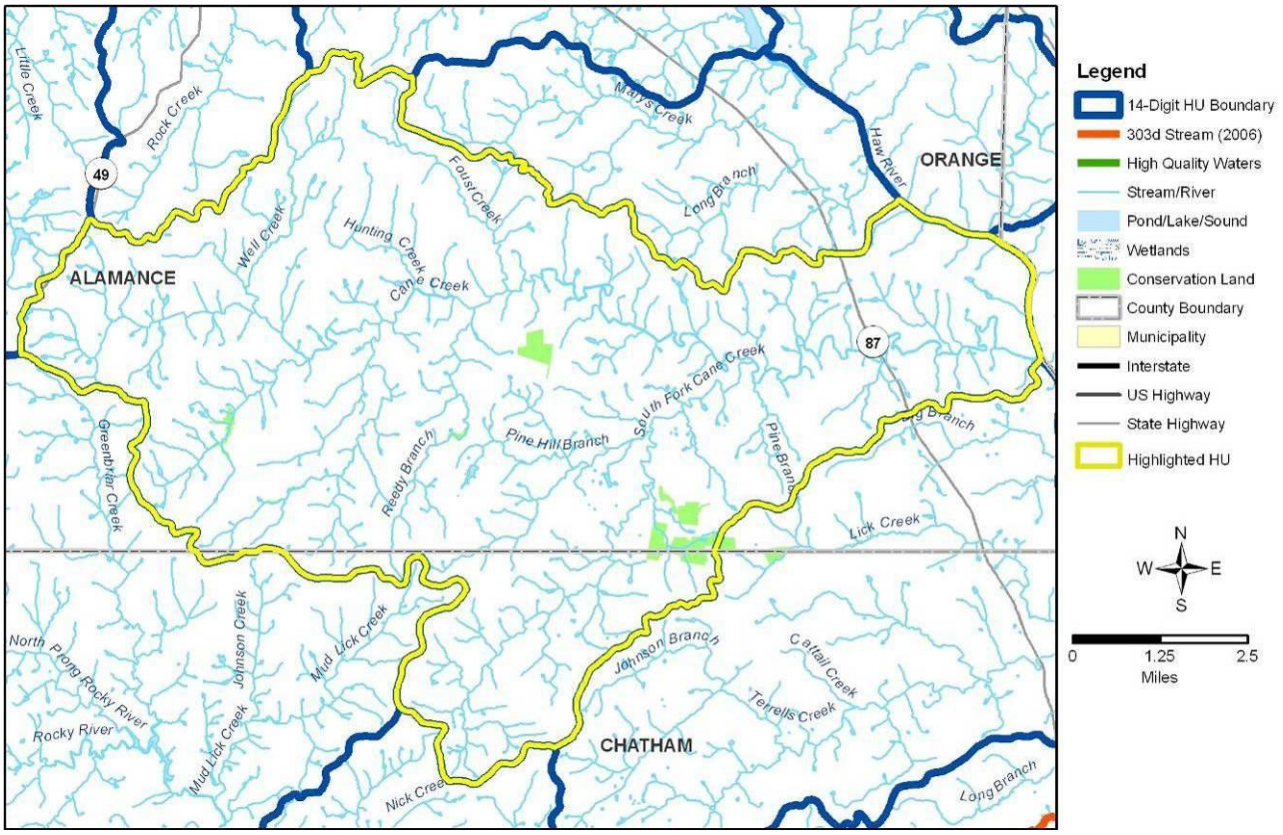
Varnals Creek and Haw Creek: 03030002050010

Located in rural Alamance and Orange counties, this HU is bisected by the Haw River and is being stressed by agricultural NPS pollution. Varnals, to the south of the Haw River, was listed as impaired for not supporting aquatic life in 2006. Prior to 2006, the watershed was considered for HQW designation by DWQ. To the north of the Haw River, observation of Haw Creek during field tours of the watershed indicated a number of restoration opportunities. A hydro-electric dam at Saxapahaw marks the outflow point of the HU and also serves as a barrier to fish passage in the Haw River. Goals for improvement in the watershed include restoring the headwaters of Varnals Creek to allow pursuit of HQW designation, pursuit of restoration opportunities in Haw Creek, and improvement of fish passage conditions along the mainstem of the Haw River.



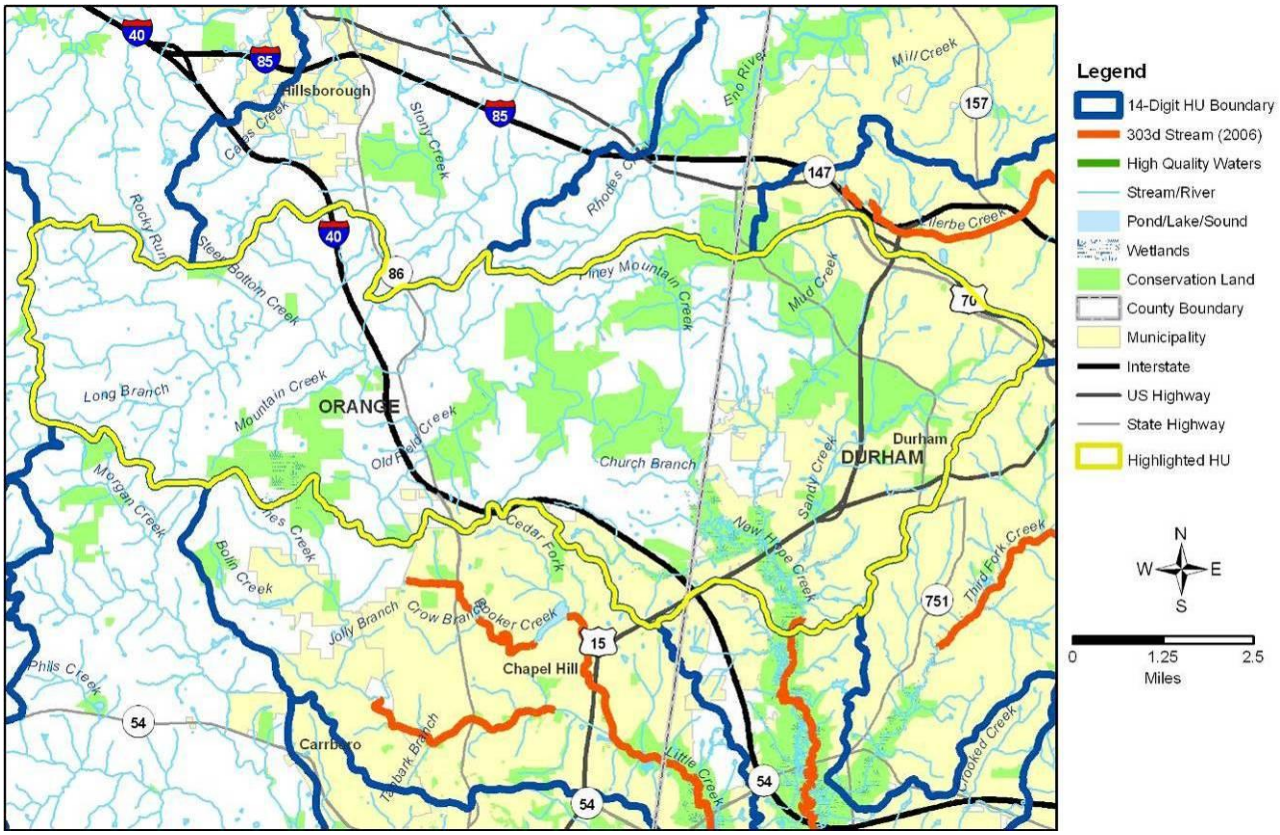
Cane Creek: 03030002050050

Cane Creek has an active base of landowners who are participating in conservation and restoration programs. The HU is a mix of mainly forest and agricultural lands and has 51 cattle, dairy, and poultry operations. Benthic ratings in the HU vary between "Fair" and "Good-Fair" indicating a need for improvement to aquatic conditions. EEP has been active in Cane Creek improvement efforts. The Program has completed or is in the process of completing a number of stream and wetland restoration projects including two projects on UT to South Fork Creek (6,000 ft. and 4,500 ft.), Reedy Branch (3,100 ft.), Cane Creek (2,200 ft.), UT to Cane Creek (6,600 ft.) and two projects on Wells Creek (5700 ft. and 3,700 ft.). These restoration investments are important to maintain with continued restoration and preservation work along with policies that promote good riparian conditions.



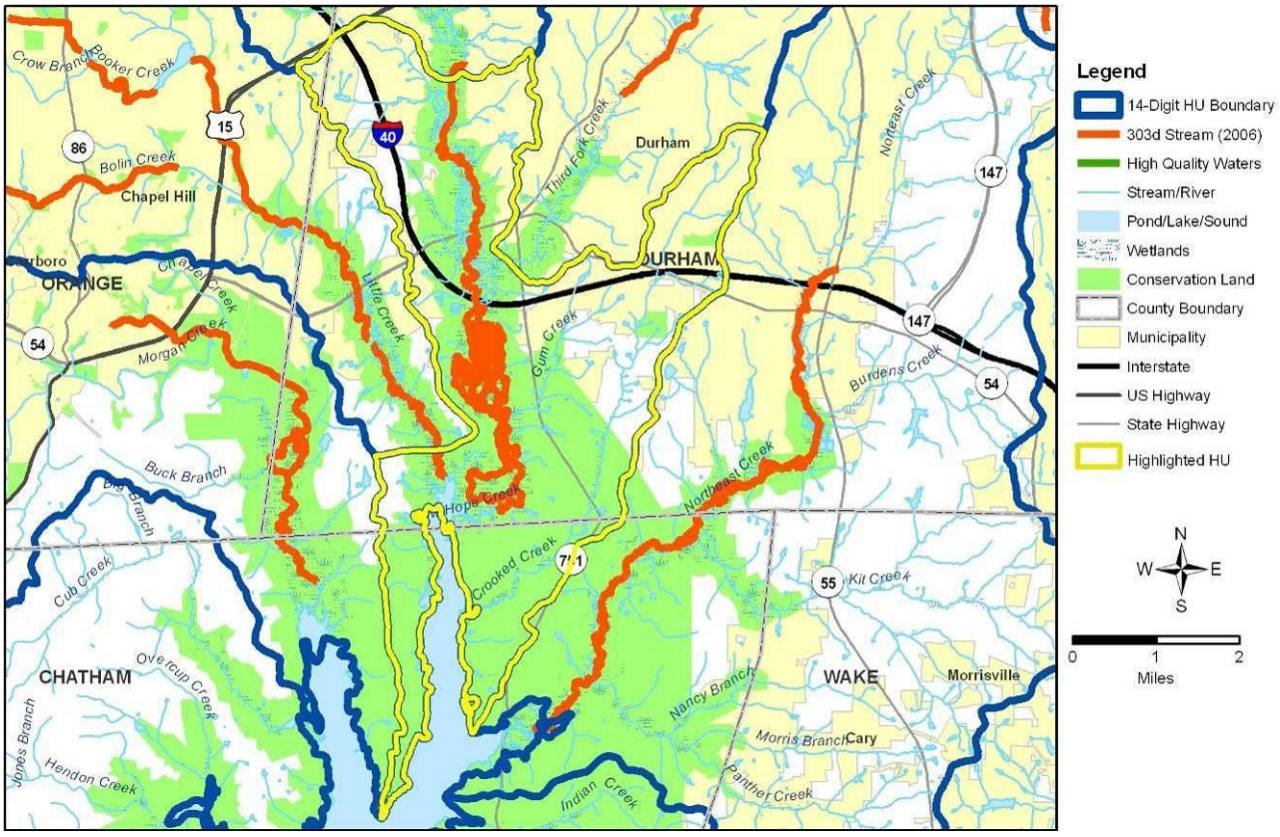
New Hope Creek Headwaters: 03030002060110

New Hope Creek flows directly to B. Everett Jordan Lake, a drinking water supply that has been designated a Nutrient Sensitive Water. NC DWQ has developed a set of proposed rules to reduce NPS pollution to Jordan Lake and restore its designated uses. Posted online at http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm, these rules seek challenging reductions for waters draining to Jordan Lake, but particularly challenging for New Hope Creek. Consequently, recommendations for New Hope Creek start with meeting the proposed nutrient reduction rules for Jordan Lake. Additionally, NC Wildlife Resources Commission considers the Creek important to restore and protect due to a diverse assemblage of native mussel species present in the HU. The lower section of the Creek in this HU is also listed as impaired for not attaining its aquatic life use. EEP has undertaken a stream and wetland restoration project at Sandy Creek (2,700 ft. and 3.6 ac., respectively) along with a restoration project adjacent to New Hope Creek (28 ac.). Additionally, EEP has preserved over 3,000 ft. of streams in the HU. In addition to EEP's activities, the Triangle Land Conservancy (TLC) is actively working with Orange and Durham counties to protect open space along New Hope Creek. Preservation and restoration activities should continue to protect native mussels and improve water quality conditions in Jordan Lake.



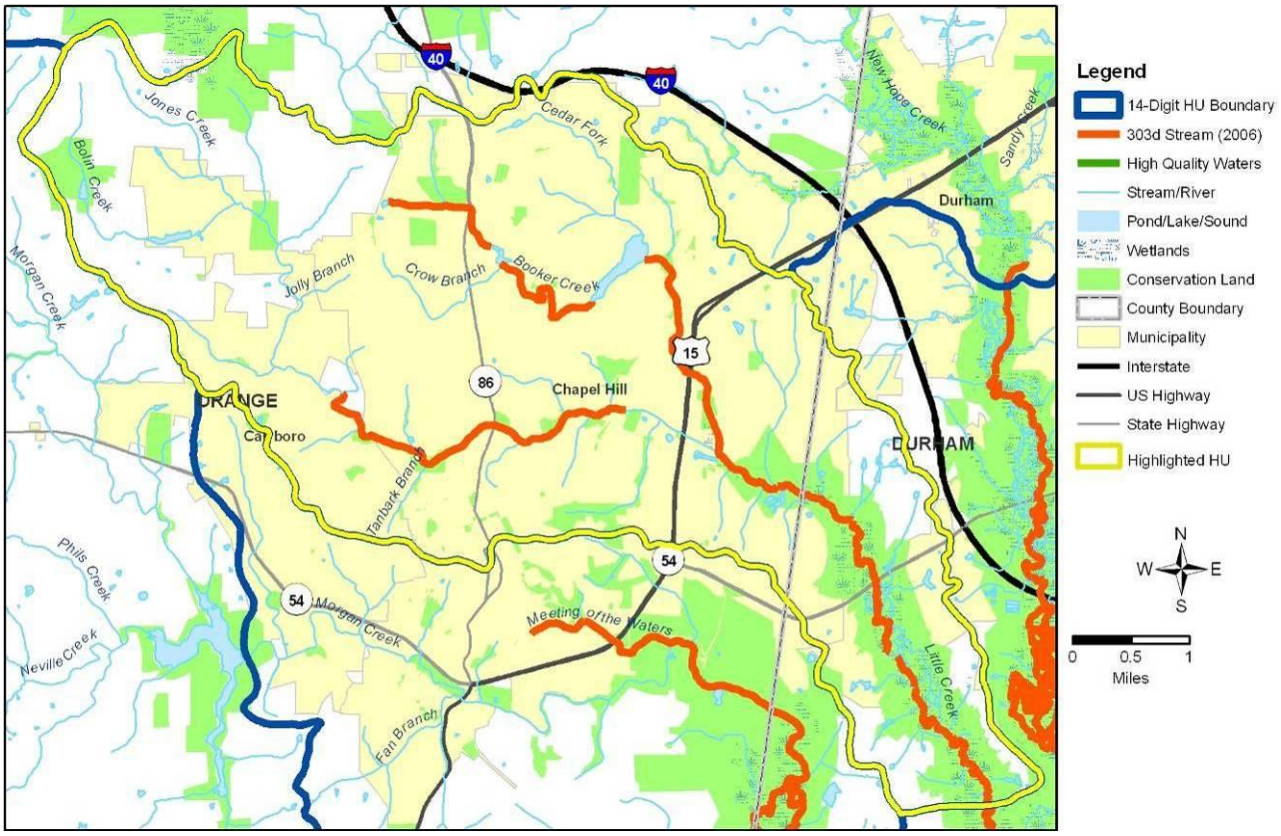
New Hope Creek-Middle: 03030002060130

New Hope Creek flows directly to B. Everett Jordan Lake, a drinking water supply that has been designated a Nutrient Sensitive Water. NC DWQ has developed a set of proposed rules to reduce NPS pollution to Jordan Lake and restore its designated uses. Posted online at http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm, these rules seek challenging nutrient reductions for waters draining to Jordan Lake, but particularly challenging for New Hope Creek. Consequently, recommendations for New Hope Creek start with meeting the proposed nutrient reduction rules for Jordan Lake. The Army Corps of Engineers owns over 50% of the land in this HU and manages it for multiple uses including recreation, protection of water quality and wildlife. The City of Durham has been active in protecting stream buffers along the New Hope Creek. Improved stormwater management of existing development and protection of current ecological assets is recommended for this HU.



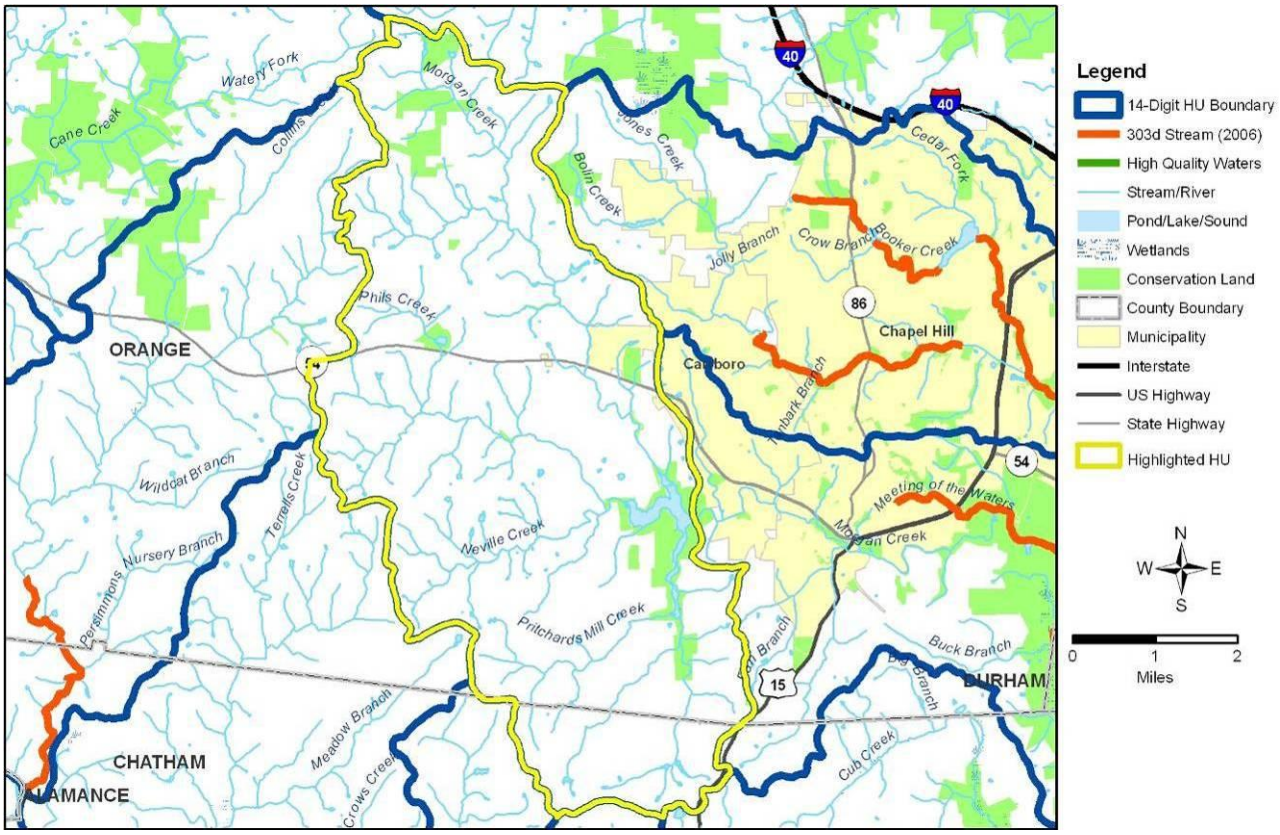
Little Creek: 03030002060100

Little Creek is one of three HUs that comprise EEP's Morgan and Little Creek LWP. Information on this LWP can be found online at www.nceep.net/services/lwps/Morgan_Creek/Morgan.pdf. The LWP was completed in 2004. Its recommendations include reducing impacts from stormwater runoff in Chapel Hill and Carrboro. Agricultural and urban restoration opportunities are also identified in the LWP. Little Creek is considered part of the Upper New Hope drainage and, consequently, is faced with challenging nutrient reduction proposals to help meet water quality standards in Jordan Lake. Additionally, 14.4 miles of Little Creek and two of its tributaries, Booker and Bolin creeks, are listed as impaired by the state for not supporting aquatic life. While the LWP is complete, the Towns of Carrboro and Chapel Hill are partnering on a plan to improve the biological conditions of Bolin Creek, a sub-watershed of Little Creek. More information on this initiative can be found at the projects website (http://www.townofcarrboro.org/pzi/Env/Water/bcwrt.htm). Recommendations for the HU are to better control stormwater and improve water quality in runoff to Jordan Lake.



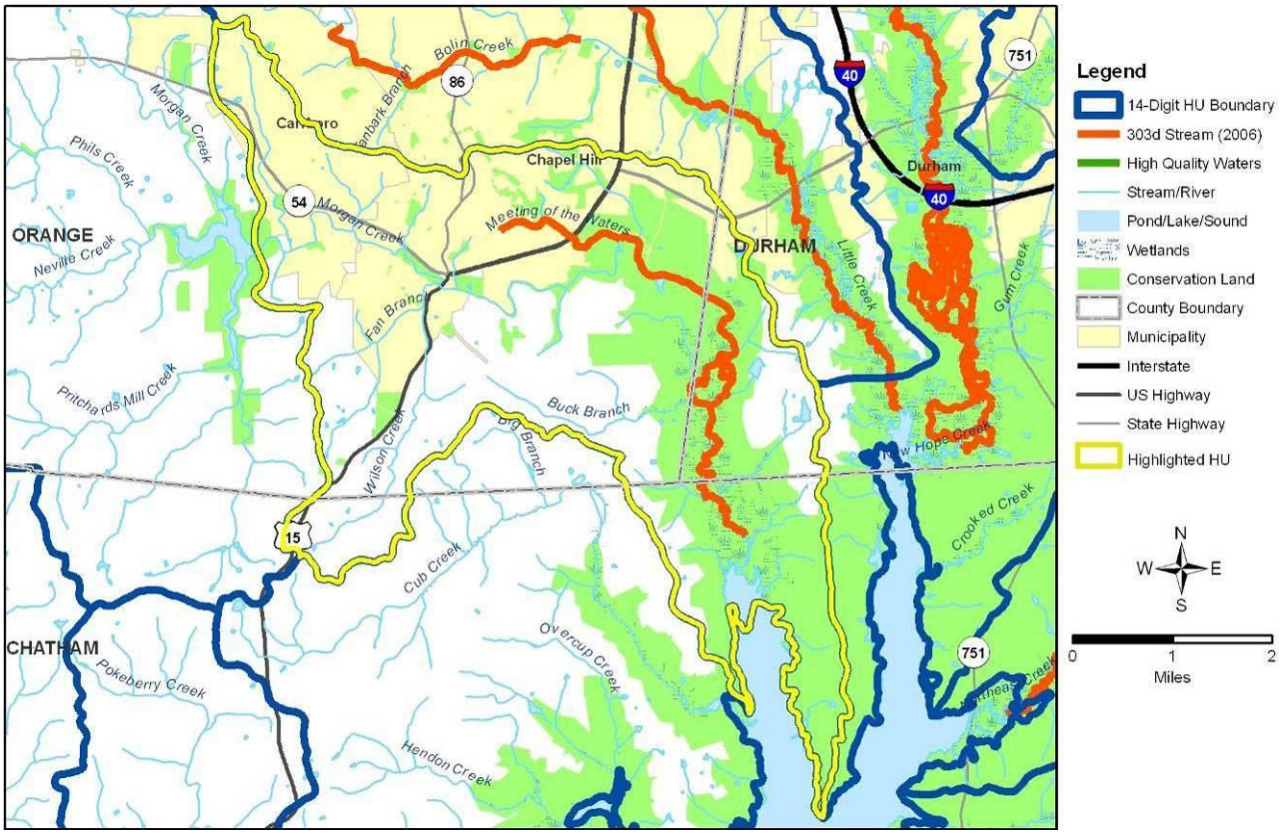
Phils Creek: 03030002060070

Phil's Creek flows into University Lake and, later, Morgan Creek. It is one of three HUs that comprise the Morgan and Little Creek LWP. Information on this LWP can be found online at www.nceep.net/services/lwps/Morgan_Creek/Morgan.pdf. The LWP was completed in 2004. University Lake, a drinking water supply for Chapel Hill and Carrboro, shows signs of eutrophic conditions but has not been rated as to whether or not its meeting aquatic life criteria because of insufficient number of samples. Phil's Creek watershed has more agricultural use and lower development densities than the downstream Morgan Creek. The HU is both a priority for conservation and restoration to help prevent degradation of drinking water supplies. EEP has preserved 4,500 ft. of stream in the Phil Creek headwaters as part of its efforts to implement LWP recommendations. Additionally, TLC is working in this area to protect land and stream corridors. Through easements and acquisitions the conservancy has protected about 900 acres of land in this watershed.



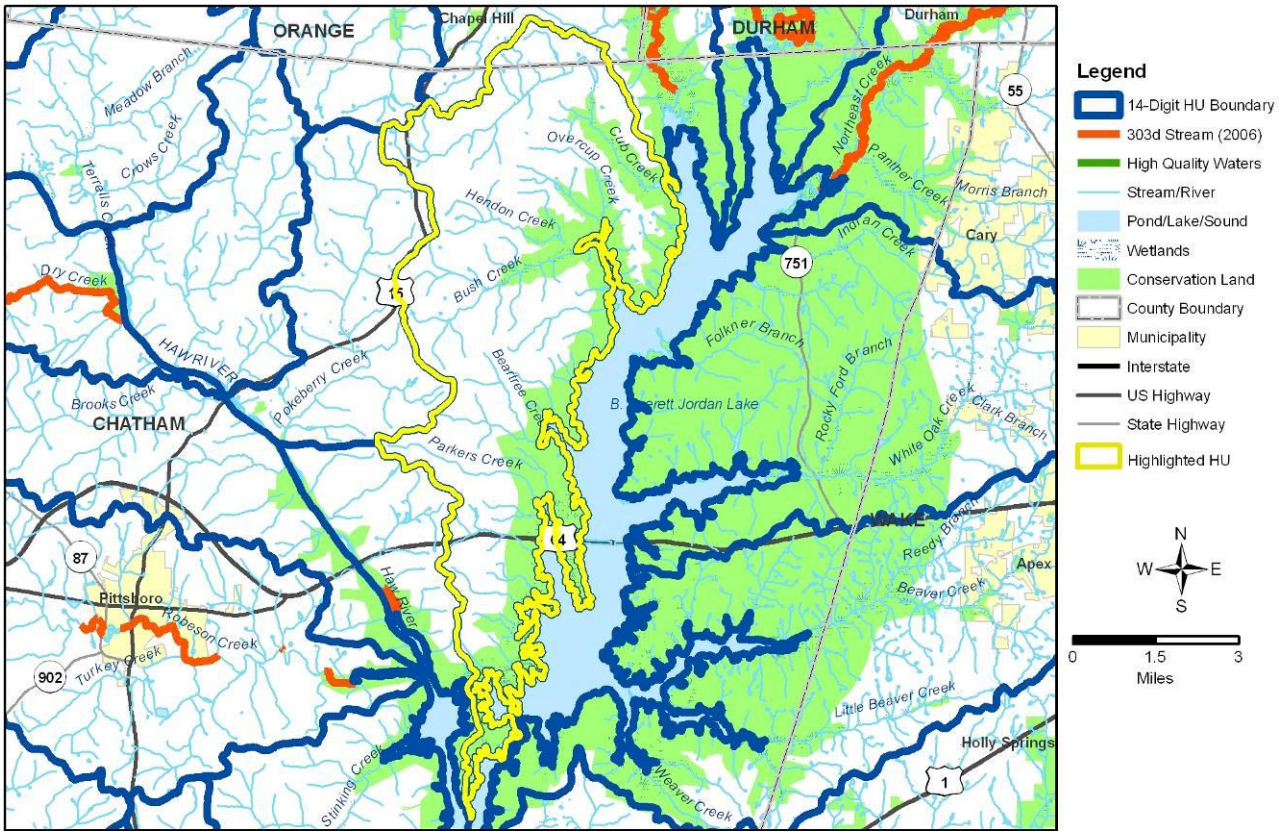
Morgan Creek: 03030002060080

Morgan Creek is a mostly urban HU that drains portions of Chapel Hill and Carrboro. It is one of three HUs that comprise the Morgan and Little Creek LWP. Information on this LWP can be found online at www.nceep.net/services/lwps/Morgan_Creek/Morgan.pdf. The LWP was completed in 2004. Its recommendations highlight the need to reduce impacts from stormwater runoff. Morgan Creek and one of its tributaries, Meeting of the Waters, have over 6 miles of stream on the 2006 impaired stream list for not meeting its designated aquatic life uses. The HU is considered part of the Upper New Hope drainage by DWQ and, consequently, the area faces challenging nutrient reduction proposals to help meet water quality standards in Jordan Lake. EEP has one completed stream restoration project in the LWP on Chapel Creek (1,400 ft.) and a wetland restoration project it plans to construct in Morgan Creek's floodplain (19 ac.).



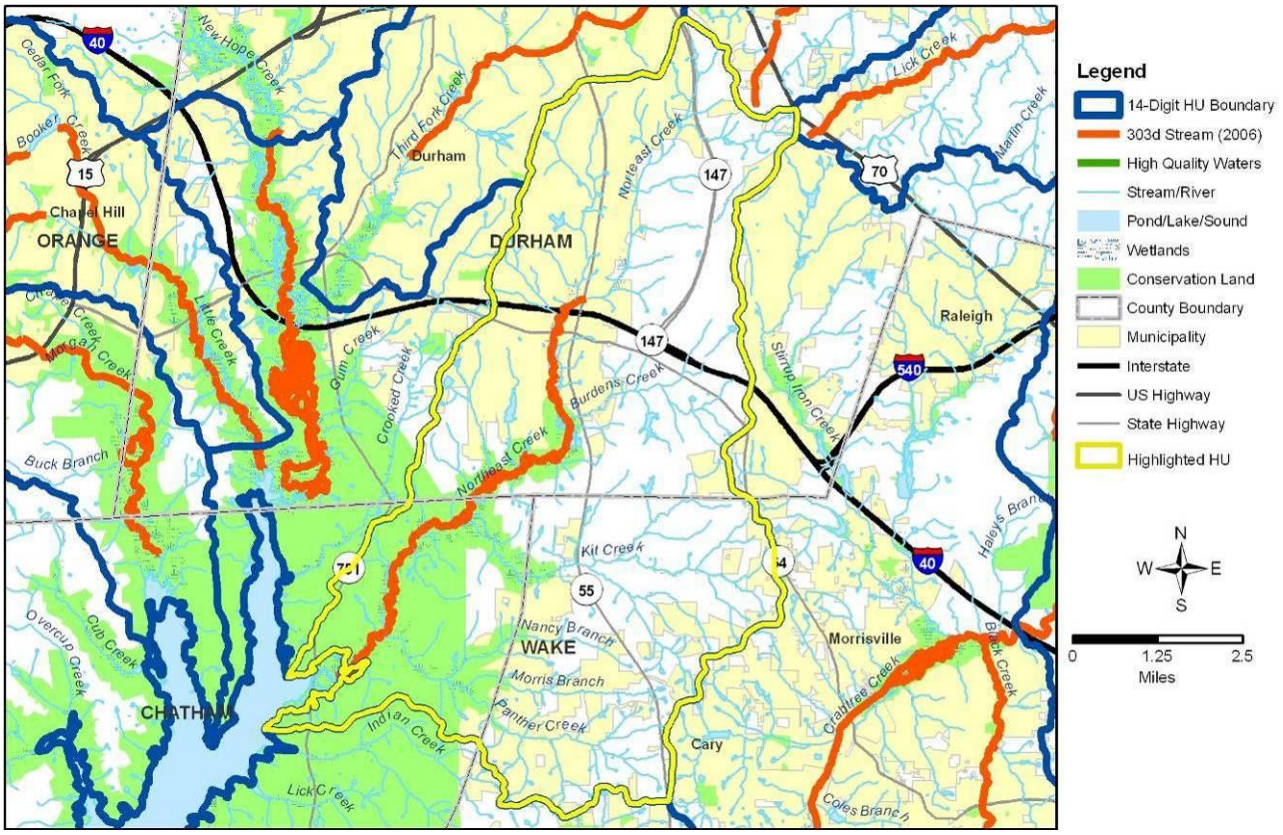
Jordan Lake Western Shore: 03030002060090

This HU is in an area of Jordan Lake facing growth pressures from both the north (Chapel Hill and Carrboro) and South (Pittsboro and Western Wake County). The HU, however, houses a several large SNHA (Bush Creek, Herndon Creek Ravine, Parkers Creek) that NC NHP considers important as Core Habitat for the region. The HU, due to its proximity to Jordan Lake, is also important to achieving the State's nutrient reduction goals for the Lake. TLC and Chatham County are actively developing plans to identify critical areas to protect for water quality and habitat objectives. In the face of development pressures, critical habitat protection should remain a priority in this HU.



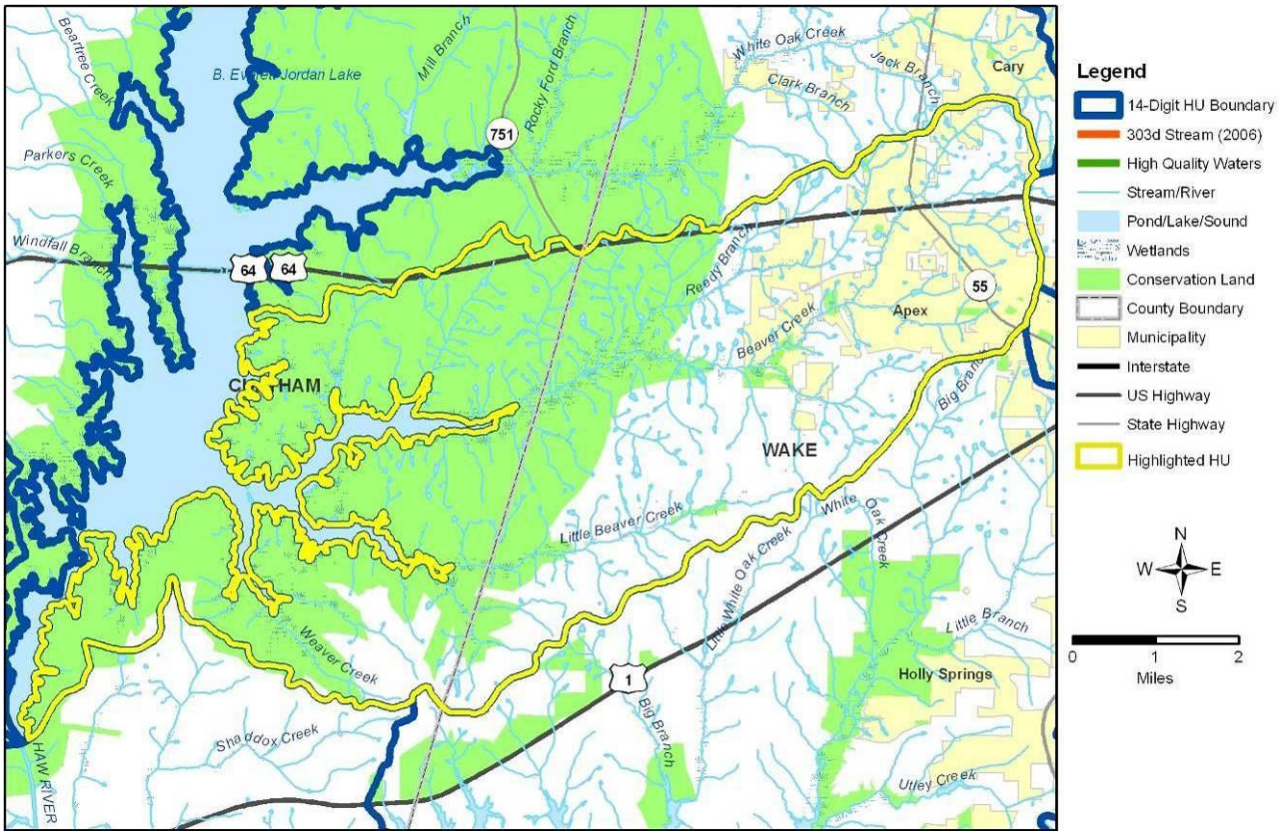
Northeast Creek: 03030002060140

Portions of Durham, Cary, and Morrisville drain to Northeast Creek contributing to a range of reasons for impaired conditions in the HU. Poor biological conditions combined with high levels of turbidity and fecal coliform bacteria have led to DWQ listing over 11 miles of Northeast Creek as not meeting its designated uses. DWQ has developed a TMDL that specifies needed reductions of fecal coliform bacteria of 90% by Durham (Online at: http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/Northeast_Creek_TMDL_Final.pdf). The HU is considered part of the Upper New Hope drainage by DWQ and, consequently, is facing challenging nutrient reduction proposals to help meet water quality standards in Jordan Lake. Improved treatment of stormwater runoff is the recommendation for improving aquatic conditions in the HU.



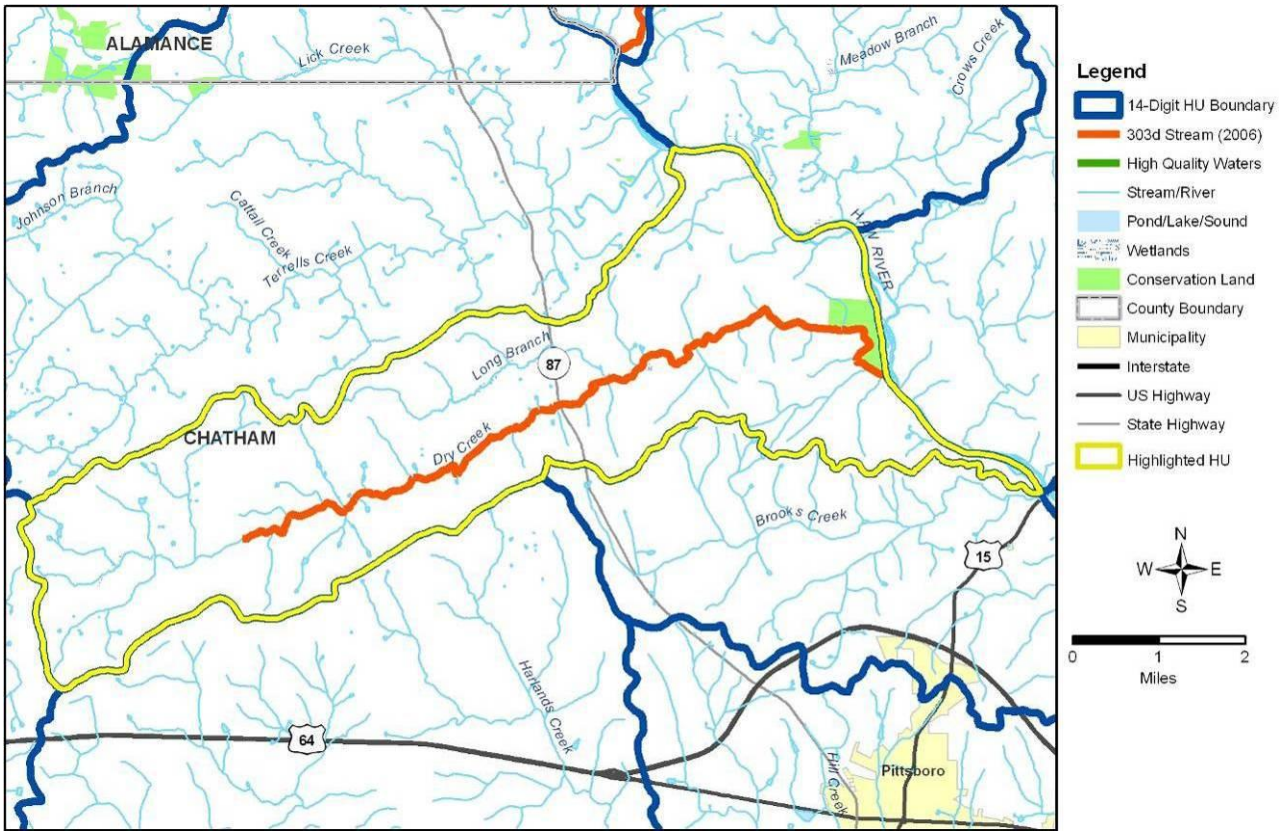
Beaver Creek: 03030002060160

Beaver Creek, which flows directly to Jordan Lake, drains portions of Apex. While it's likely this stream shows impacts from Apex's stormwater runoff, it has not been adequately monitored to receive a use support rating from DWQ. The proposed DWQ rules to reduce nutrient runoff to Jordan Lake consider Beaver Creek to be part of Lower New Hope Creek and, consequently, require a freeze on nitrogen and phosphorus levels from this portion of the Lake's Watershed. Much of the land in this watershed has been protected by the Army Corps of Engineers as a consequence of the creation of Jordan Lake. Apex has successfully protected over 120 acres of floodplain with help from CWMTF. Additionally, EEP has completed a restoration and preservation project over 5,600 ft. of stream in Little Beaver Creek. Continued preservation efforts and stormwater treatment are recommended to limit NPS pollution from this HU to Jordan Lake.



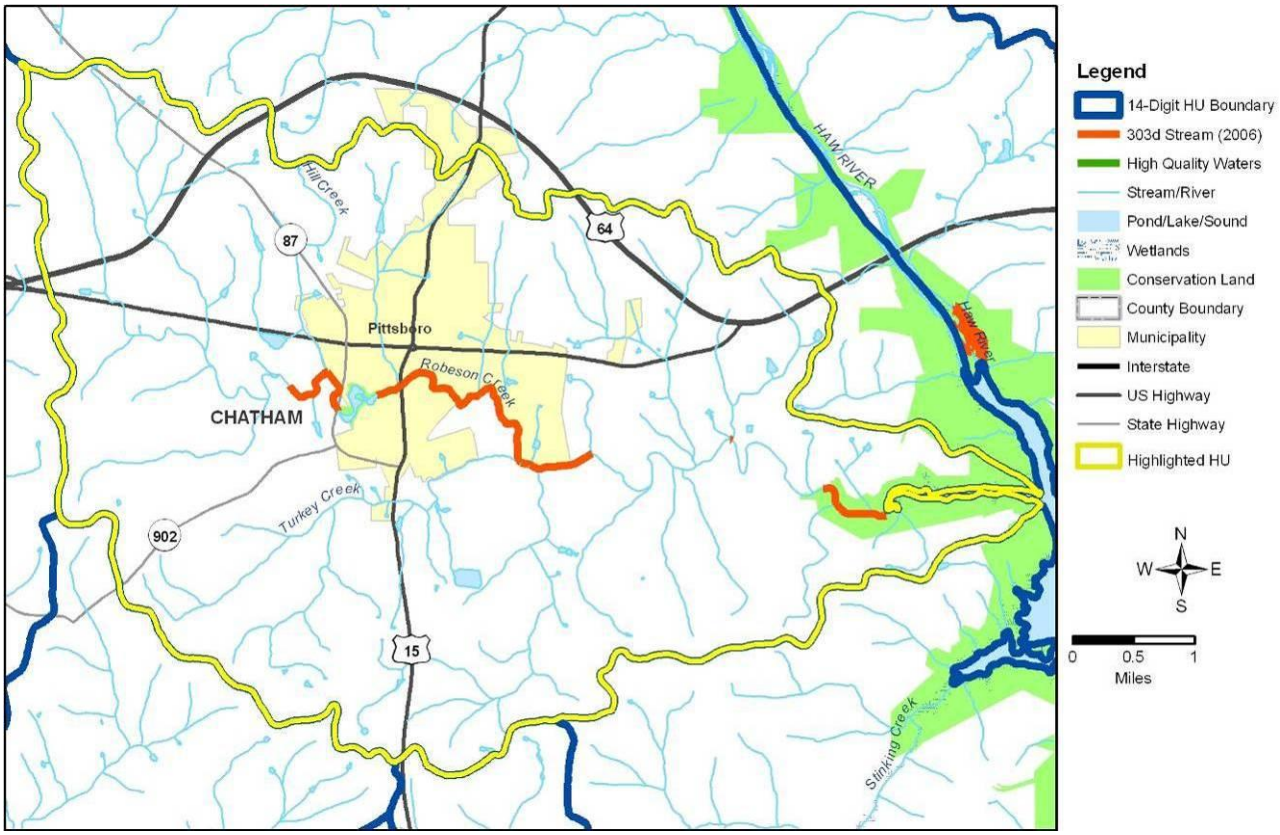
Dry Creek: 03030002050090

Biological conditions in this HU have deteriorated recently and, as a result, Dry Creek is listed as impaired for not fully supporting aquatic life use due to Poor benthic ratings. Source(s) for degrading conditions in the HU may be related to development of a large subdivision and golf course. The US Fish and Wildlife Service (FWS) identify Dry Creek as one of their priority HUs for habitat preservation and restoration to protect the Cape Fear shiner, a federally endangered species in the adjacent Cape Fear River. This HU has also received attention from the Haw River Assembly and is actively being monitored by members of the organization in a study funded by NC DWQ.



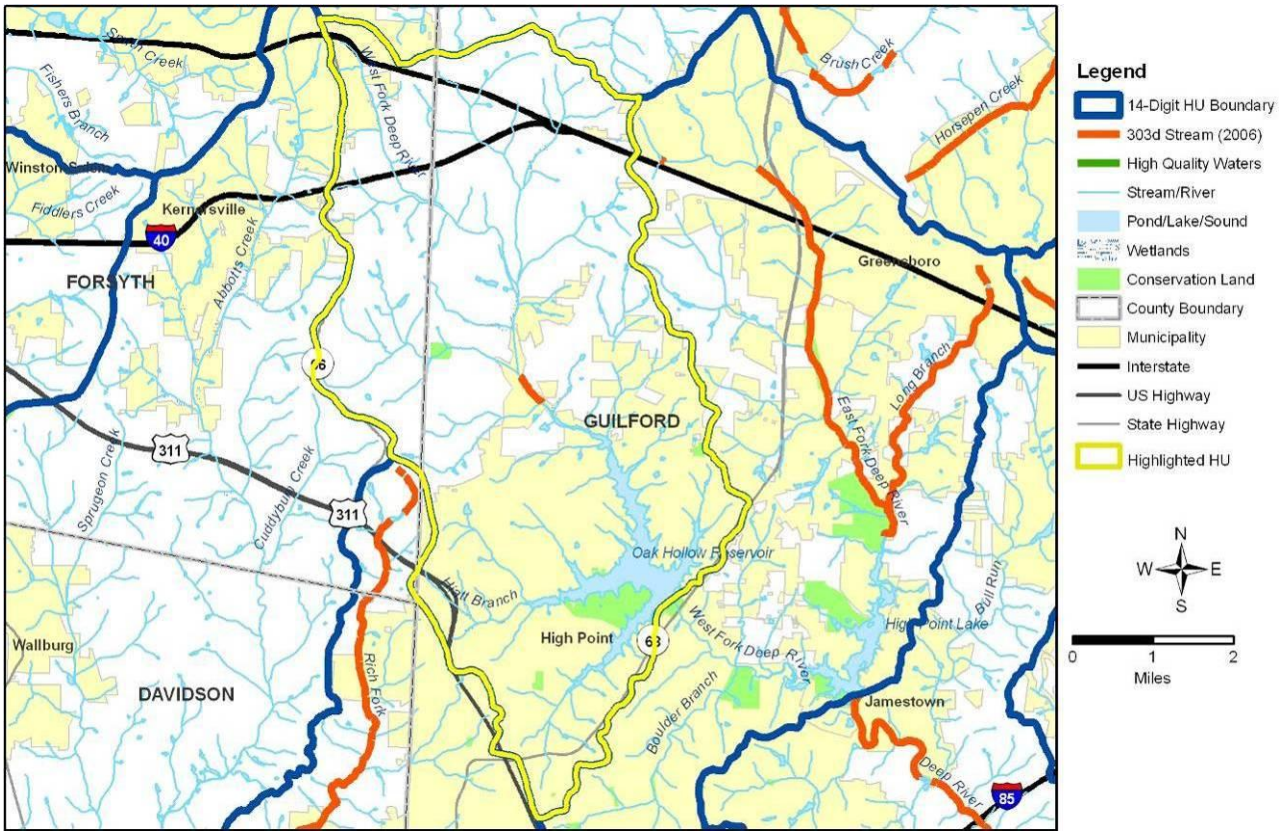
Robeson Creek: 03030002060030

Pittsboro is centered in the middle of this HU which flows to the Haw River and, soon after, B. Everett Jordan Lake. Robeson Creek currently has a 20.7 miles of its length rated impaired for aquatic life because of either high chlorophyll *a* measurements or Fair benthic ratings. Pittsboro's waste water discharges to Robeson Creek. This discharge, combined with other agricultural and urban NPS pollution, are stressors to aquatic life in the HU. As a result of the impairment, NC DWQ has developed a TMDL for the Creek outlining a phosphorus reduction goal of 71% for the HU (Online at: http://h2o.enr.state.nc.us/tmdl/TMDL_list.htm). NC State University, the Haw River Assembly, and others have been using funding from NC DWQ's NPS Pollution program to identify and implement practices to help achieve the phosphorus reduction goals. In addition to these efforts, TLC has developed a conservation assessment for the area aimed at protecting water quality and habitat. Efforts to reduce nutrients should continue in order to improve aquatic conditions in the HU



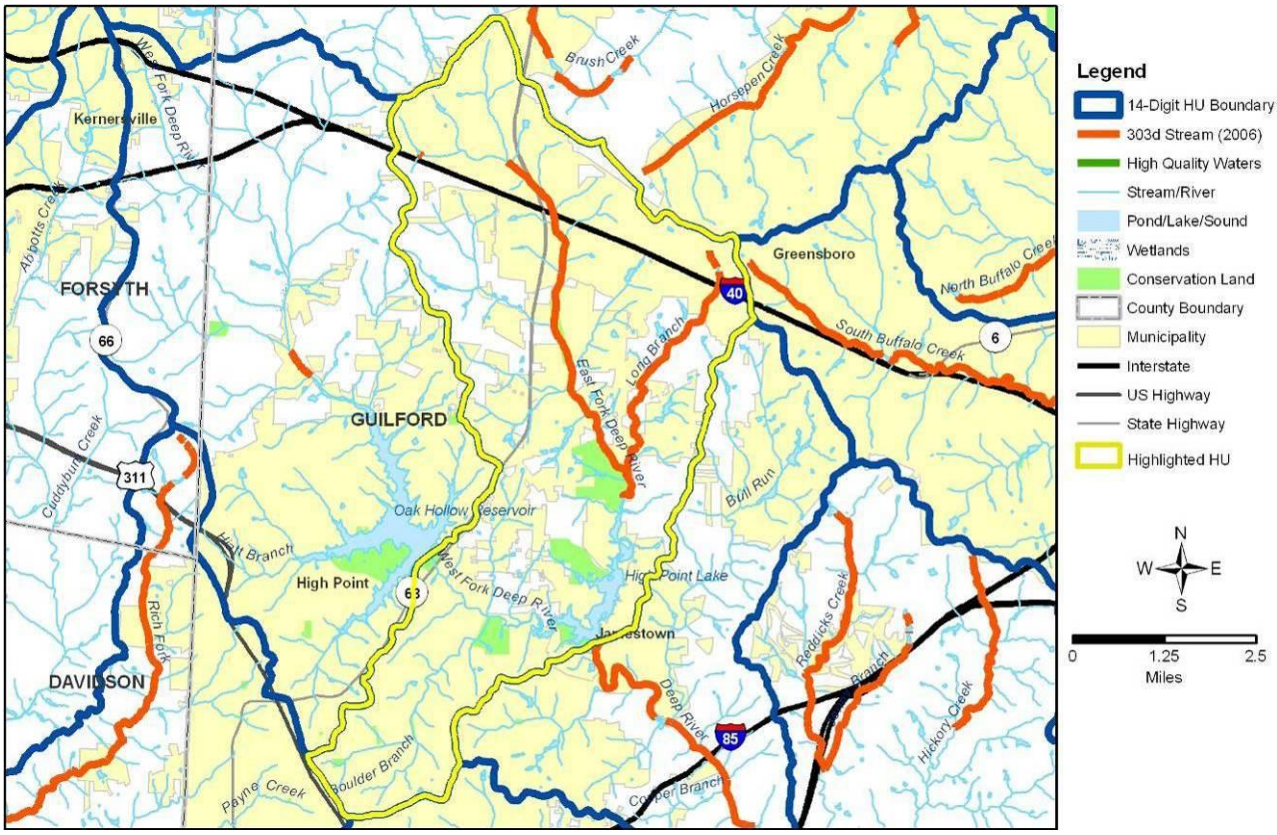
Deep River–West Fork: 03030003010010

This HU contains the West Fork of the Deep River (classified as Water Supply for High Point), which flows into Oak Hollow Reservoir. In 2006, the West Fork was listed as impaired by NC DWQ due to high levels of turbidity. Developed land (neighborhoods, commercial, and industrial land) is the dominant land cover in the watershed that includes portions of High Point and, to a smaller degree, Kernersville. Field tours of the watershed identified areas with channelized streams and poor riparian conditions. EEP has completed a stream restoration and enhancement project (5,000 ft.) on a tributary to the West Fork and the CWMTF has also funded a stream restoration project in the HU on Koerner Place Creek.



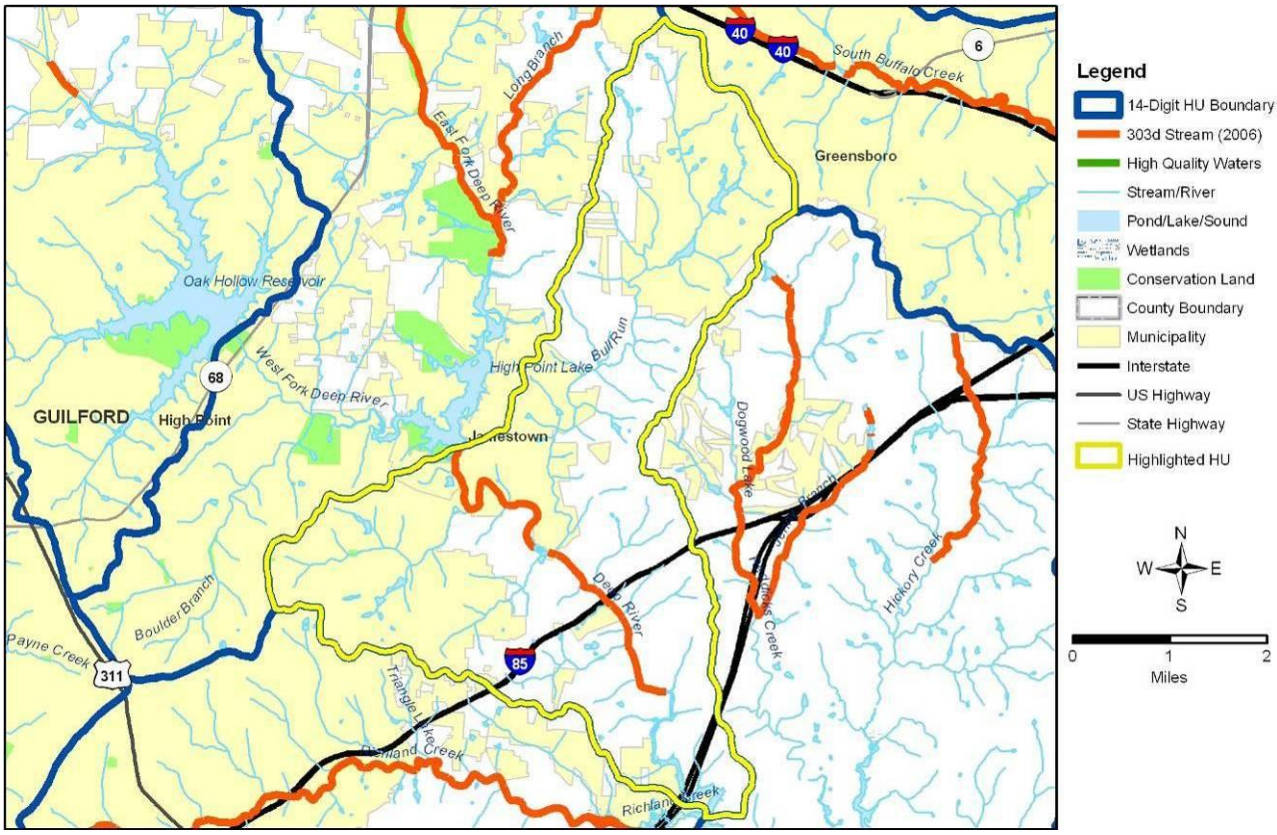
Deep River -East Fork: 03030003010020

The East Fork HU drains large developed areas of High Point, Greensboro, and Jamestown. As such, its 2001 estimated impervious cover was over 24%. Stormwater runoff from impervious surfaces has contributed to poor biological conditions in the watershed and impaired conditions on 11 miles of streams in 2006. Additionally, streams have shown high fecal coliform and turbidity levels. These streams drain to High Point Lake, a water supply reservoir that is also listed as impaired due to elevated chlorophyll *a* levels. As a water supply, there have also been concerns about the taste and odor of treated water from the lake. Improvement of water quality in streams flowing to High Point Lake along with improved stormwater management are recommendations for the HU.



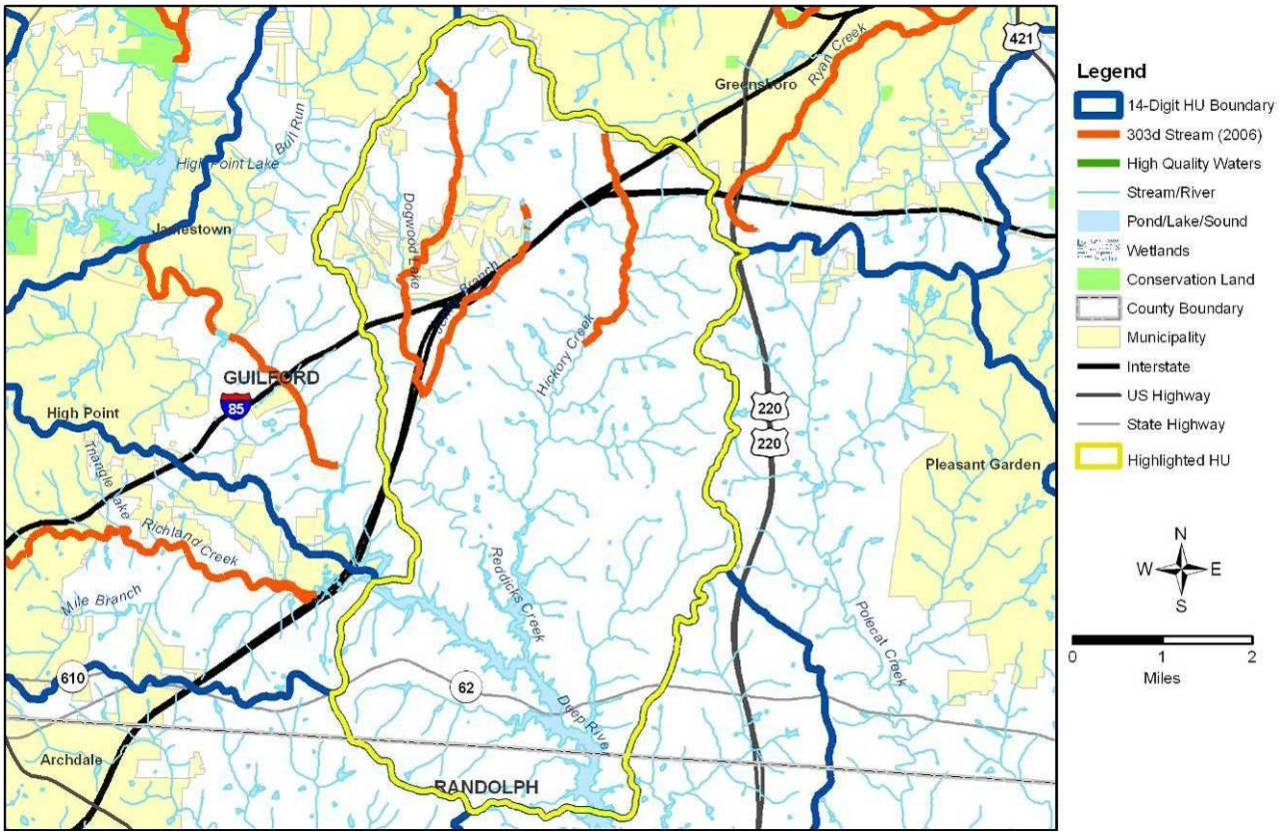
Deep River / Bull Run: 03030003010030

This HU contains a segment of the Deep River mainstem and a large tributary, Bull Run. The HU area drains portions of High Point, Greensboro, and Jamestown and had a 2001 estimated impervious area of 14%. The area is just upstream of the Randleman Reservoir and classified as a Water Supply Watershed. Over 5 miles of the Deep River in this HU have been listed as impaired for poor biological ratings. The creation of the Randleman Reservoir, however, will remove the impaired rating because the sites used to assign use support ratings are now inundated. The Randleman Lake watershed is subject to stream buffer protections administered by DWQ (see online rules at http://h2o.enr.state.nc.us/ncwetlands/RiparianBufferRules.htm). EEP has is actively pursuing stream buffer reforestation opportunities in the Randleman Lake watershed which includes this HU.



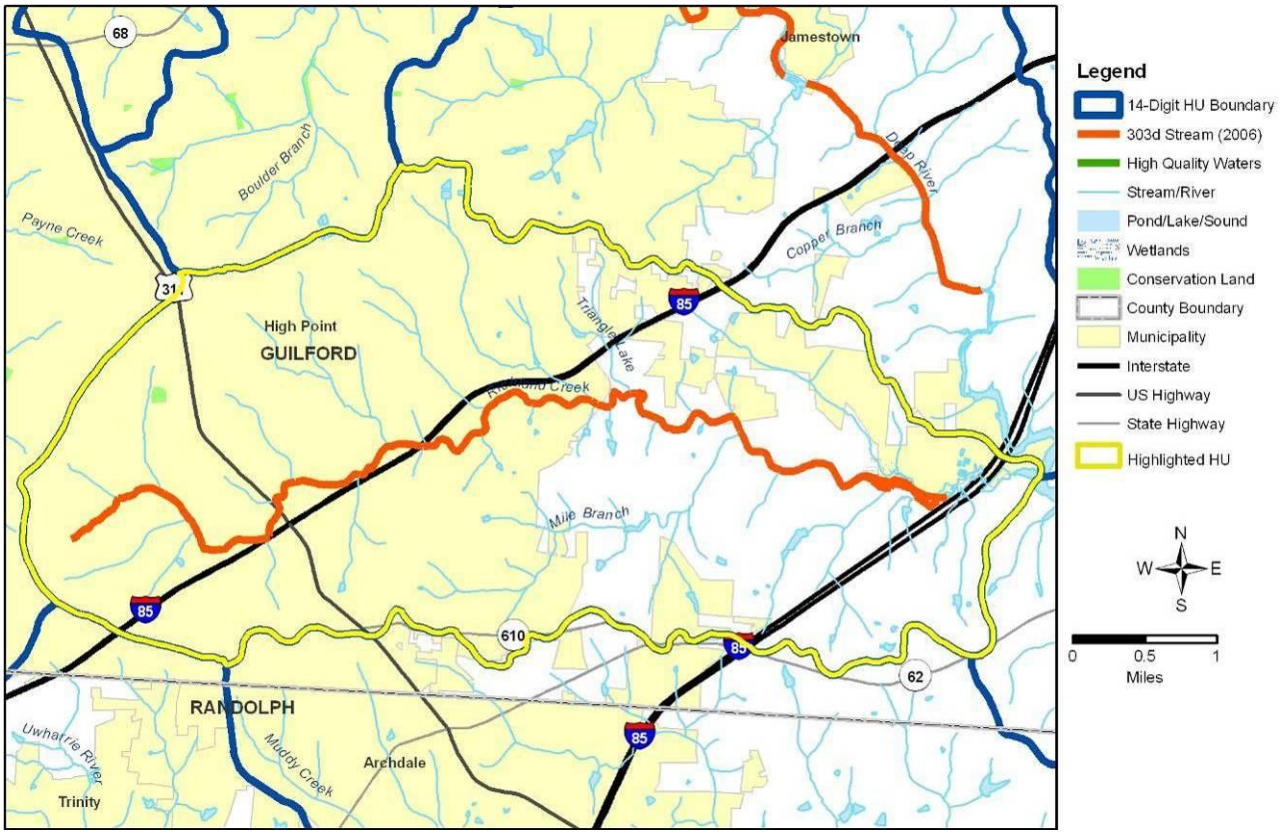
Randleman Reservoir / Hickory Creek: 03030003010050

This HU contains portions of Randleman Lake, a drinking water reservoir, making this HU a Water Supply Watershed. Runoff from portions of Greensboro drains to Hickory Creek, stressing its aquatic ecosystem. Consequently, in 2006, over 11 miles creeks in the HU were listed as having impaired biology. The Randleman Lake watershed is subject to stream buffer protections administered by DWQ (see online rules at http://h2o.enr.state.nc.us/ncwetlands/RiparianBufferRules.htm). EEP has is actively pursuing stream buffer reforestation opportunities in the Randleman Lake watershed, which includes this HU.



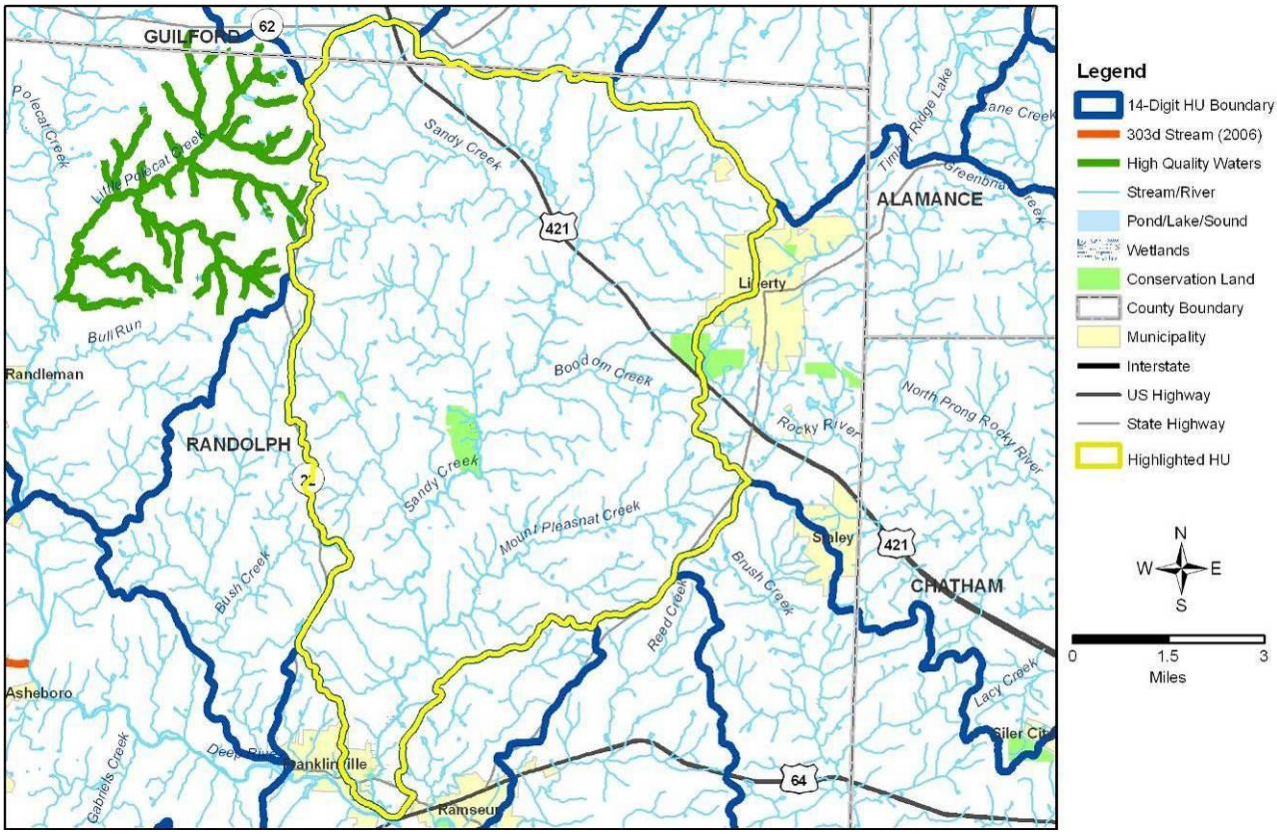
Richland Creek (High Point): 03030003010040

Richland Creek drains portions of High Point. The entire length of the mainstem channel, 9 miles, has been listed as impaired due to low biological ratings. Poor riparian conditions urban runoff, and waste water discharge from High Point have contributed to stressors to the aquatic habitat. DWQ has developed a TMDL for Richland Creek that outlines a strategy for an 82% reduction in fecal coliform bacteria (Online at http://h2o.enr.state.nc.us/tmdl/TMDL_list.htm#Final_TMDLs). As a tributary to Randleman Lake, the HU is subject to stream buffer protections administered by DWQ (see online rules at http://h2o.enr.state.nc.us/ncwetlands/RiparianBufferRules.htm). EEP has is actively pursuing stream buffer reforestation opportunities in the Randleman Lake watershed, which includes this HU.



Sandy Creek: 03030003020010

This is a largely rural HU. The main stream, Sandy Creek, flows through Randolph County to Sandy Creek Reservoir, a water supply for Ramseur and Franklinville. As of 2006, the HU had no streams on DWQ's list of impaired waters, however, the reservoir shows indications of high nutrient levels, likely related to the large number of animal operations in the HU. The HU is a Water Supply Watershed and a long portion of Sandy Creek is recognized by the State's NHP as a Significant Natural Heritage Area. EEP has been active in the HU with 5 projects that include components of preserving wetlands (3 ac.) and streams (5100 ft.) and restoring wetlands (15 ac.) and streams (15,000 ft.). Piedmont Land Conservancy has also been active in protecting streamside buffers in the HU. Continued implementation of practices to reduce nutrient inputs to Sandy Creek Reservoir is recommended for this HU.

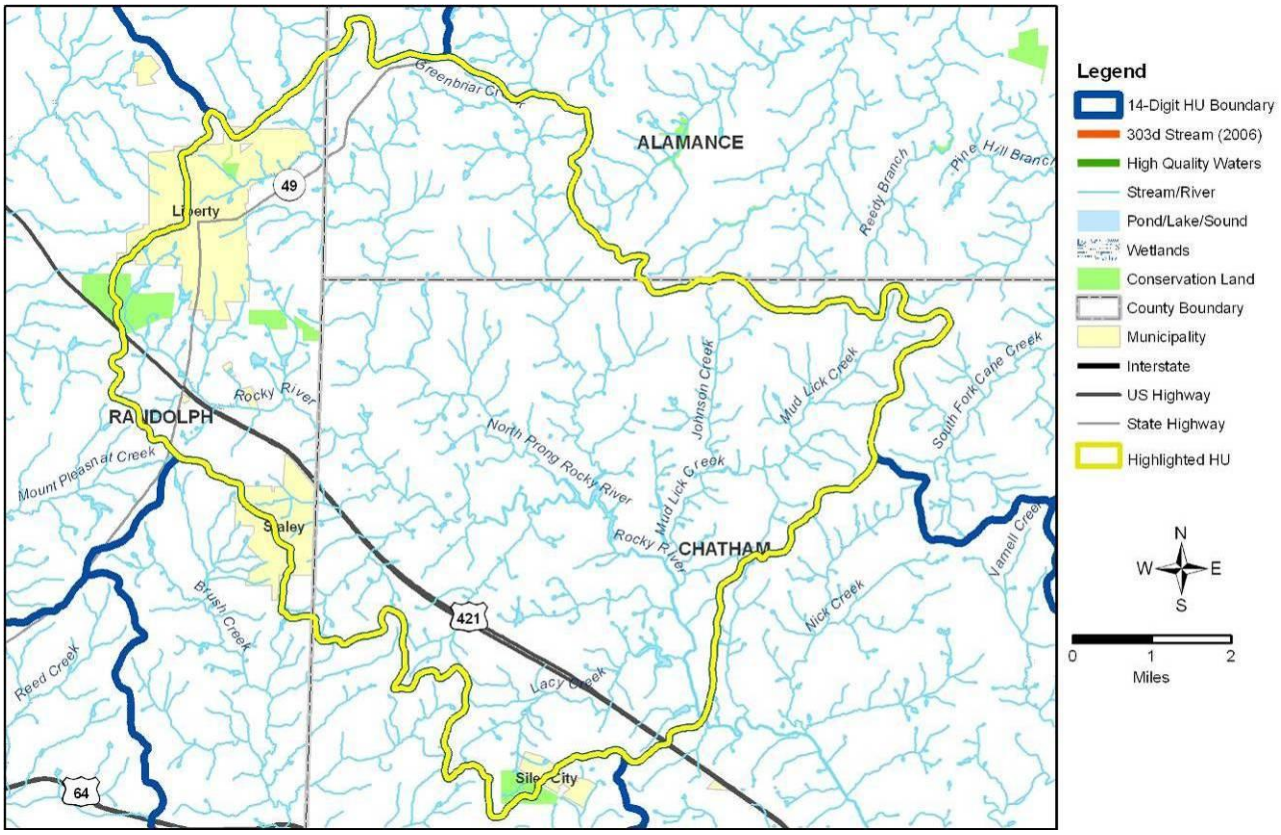


Rocky River Headwaters: 03030003070010

A number of tributaries join in this HU to form the Rocky River (i.e., Greenbrier Creek, Mud Lick Creek, North and South Prong of the Rocky River, Lacy Creek). The HU is mainly rural but has portions of the two small communities of Staley and Liberty. Streams in the HU are being stressed by the cattle accessing streams, erosion, and poor riparian condition. In 2005, EEP completed a Local Watershed Plan for this HU along with 2 others. Plan documents can be found online at http://www.nceep.net/services/lwps/Rocky_Cape_Fear/CapeFear_ROCKY.pdf. Plan recommendations include:

- Enhanced protections for perennial and intermittent streams;
- Erosion and sediment control guidance;
- Improved maps for streams and floodplains; and
- Sites for Preservation, Restoration and BMP installation.

EEP has completed a stream restoration and enhancement project (11,300 ft.) on Greenbrier Creek.

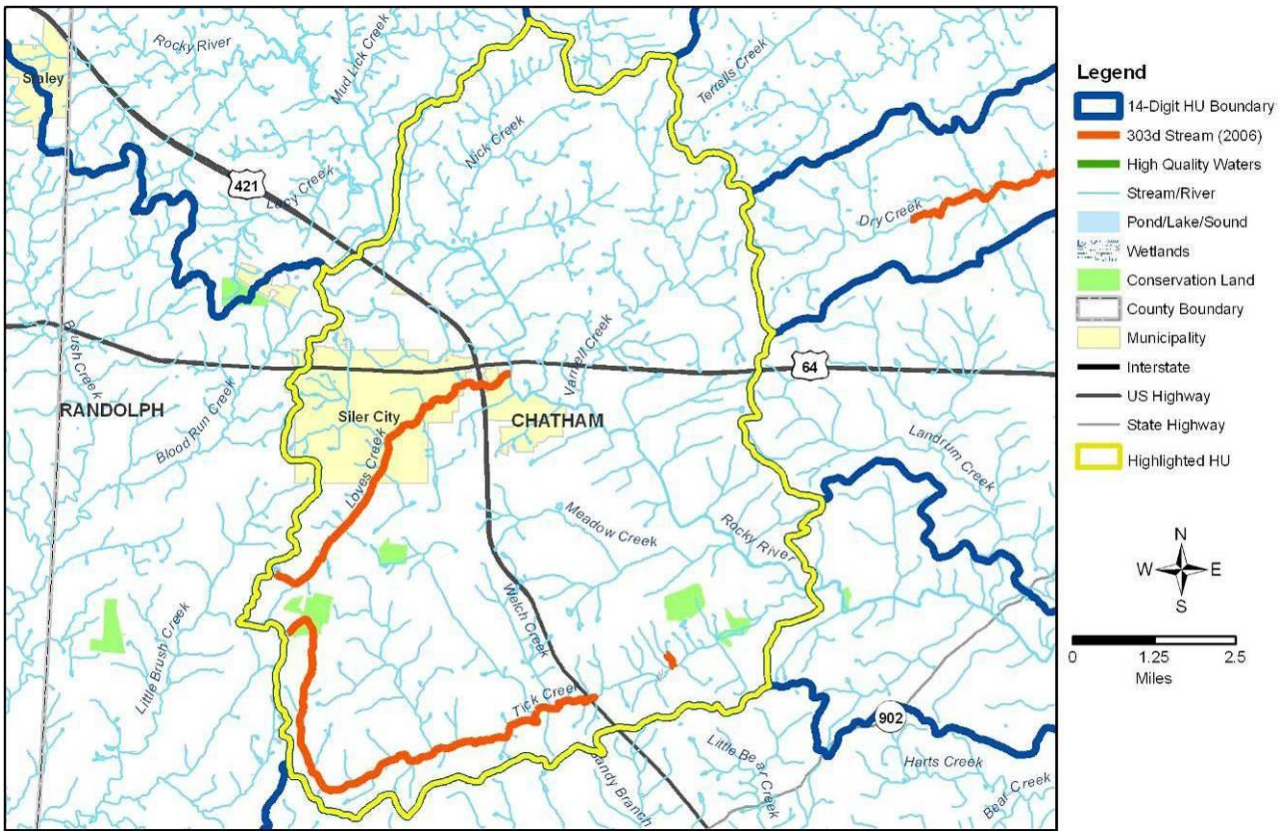


Tick Creek / Rocky River: 03030003070020

This HU contains the majority of Siler City along with a number of tributaries to the Rocky River including the creeks of Tick, Loves, Meadow, Vamell and Nick. Based on poor biological ratings, 14.4 miles of Tick and Loves creeks are listed as impaired waters by the State's DWQ. Urban and agricultural runoff, combined with municipal discharges from Siler City, are the State's cited stressors in these streams (NC DWQ 2005). In 2005, EEP completed a Local Watershed Plan for this HU along with 2 others. Plan documents can be found online at http://www.nceep.net/services/lwps/Rocky_Cape_Fear/CapeFear_ROCKY.pdf. Plan recommendations include:

- Enhanced protections for perennial and intermittent streams;
- Erosion and sediment control guidance;
- Improved maps for streams and floodplains; and
- Sites for Preservation, Restoration and BMP installation.

EEP has completed 2 stream restoration and enhancement projects in the HU; one on Tick Creek (3,000 ft.) and one on a tributary to Rocky River (1,100 ft.). Also, TLC has protected over 500 acres of land in this watershed and is continuing to work with landowners on conservation projects. In addition to these activities, NC State University's Watershed Education for Communities and Officials (WECO) are working with a stakeholder group in the area to help protect Tick Creek and the Rocky River. Information on the project can be found online at http://www.ces.ncsu.edu/depts/agecon/WECO/rocky/.

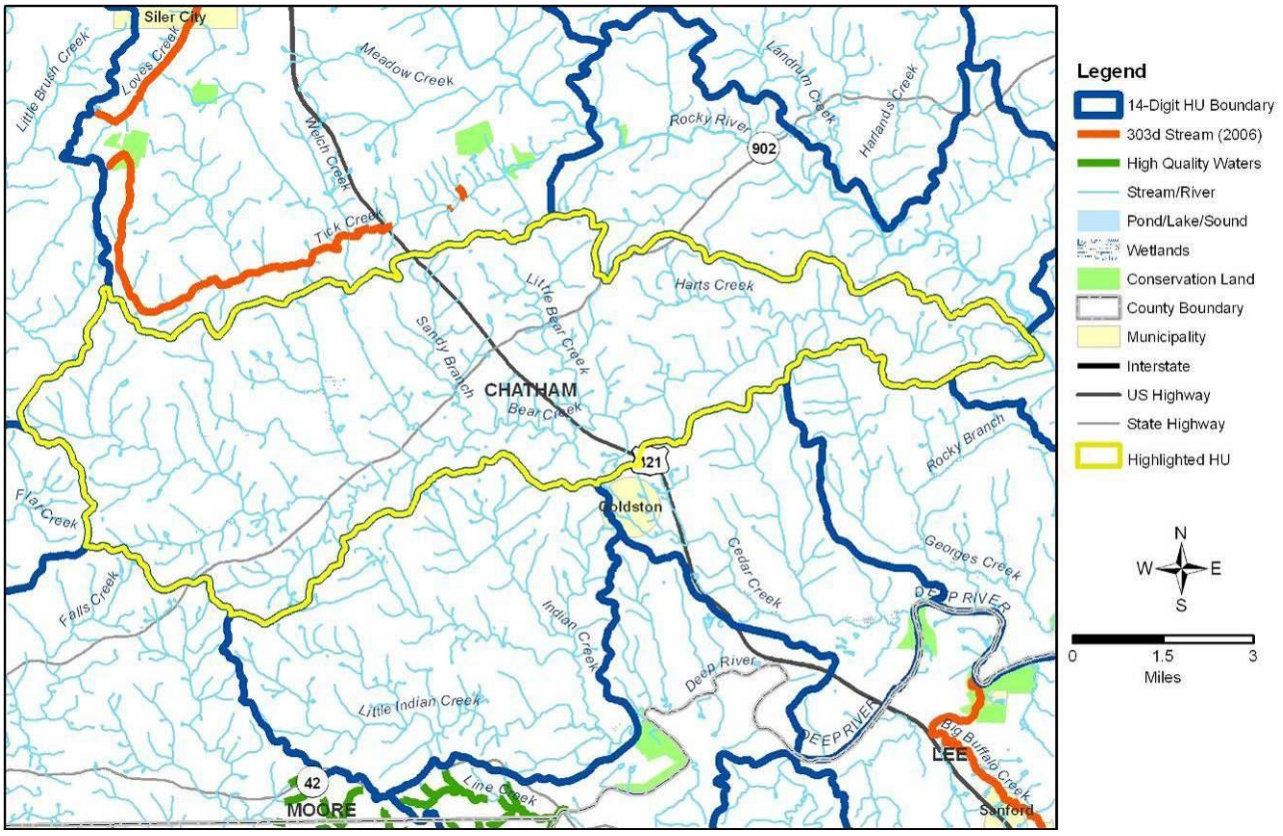


Bear Creek: 03030003070050

This HU is located in rural Chatham County and drains to the lower Rocky River. According to 2001 land cover data, the HU was mostly forest (63%) and agriculture (26%). The NHP has noted occurrences of several rare, threatened, and endangered species in lower Bear Creek including the federally endangered Cape Fear Shiner, and a number of mussel species (Creeper, Atlantic Pigtoe, Brook Floater, and Notched Rainbow). In 2005, EEP completed a LWP for this HU along with 2 others. Plan documents can be found online at http://www.nceep.net/services/lwps/Rocky_Cape_Fear/CapeFear_ROCKY.pdf. Plan recommendations include:

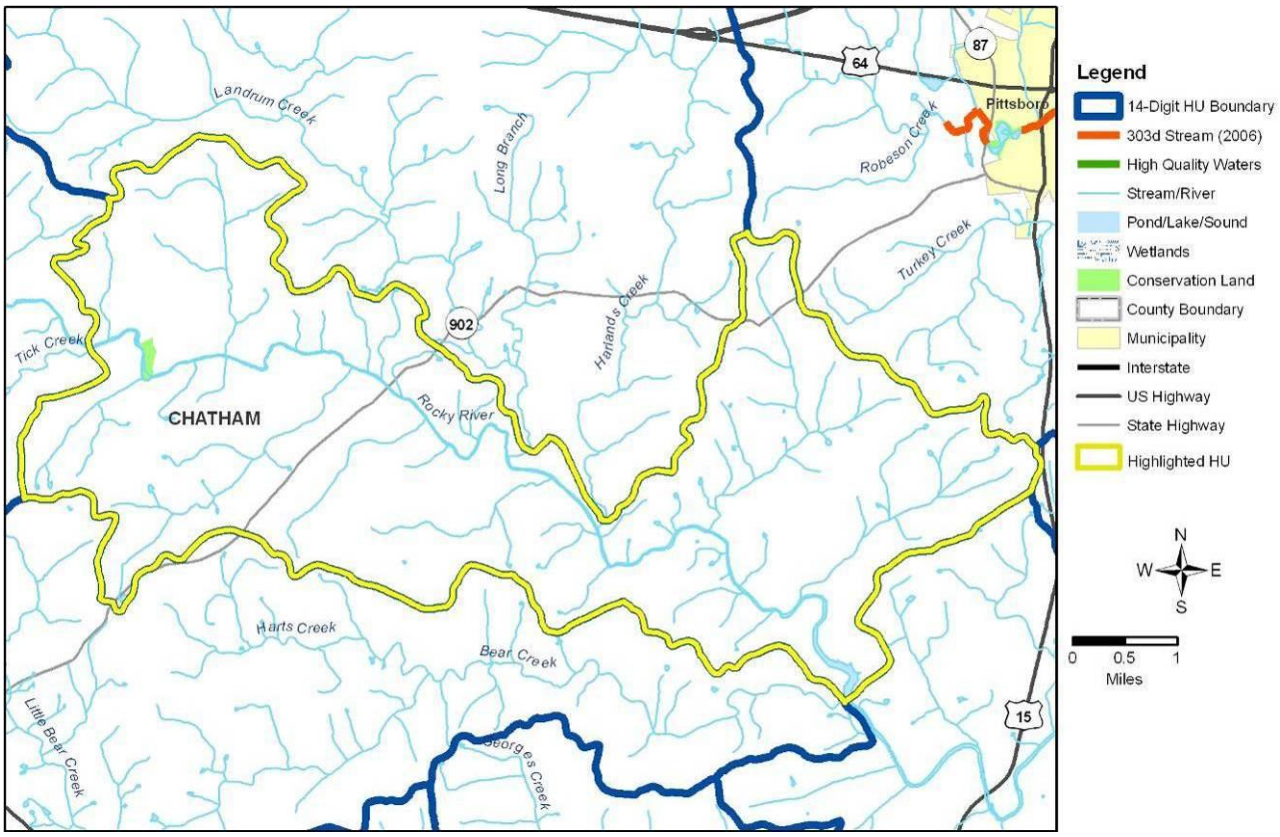
- Enhanced protections for perennial and intermittent streams;
- Erosion and sediment control guidance;
- Improved maps for streams and floodplains; and
- Sites for Preservation, Restoration and BMP installation.

Restoration activities in the HU include a planned EEP stream (4,800 ft.) and wetland (1 ac.) restoration project on a tributary to Bear Creek.



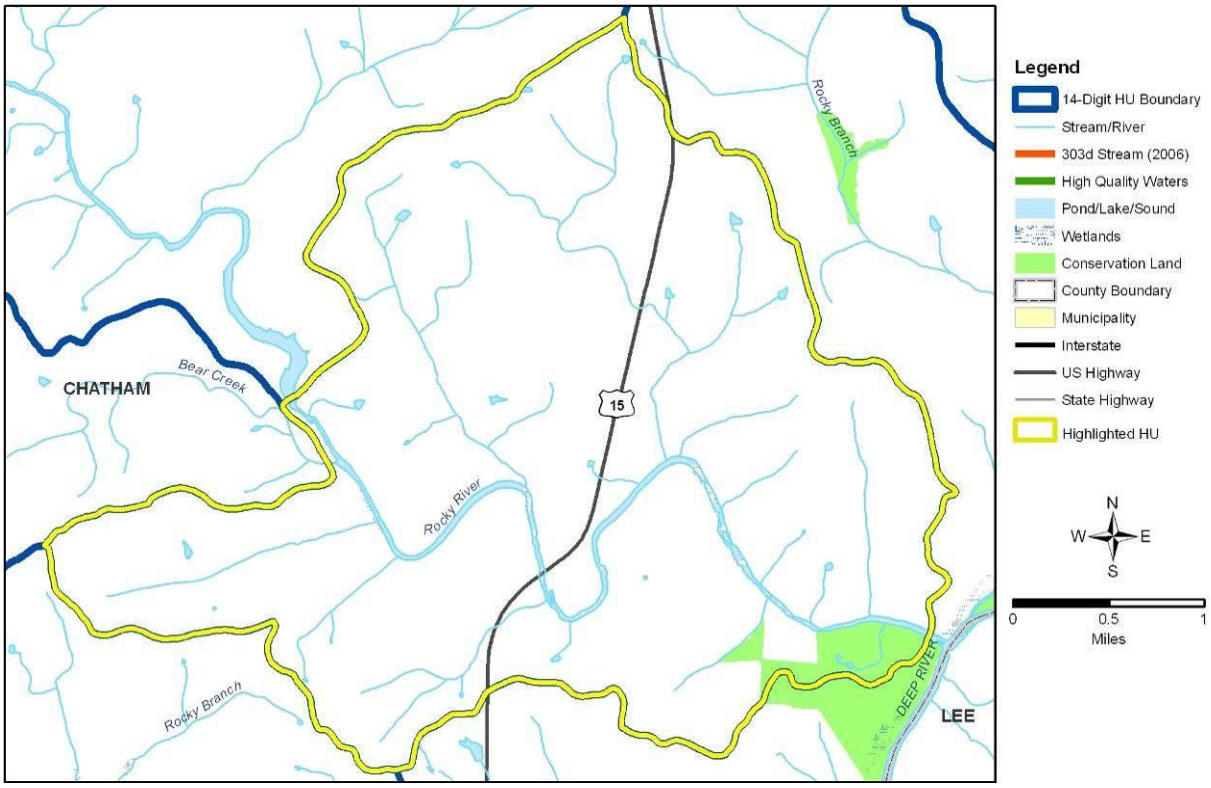
Rocky River-Middle: 03030003070040

This is a rural largely forested HU along the Rocky River. Recent DWQ biological ratings in the HU are Good. This HU contains NHP priority habitat areas along the mainstem of the creek. A number of Cape Fear Shiner occurrences have been noted in the HU. Protection of the Cape Fear Shiner is a priority for the US FWS, and, consequently, they have prioritized this HU as one for protection and restoration of the species. A number of threatened mussel species (Creeper, Atlantic Pigtoe, and Brook Floater) have also been noted in the HU. Preservation opportunities and where available, restoration, are recommended for the HU.



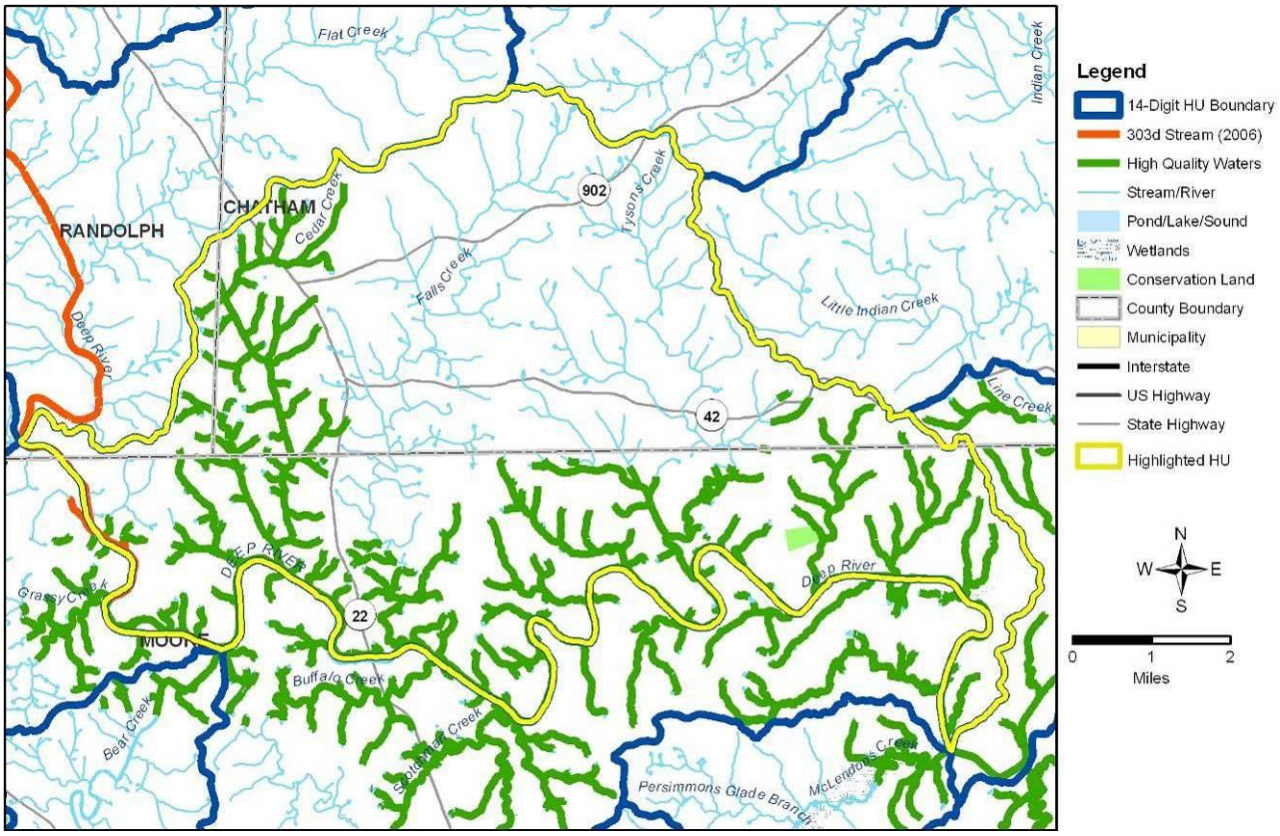
Rocky River-Lower: 03030003070060

This HU is located in a largely wooded and rural section of Chatham County. The NC NHP has identified a number of rare, threatened, and endangered aquatic species in the lower Rocky River including mussel species (Creeper, Triangle Floater, Carolina Creekshell, Notched Floater, and Brook Floater) and the Cape Fear Shiner. Due to the presence of these endangered species, both the US FWS and NC WRC have identified this area as a priority for activities aimed at protecting these species Also, because it is adjacent to the Rocky River LWP, selecting this HU as a TLW allows EEP to prioritize a corridor along the Rocky River to help protect and restore endangered species. The Triangle Lands Conservancy (TLC), CWMTF, NC Parks and EEP have all been active in protecting land in the HU. That work has concentrated at the confluence of the Rocky River with the Deep River where EEP has helped preserve over a 1000 ft. of stream and other noted programs have created the White Plains Natural Area and Nature Preserve. Preservation of the existing ecological assets should be the priority for this HU.



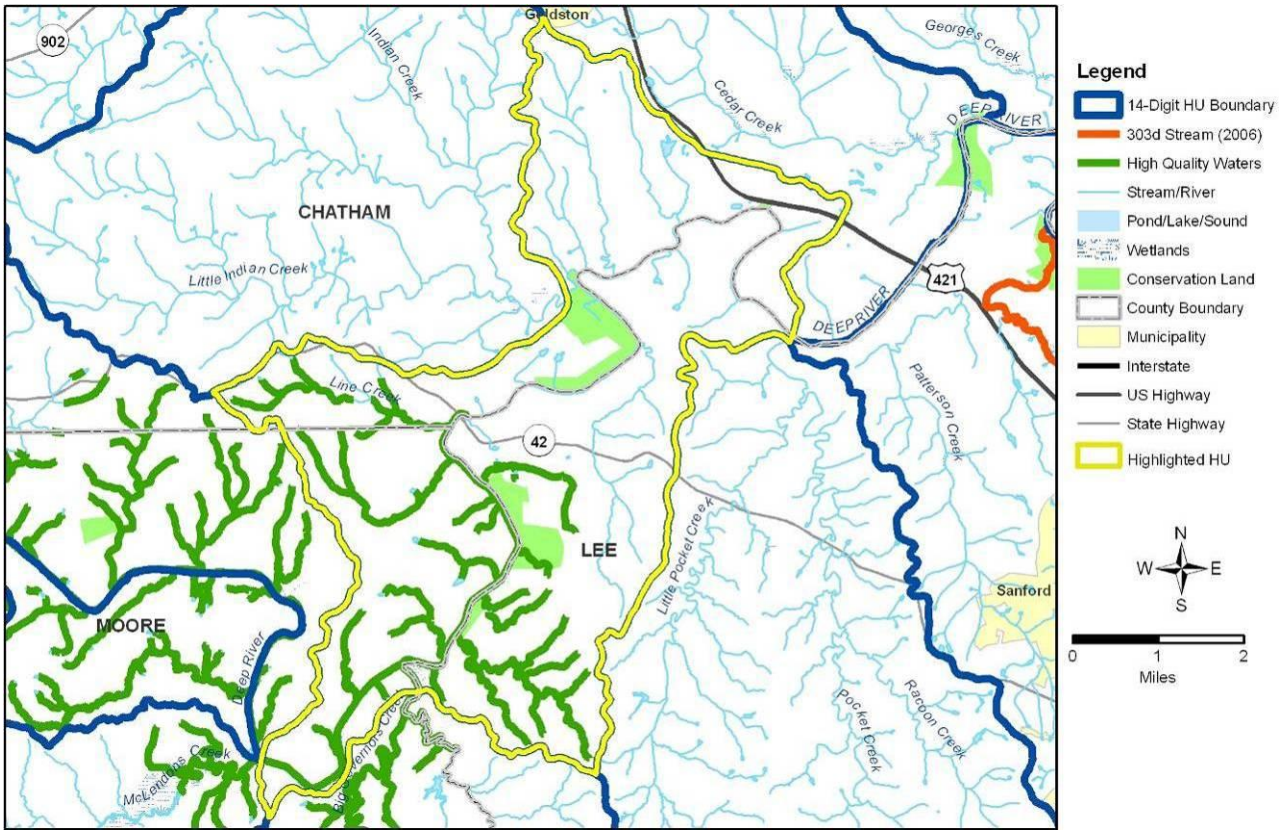
Falls Creek: 03030003040010

This HU contains a number of tributaries to Deep River including Cedar Creek, Tysons Creek, and, the largest of these, Falls Creek. About 60 miles of creeks in the HU have been designated High Quality Waters by DWQ due to the presence of endangered fish (Cape Fear Shiner) and mussels (Triangle Floater, Yellow Lampmussel, Notched Rainbow, Creeper, and Brook Floater). Due to the presence of these endangered species, both the US FWS and NC WRC have identified this HU as a priority for activities aimed at protecting these species. Creeks in the HU drain to the Deep River. Nearly 3 miles of the Deep River in this HU have been listed as an impaired due to high turbidity levels. Due to its biological significance, the Deep River is a high priority for TLC activities. They have partnered with the Rocky River Heritage Foundation to look at opportunities for conservation in this watershed through a CWMTF planning grant. In addition to these efforts, EEP has 3 stream preservation projects on High Quality Waters in this HU (1,300 ft. 5,100 ft., and 12,500 ft.) Continued activities to protect endangered species are recommended for this HU.



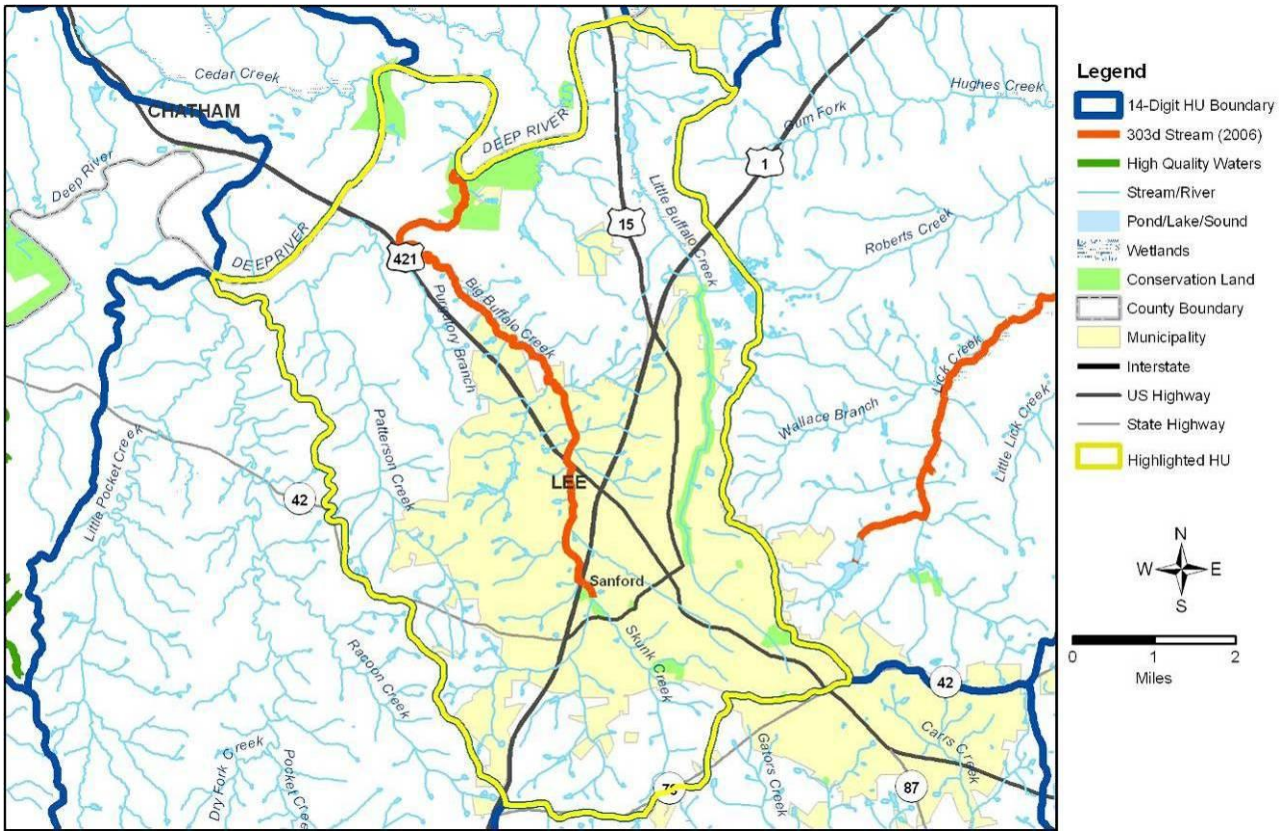
Smith Creek and Line Creek: 03030003060010

This HU contains a large section of the mainstem Deep River, Smith and Line creeks, and several unnamed tributaries. The HU is largely rural with an estimated 70% forested land cover in 2001. About 60 miles of creeks in the HU have been designated High Quality Waters by DWQ due to the presence of endangered fish (Cape Fear Shiner) and mussels (Yellow Lampmussel, Notched Rainbow, Creeper, Roanoke Slabshell, Savannh Lilliput, and Triangle Floater). Due to the presence of these endangered species, both the US FWS and NC WRC have identified this HU as a priority for activities aimed at protecting these species. Among others, TLC and EEP have been active in this HU. TLC has focused on this area for protection and continues to work with partners to protect this watershed. EEP has funded a wetland restoration project (6 ac.) and the Carbonton Dam removal along the mainstem of the Deep River. Prior to its removal, Deep River was listed as impaired based on high chlorophyll *a* levels. The dam removal, however, has improved both water quality and conditions for rare, threatened, and endangered aquatic communities. Continued activities to protect the endangered species are recommended for this HU.



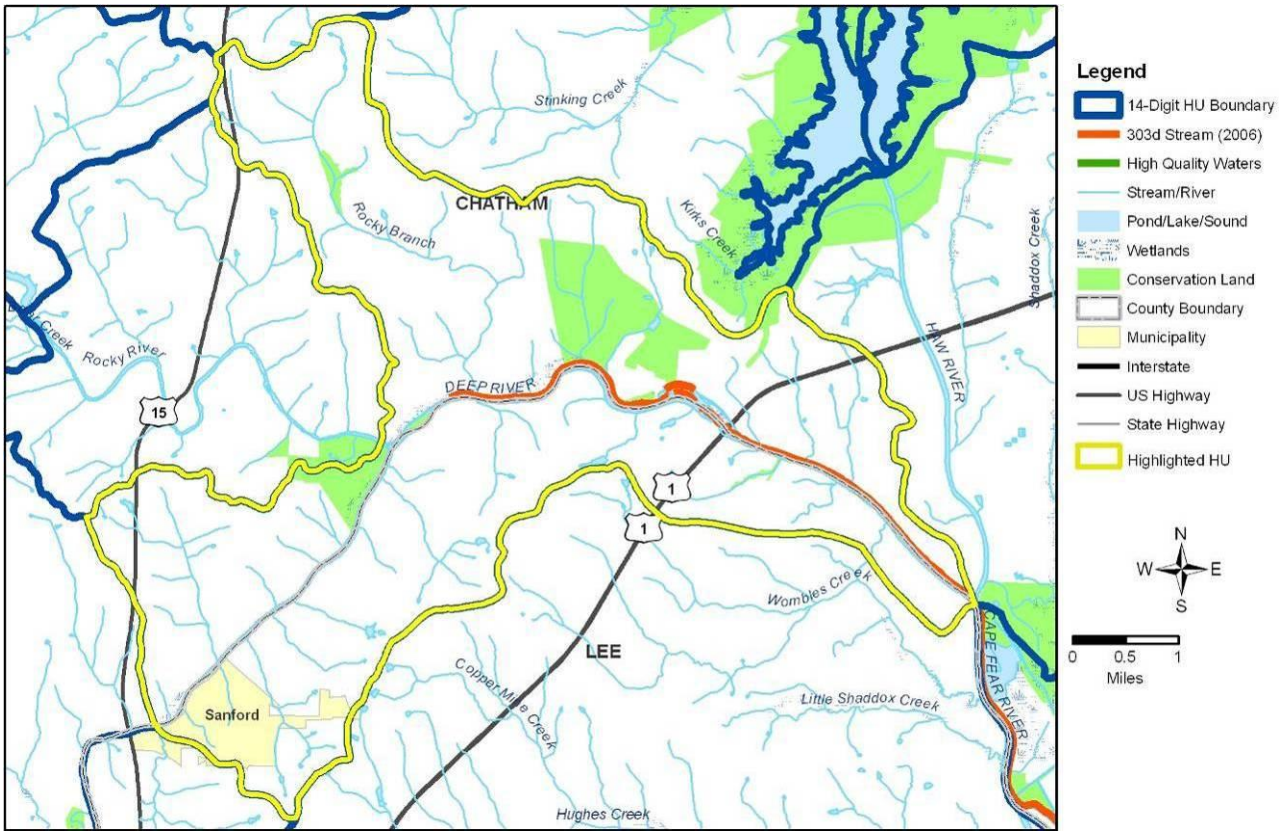
Big Buffalo Creek: 03030003060050

In addition to Big Buffalo Creek, this HU contains Little Buffalo Creek and Purgatory Branch. Big Buffalo Creek drains a large portion of Sanford. Urban runoff from Sanford has contributed to degraded biological conditions and 8 miles of stream on the Creek are listed as impaired. Sanford has successfully used CWMTF grants to purchase easements totaling over 260 acres along Little Buffalo Creek to help protect its aquatic environment and TLC is actively working to continue protection efforts along the Deep River.
Improved management of stormwater runoff from Sanford is needed to help restore aquatic ecosystems in the HU and the rare fish and mussel species found in the Deep River.



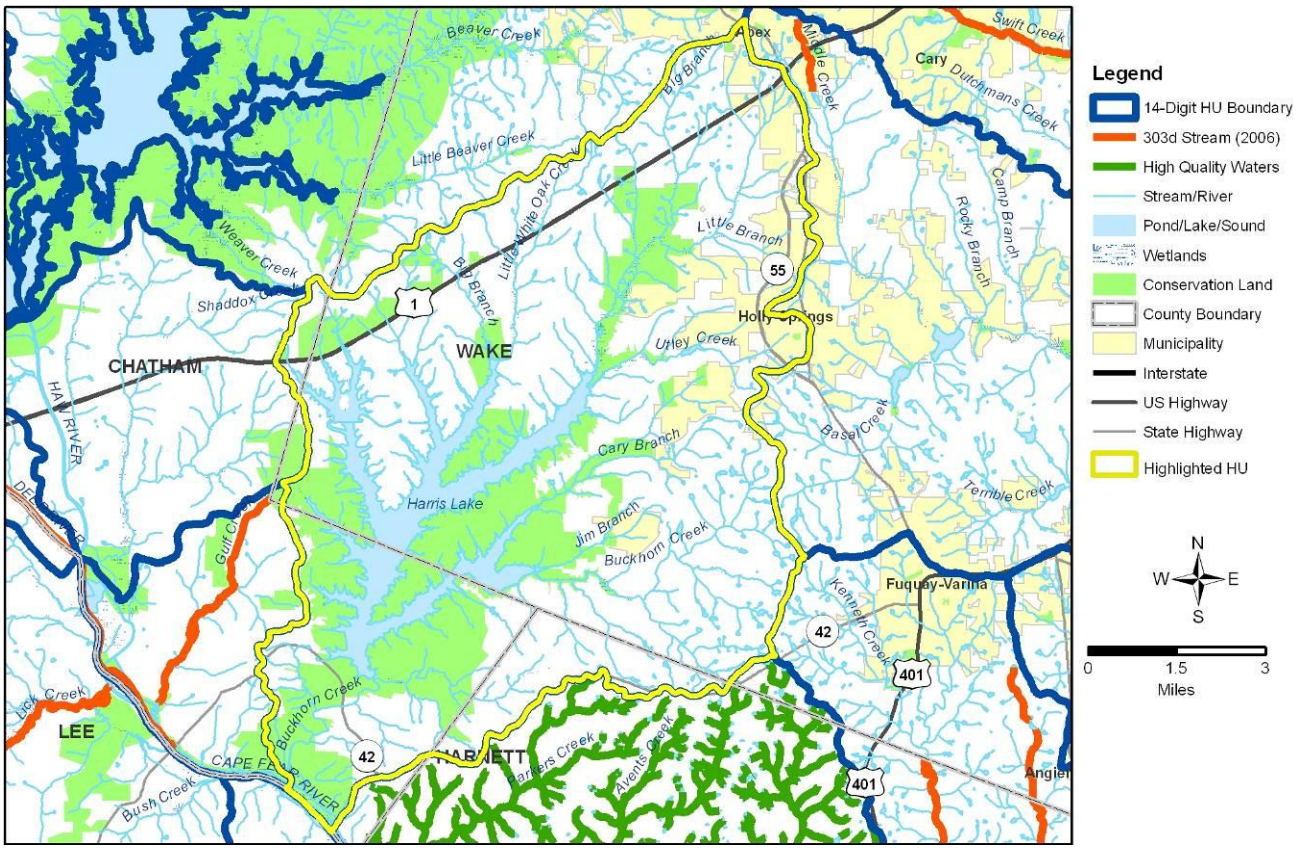
Deep River-Lower: 03030003060080

This HU marks the terminus of the Deep River as it connects with the Haw River to form the Cape Fear River. Sections of the Deep River in this HU are listed as impaired due to high mercury levels in fish. Though not exceeding NC criteria, monitored turbidity levels have also been high. These conditions threaten the Cape Fear Shiner which has a number of reported occurrences in the HU making this a NC WRC priority area. Due to its biological significance, this area is one of the highest priorities for TLC. CWMTF grants have been used by TLC to help acquire lands along the Deep River and TLC has worked in partnership with the NC Division of Sate Parks to protect more land along the Deep River. EEP has also funded a stream preservation project (2,500 ft.). Continued preservation and protection activities to protect the endangered Shiner are recommended for this HU.



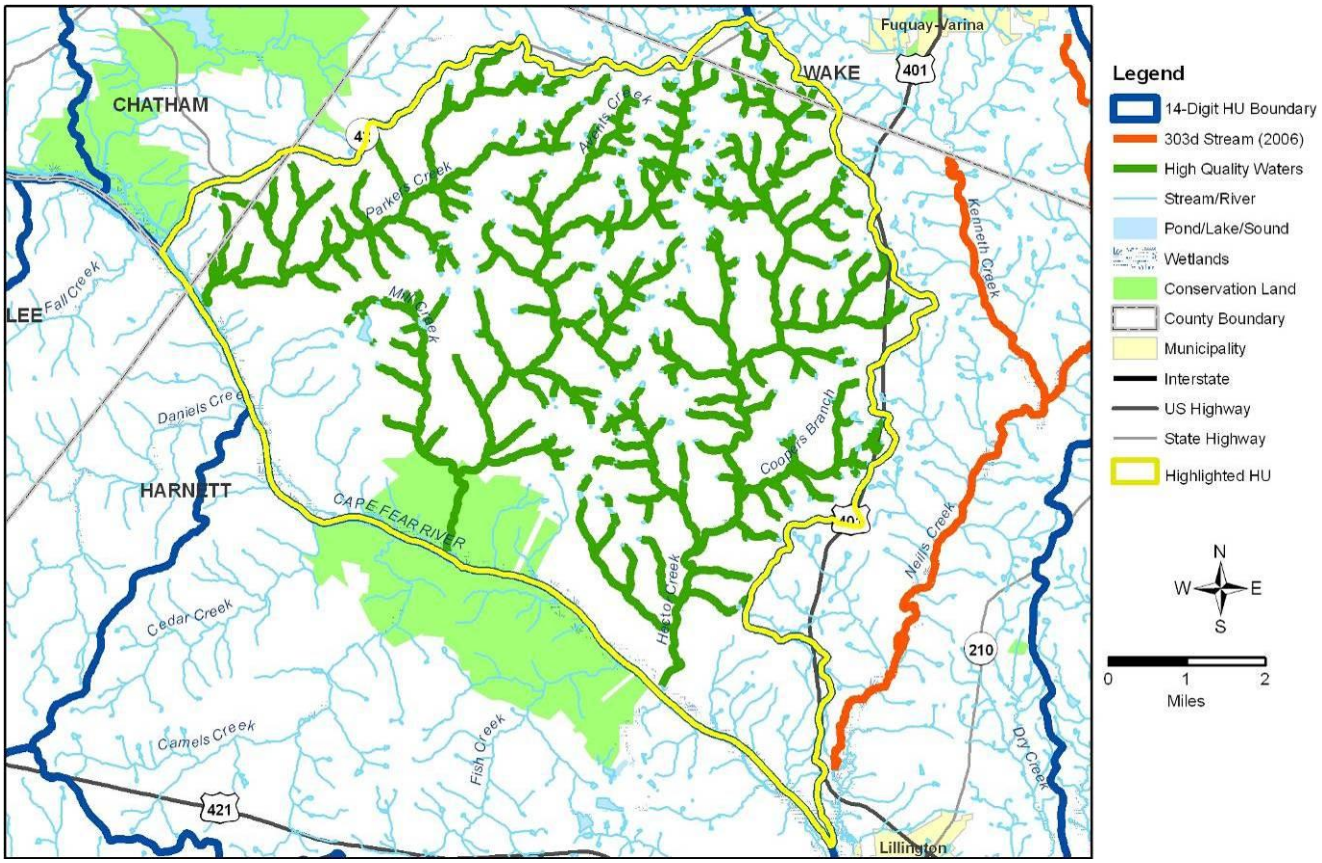
Harris Lake: 03030004020010

Harris Lake, Parker and Kenneth Creek watersheds were all selected for the Middle Cape Fear Local Watershed Plan, which was completed in 2004. This watershed is approximately 80 square miles in size, extending south from the Town of Apex to the Cape Fear River and east from the Chatham/Wake County line to the Town of Holly Springs. The watershed contains Harris Lake, an impoundment of Buckhorn Creek, which is used by Progress Energy's 900-megawatt Shearon Harris Nuclear Plant for cooling. Progress Energy is a major landowner within the watershed. The Shearon Harris plant is located on a 10,700-acre site near the town of New Hill. Progress Energy also owns land outside the power plant and has enrolled more than 13,000 acres within the watershed into the North Carolina Wildlife Resources Commission's Game Lands Program. While much of the watershed is still forested, the upper portion of the watershed is expected to be heavily developed. Population is expected to drastically increase in this watershed over the next 20 years. The watershed plan found that a majority of the streams have good buffer but changes in hydrology are causing moderate incision. Sediment and nutrient loads were also found to be high in some streams. Recommendations in the local watershed plan include local governments adopting stormwater management strategies and Low Impact Development ordinances. Buffer protection and preservation should also be pursued.



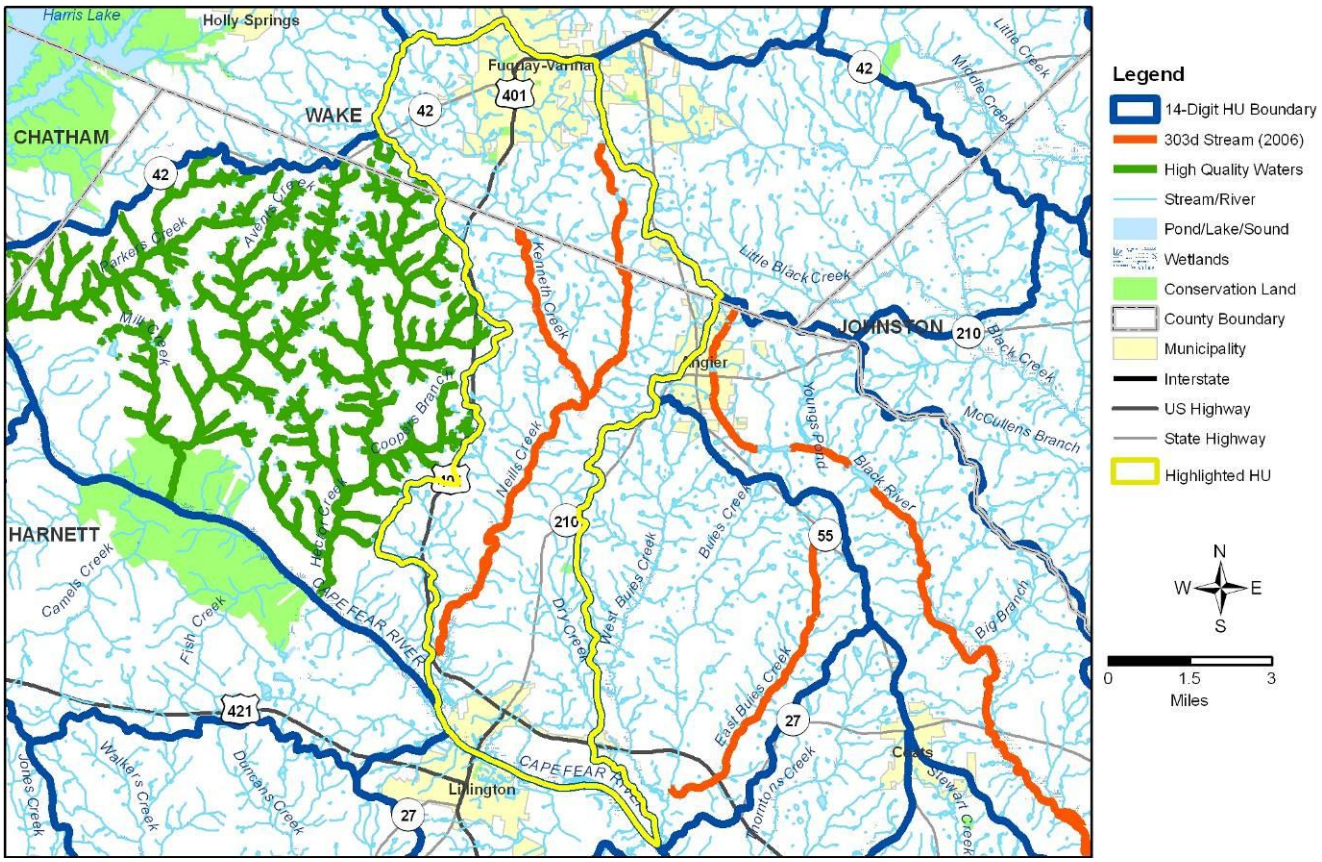
Parker Creek: 030300040300l0

Harris Lake, Parker and Kenneth Creek watersheds were all selected for the Middle Cape Fear Local Watershed Plan, which was completed in 2004. Parker Creek watershed is approximately 54 square miles in size, and is located almost entirely within Harnett County. Raven Rock State Park is located along the Cape Fear River on the southern boundary of the watershed. There are no municipalities within the watershed. Most of the land area is part of the water supply watershed for the Town of Lillington, located farther downstream along the Cape Fear River. The three main stem streams in this watershed, Parkers Creek, Avents Creek, and Hector Creek, all have High Quality Waters designations because of the "Excellent" water quality ratings they received from DWQ. There are no point source discharges or hazardous materials sites within the watershed. Preservation and buffer protection / restoration should be the focus in this watershed.



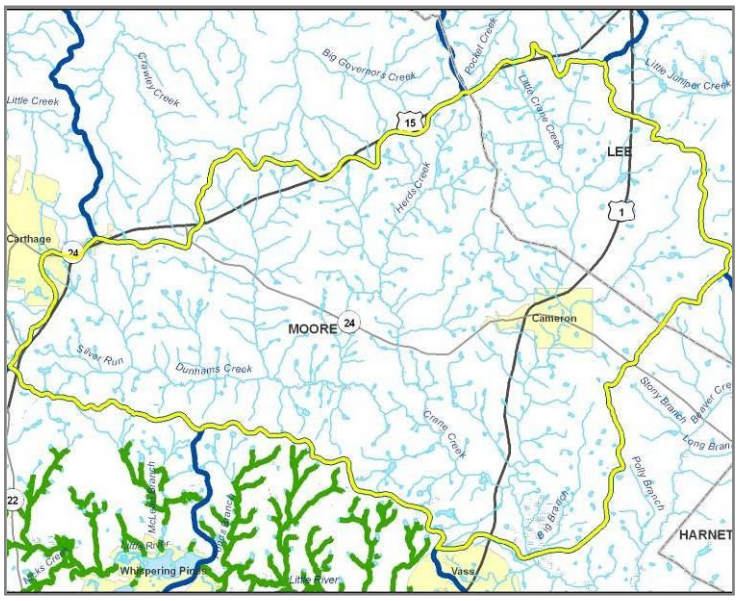
Kenneth Creek: 03030004040010

Harris Lake, Parker and Kenneth Creek watersheds were all selected for the Middle Cape Fear Local Watershed Plan, which was completed in 2004. Kenneth Creek is approximately 46 square miles in size, extending south from the Town of Fuquay-Varina to Lillington, and east from US 401 to the Town of Angier. Kenneth Creek is a tributary to Neills Creek, which flows to the Cape Fear River near Lillington. Kenneth Creek from Wake-Harnett county line to Neills Creek (3.9 miles) is Impaired for aquatic life because of a poor benthic community rating. Neills Creek from source to US 401 (12.6 miles) is Impaired for aquatic life because of Poor and Fair benthic community ratings. The watershed plan showed that this watershed exhibits signs of degradation. Recommendations for this watershed include stormwater management, low impact development and stream restoration.

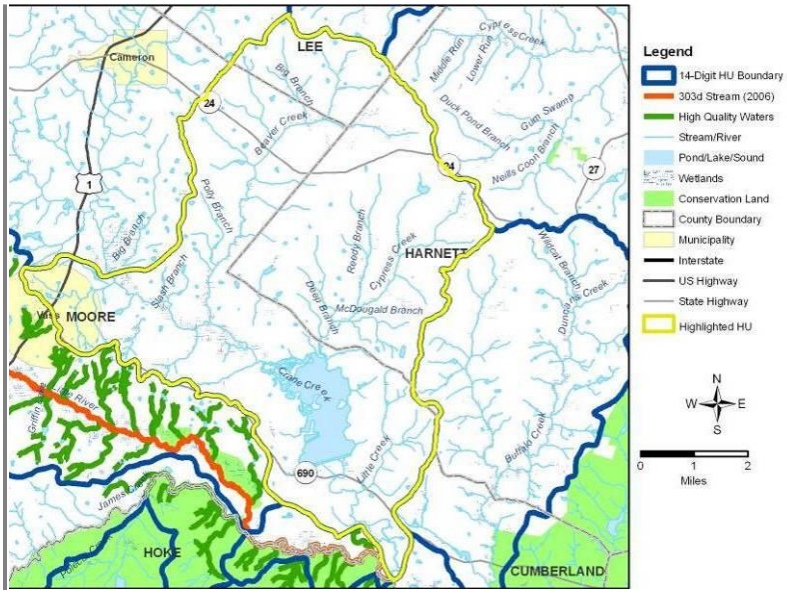


Crane Creek: 03030004070010 & 03030004070020

Crane Creek was selected for a Local Watershed Plan and completed in 2005. It was initially selected because it was on the DWQ 303(d) list for habitat degradation and sediment issues. Based on habitat assessment, restoration site assessments, and water quality and benthic sampling, the Crane's Creek Local Watershed Stakeholder team recommended that most of Crane's Creek and its tributaries be removed from the state's 303(d) list. Crane's Creek was removed from the 303(d) list in 2004. Water quality and habitat concerns were identified on Little Cranes Creek and on a tributary to Cypress Creek during the LWP process. The presence of copper metals in the water at low levels has also been identified as a potential future threat to water quality that may need to be monitored in the future. This watershed contains a Natural Heritage Program Priority Area for habitat protection. Voluntary practices such as stream restoration and agricultural best management practices could reduce potential impacts to surface waters within this watershed.



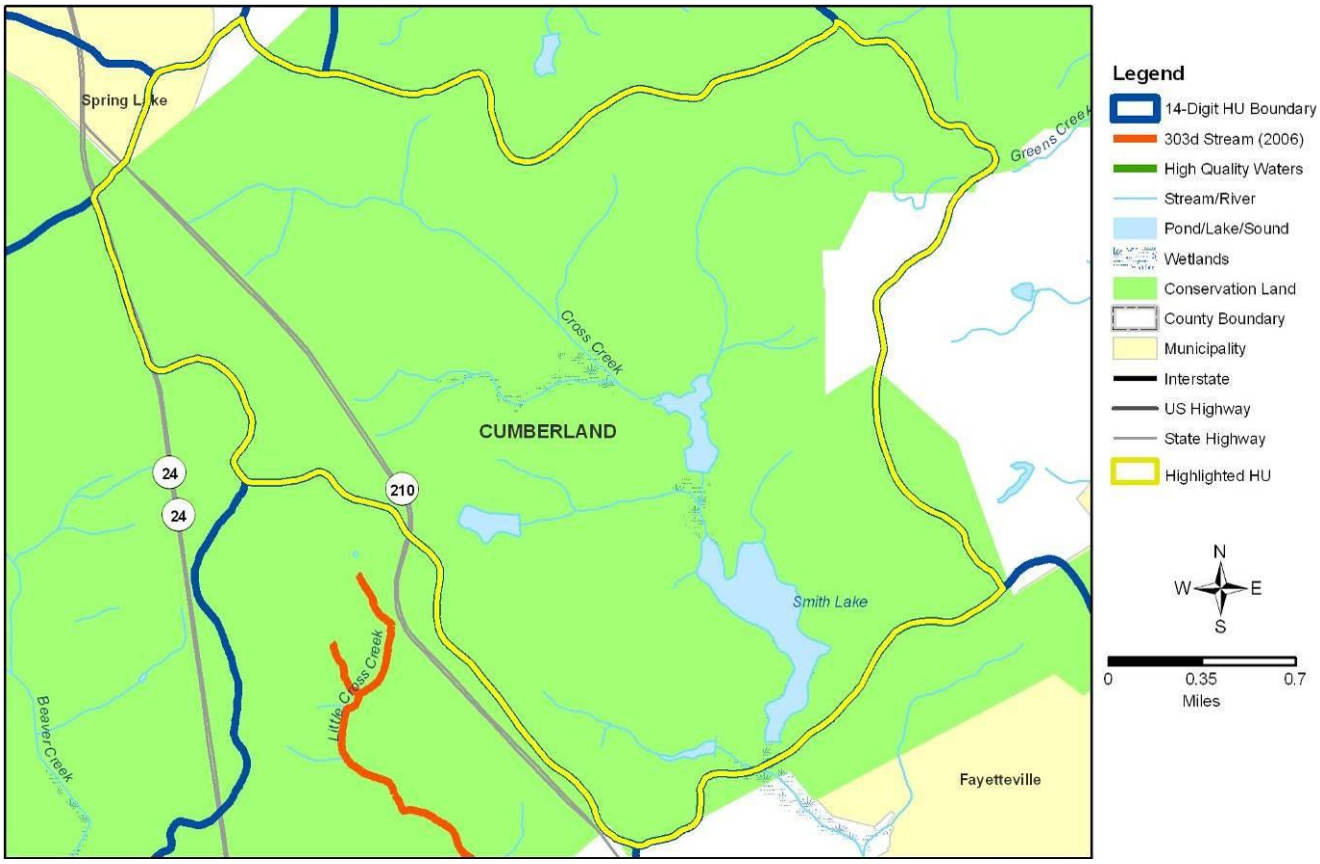
HU 03030004070010



HU 03030004070020

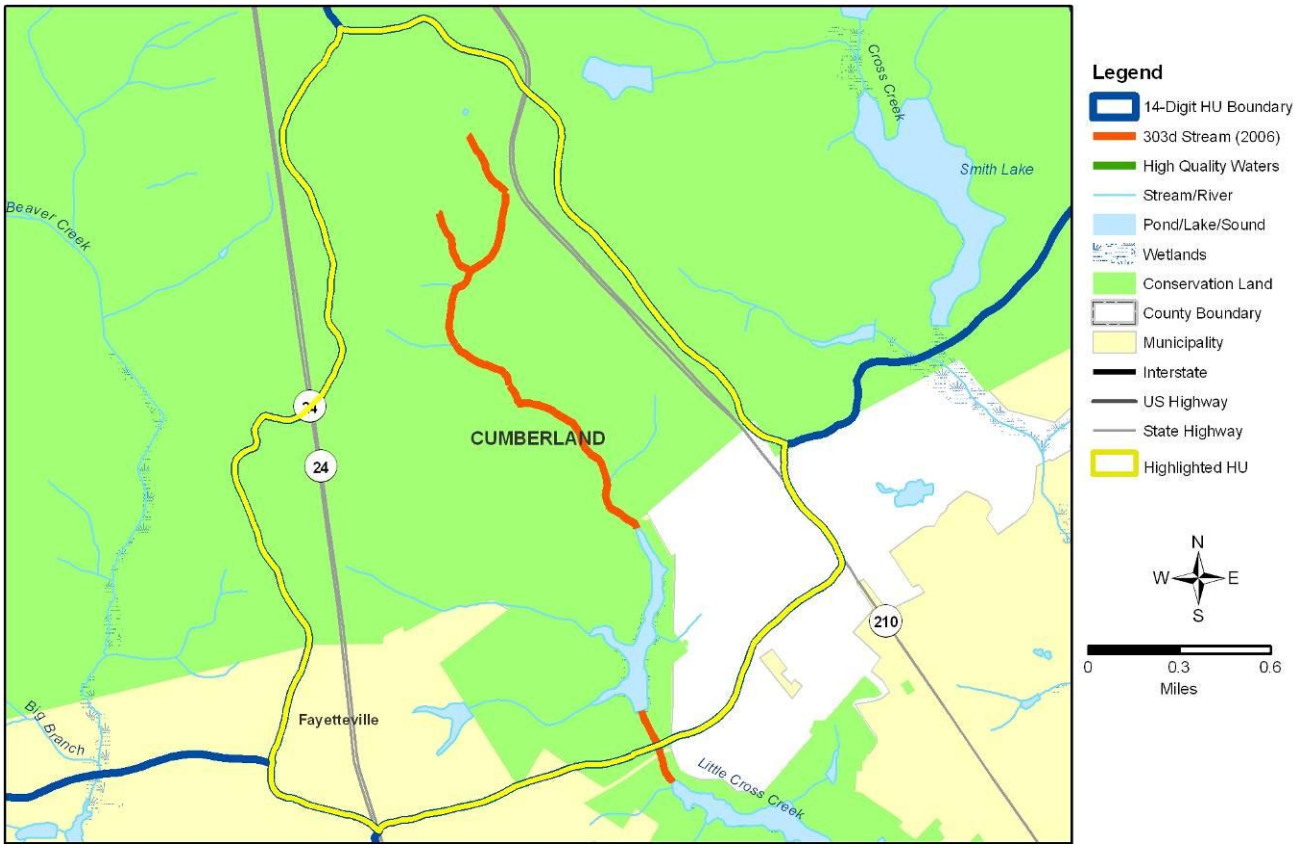
Cross Creek Local Watershed 03030004100030

Cross Creek was chosen as a TLW in 2001 because it was listed on the DWQ 303 (d) list for biological impairment. This portion was resampled and since removed from the list. Cross Creek contains some highly urbanized areas and is classified as Water Supply Watershed-IV. More than 95% of the land area is federally owned and part of Fort Bragg. Fort Bragg and the City of Fayetteville should continue stormwater management and buffer protection in this watershed.



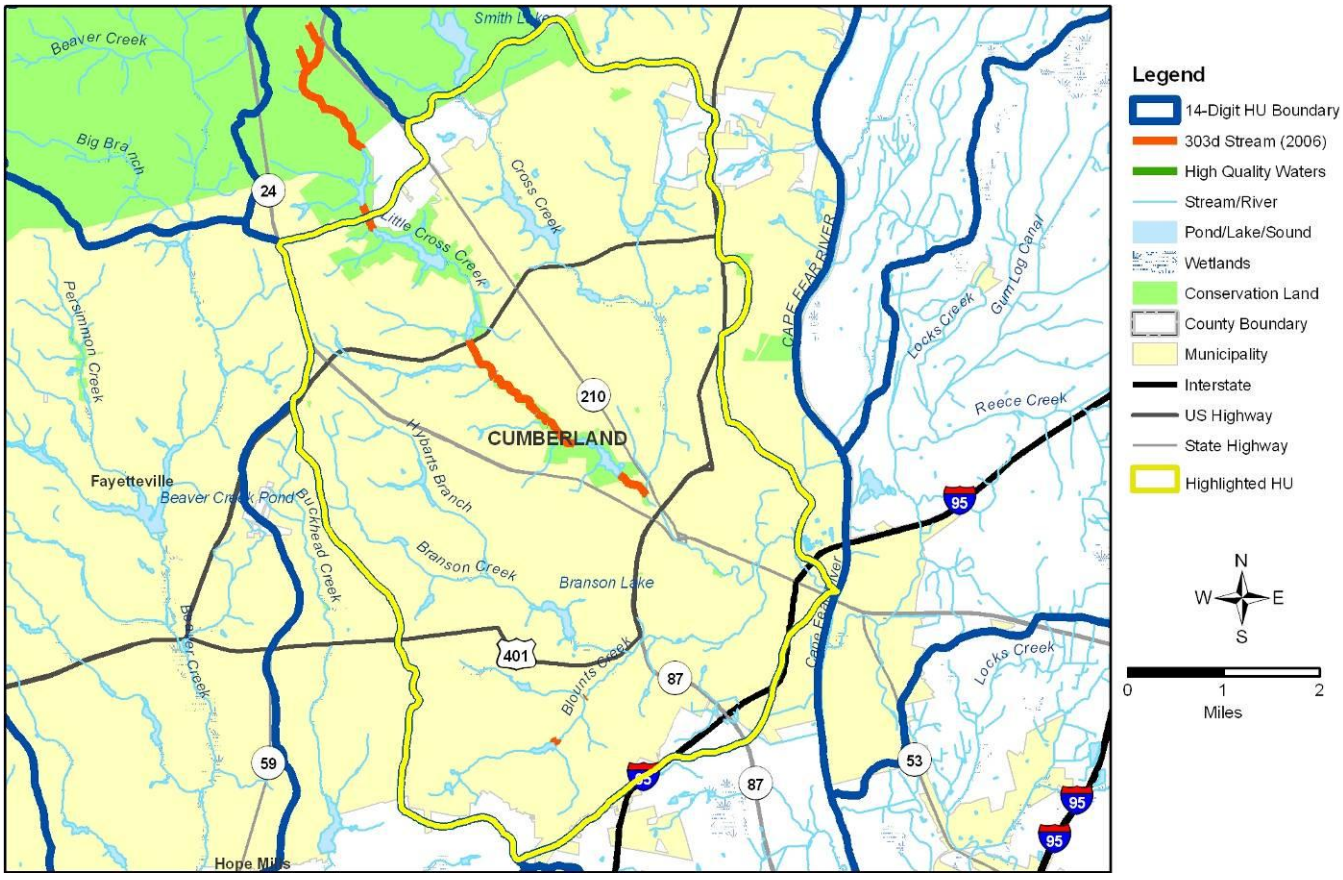
Little Cross Creek Local Watershed 03030004100040

This watershed contains the headwaters of Little Cross Creek. Little Cross Creek was selected in 2001 because it was listed on the 303(d) list as Impaired for aquatic life. A stressor study completed in 2003 indicated that altered hydrology causing bank erosion and sedimentation are likely stressors to the benthic community in Little Cross Creek (DENR-DWQ, memo B-040226). The stressor survey in 2003 also noted tannin stained waters, trash and urban debris as well elevated ammonia levels and periphyton growths. All of Little Cross Creek is classified as Water Supply-IV. Bonnie Doone Lake, Kornbow Lake and Mintz Pond are three of four lake impoundments of Little Cross Creek. All the lakes have been heavily impacted by sediment, nutrients, herbicide and pesticide inputs. More than 77% of this watershed is federally owned land and part of Fort Bragg. Management recommendations include continued efforts in stream restoration, buffers around the lakes and stormwater management.



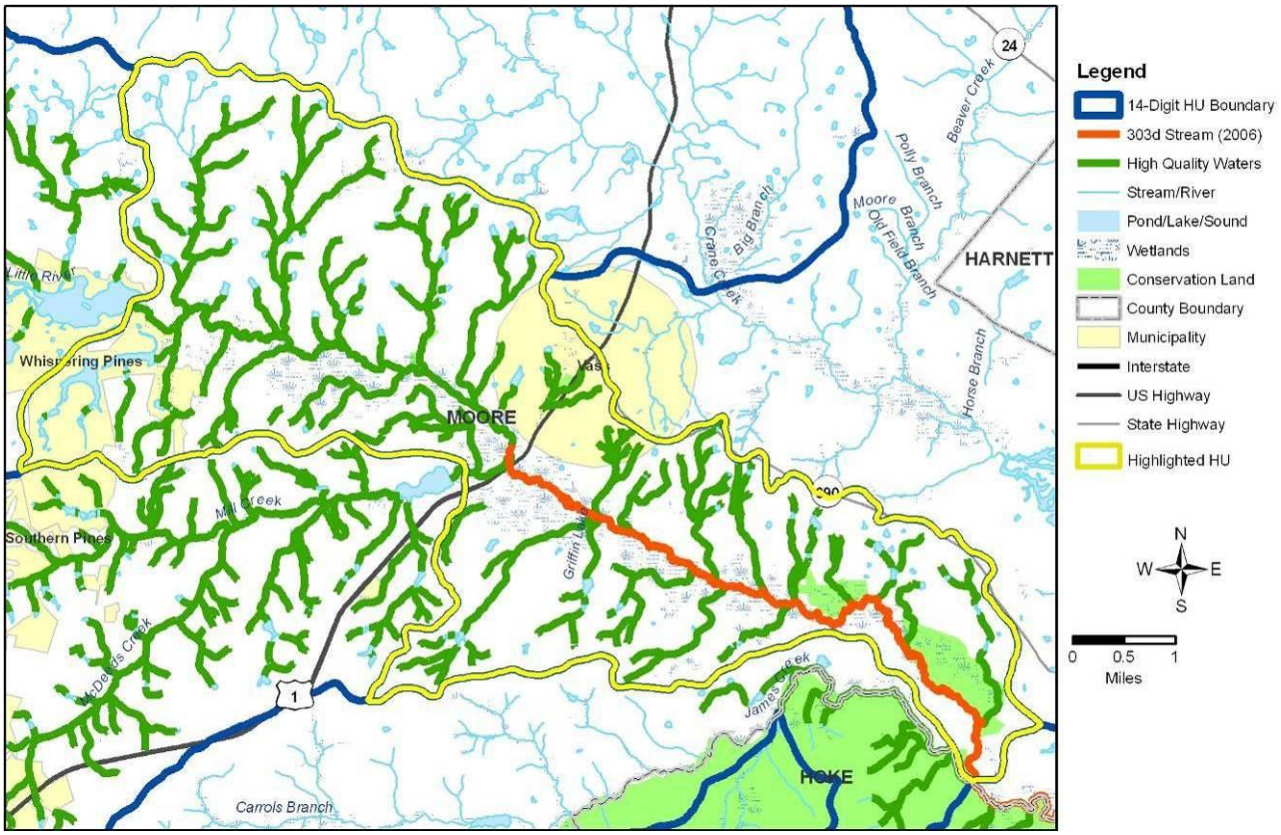
Cross Creek & Little Cross Creek Local Watershed 03030004100050

This watershed contains a segment of Cross Creek and Little Cross Creek, 48% of these waterbodies are classified as Water Supply-IV. Little Cross Creek is listed on the 303(d) list as Impaired for aquatic life. A stressor study completed in 2003 indicated that altered hydrology causing bank erosion and sedimentation are likely stressors to the benthic community in Little Cross Creek (DENR-DWQ, memo B-040226). The stressor survey in 2003 also noted tannin stained waters, trash and urban debris as well elevated ammonia levels and periphyton growths. Glenville Lake is the last of the series of impoundments of Little Cross Creek and serves as a backup water supply reservoir for the City of Fayetteville. Sedimentation has been a problem in this lake, and the lake is gradually filling in. Stormwater seems to contribute to the water quality degradation of this lake. The Fayetteville Public Works Commission has received multiple grants to address stormwater management and water quality issues in this watershed.



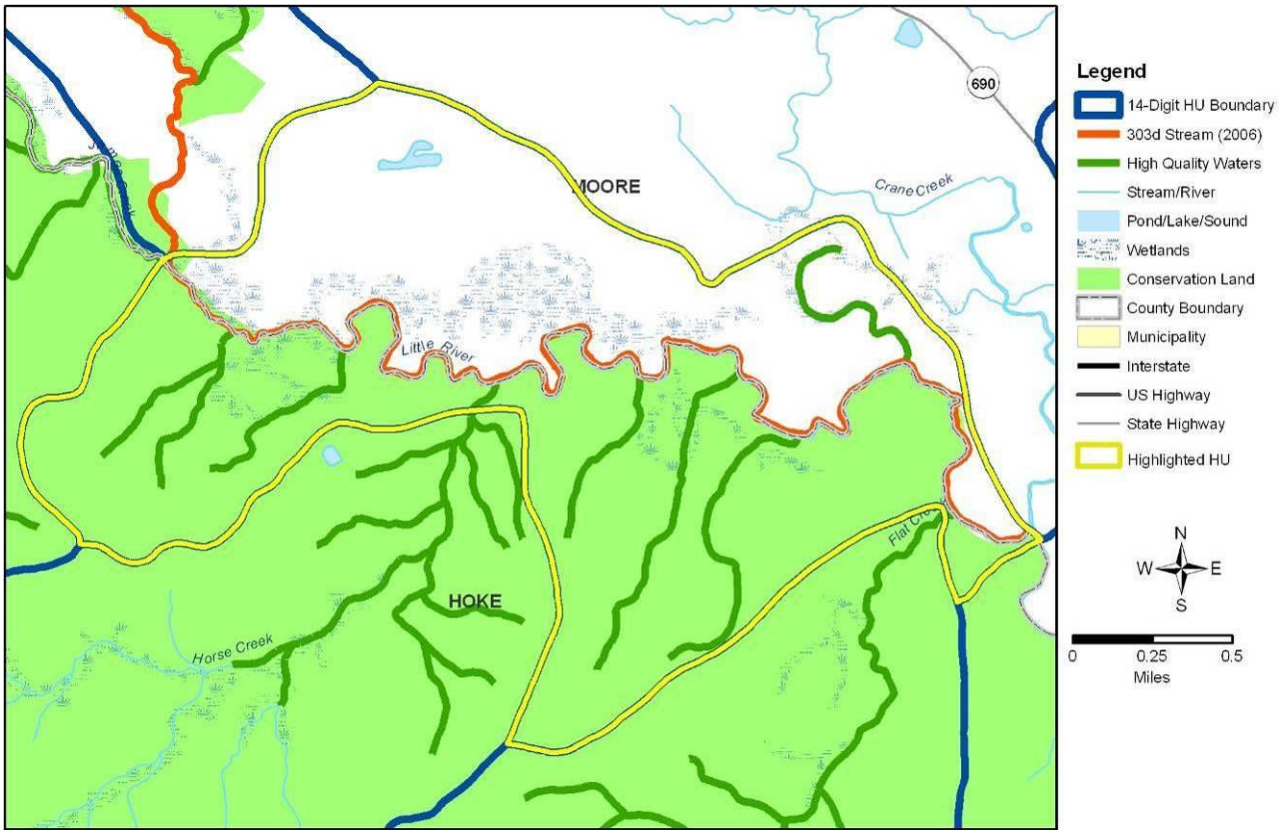
Lower Little River: 03030004070050

This 14-digit HU is part of the Lower Little River Watershed and is located in Moore County. It begins near Whispering Pines and includes the Town of Vass. It was selected for its extensive High Quality Waters (HQW) combined with 8.5 miles of stream on the DWQ 303 (d) list of impaired low pH. Reason for impairment is unknown. Of the 85 stream miles in this watershed, 31% have buffers less than 100ft. wide. Preservation is recommended for this HU.



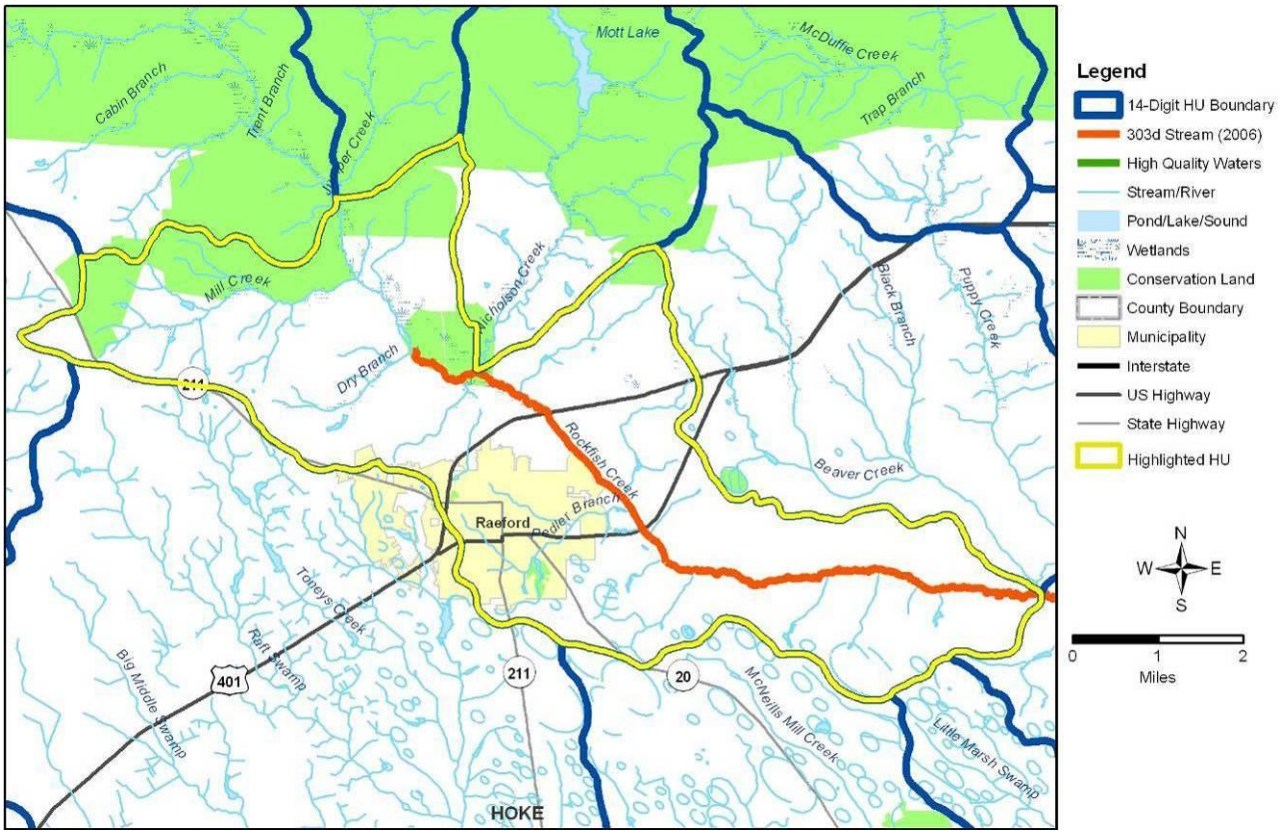
Lower Little River: 03030004070080

This watershed is downstream of 03030004070050 and was selected because 100% of the stream miles are considered High Quality Waters. Currently, this watershed in minimally impacted and has drawn a high level of conservation attention. (Note that additional 14-digit HUs in the Lower Little River chain stood out during the watershed screening but were removed from the list because the Federal Government owns a larger percentage of the land and, therefore, is not available for state-funded restoration opportunities. It is recommended that Fort Bragg continue their preservation efforts in this area). The whole segment of the Little River within this HU is on the DWQ 303 (d) list of impaired waters due to low pH. Reason for impairment is unknown. Continued preservation is recommended for this HU.



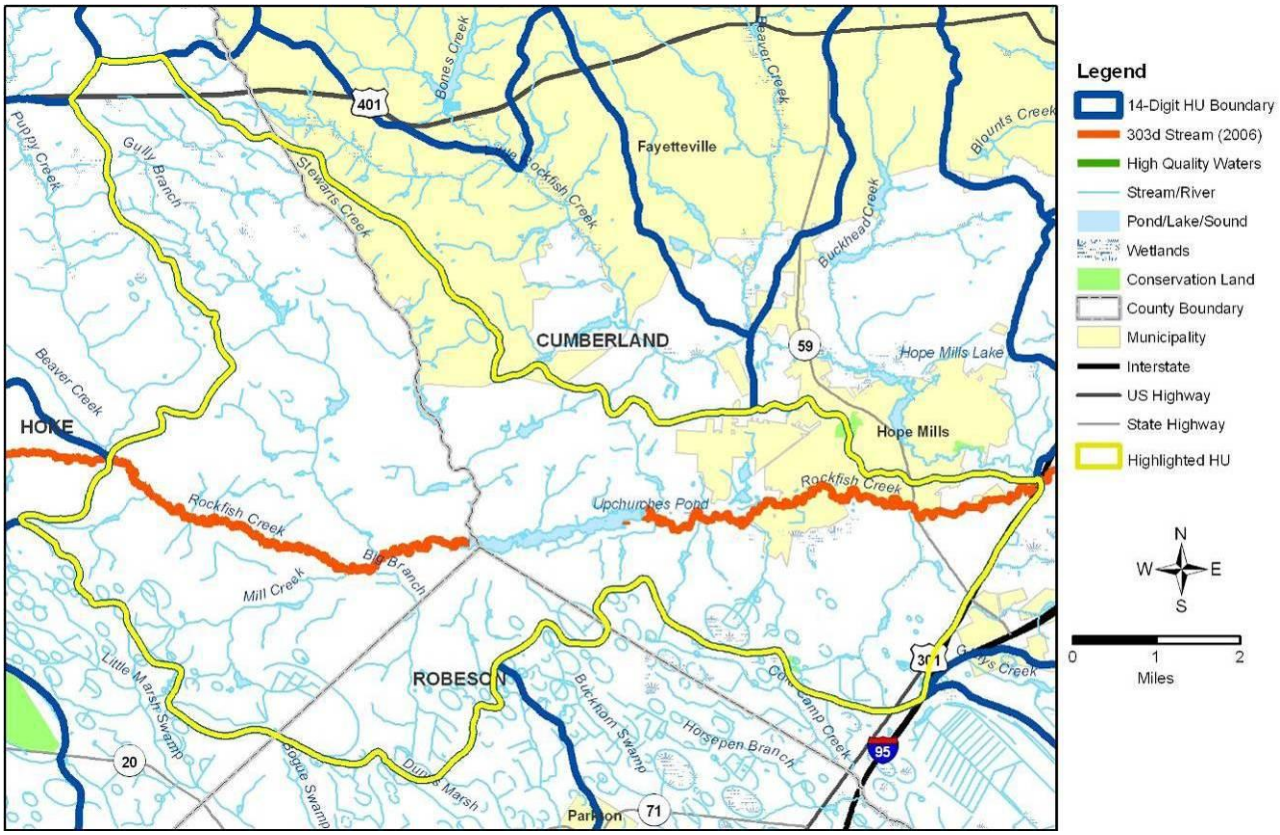
Rockfish Creek: 03030004150011

This 14-digit HU is part of the Rockfish Creek Watershed within Hoke County. This subwatershed begins northwest of Raeford in the Calloway Sandhills and extends southeast of Raeford. The northwest corner of the watershed and areas within the riparian zone of Rockfish Creek contain Significant Natural Heritage Areas. The northwest portion of the watershed contains the Calloway Sandhills. Rockfish Creek drains into the Cape Fear River and is ecologically very significant due to the mixture of piedmont and coastal plain flora and fauna. The northwest portion of the watershed is zoned rural residential. The central portion of the watershed is within Raeford ETJ. The southeast portion is zoned Urban Service Area. 9.7 miles of Rockfish Creek within this subwatershed is on the DWQ 303 (d) list of impaired waters for low pH.



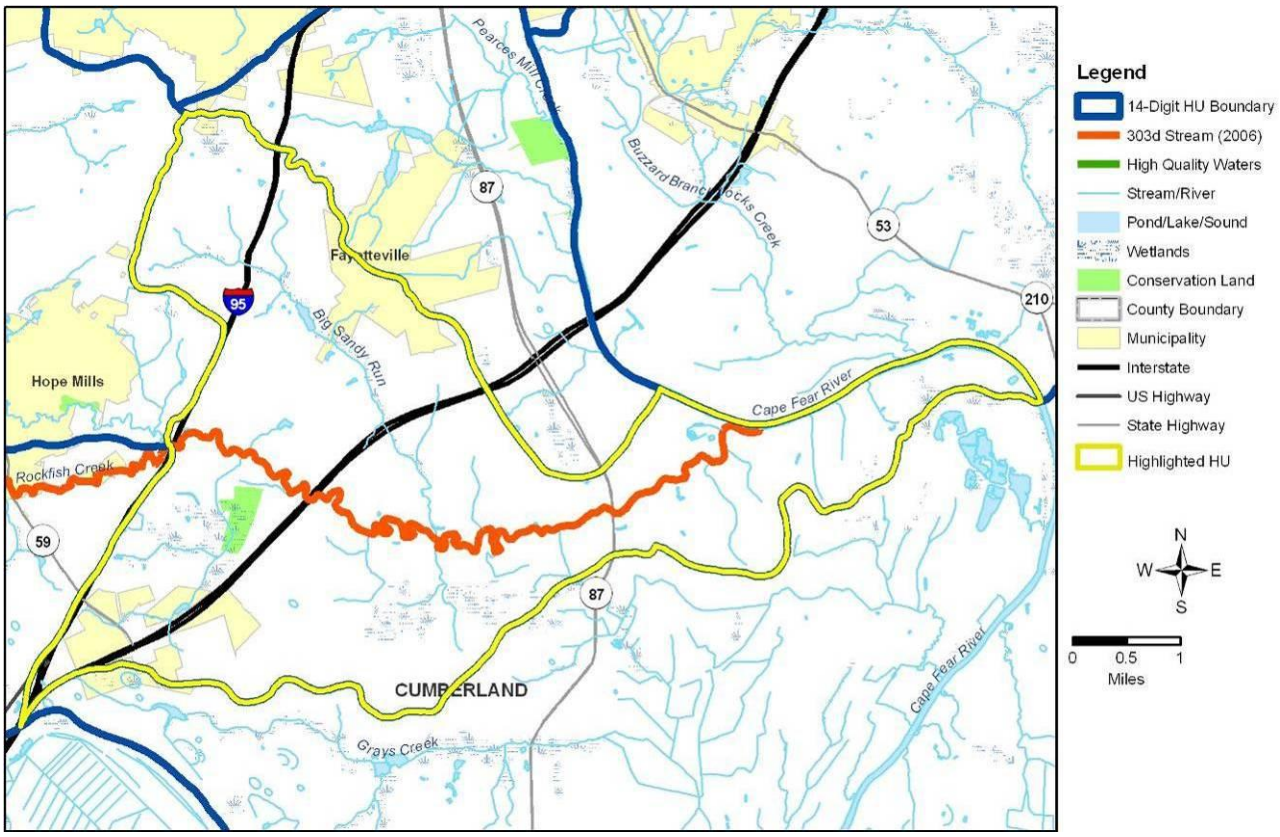
Rockfish Creek: 3030004150012

This watershed is also part of the Rockfish Creek Watershed and is within part of Hoke, Cumberland and Robeson Counties. The western part of the watershed is zoned Urban Service Area in Hoke County with the eastern part of the watershed, in Cumberland, zoned rural residential with a strong influence from the development of the Town of Hope Mills. This watershed was selected due to the high level of development taking place here combined with the Significant Natural Heritage Area designation along Rockfish Creek. In addition, 13.5 miles of Rockfish Creek is on the DWQ 303 (d) list of impaired waters for low pH. Restoration and efforts to maintain buffers where development is taking place is recommended for this HU.



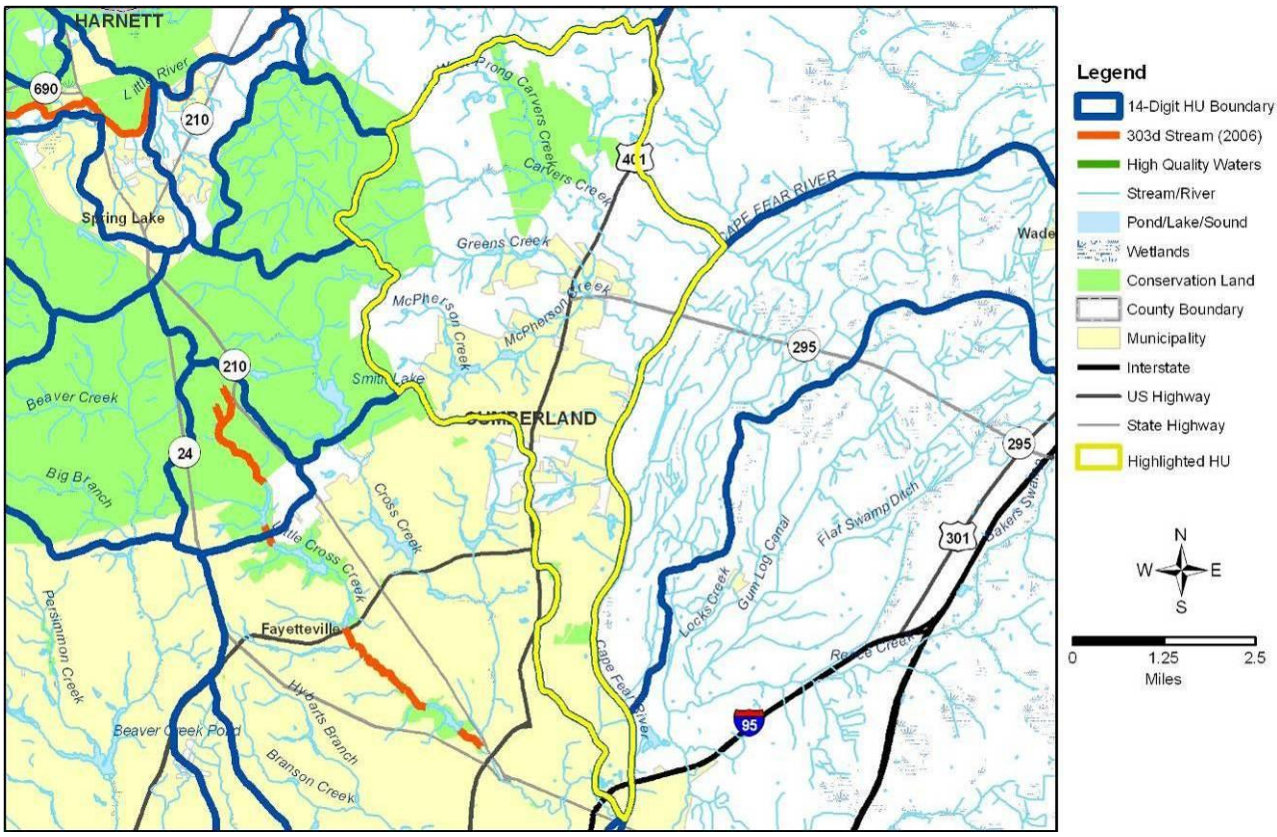
Rockfish Creek: 3030004150013

This watershed contains the last segment of Rockfish Creek before it drains into the Cape Fear River. The watershed is in Cumberland County and contains parts of the Town of Hope Hills, The City of Fayetteville and the I-95 corridor. The Rockfish Creek Corridor is designated Significant Natural Heritage Area and is also on the DWQ 303(d) list for low pH. Efforts to protect the SNHA are recommended as well as maintaining buffers where development is taking place.



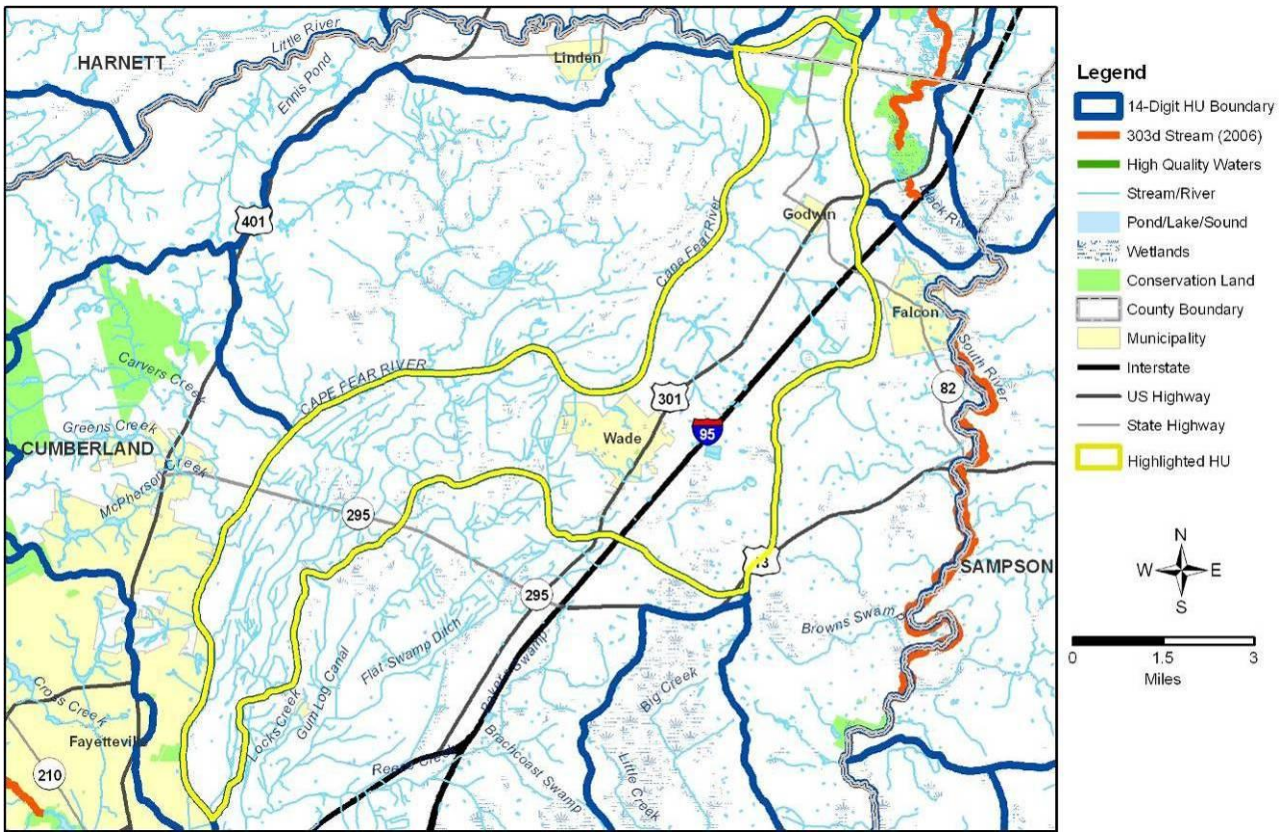
Carvers Creek: 03030004100020

This watershed is located in Cumberland County with the Cape Fear River forming its eastern boarder. This watershed contains 17% of Significant Natural Heritage Area and 98% is a Water Supply Watershed. This watershed was selected as a TLW because the area is quickly urbanizing as a part of the City of Fayetteville. Preservation should be the focus in the northern portion of the watershed with a focus on restoration and stormwater management in the southern portion of this HU.



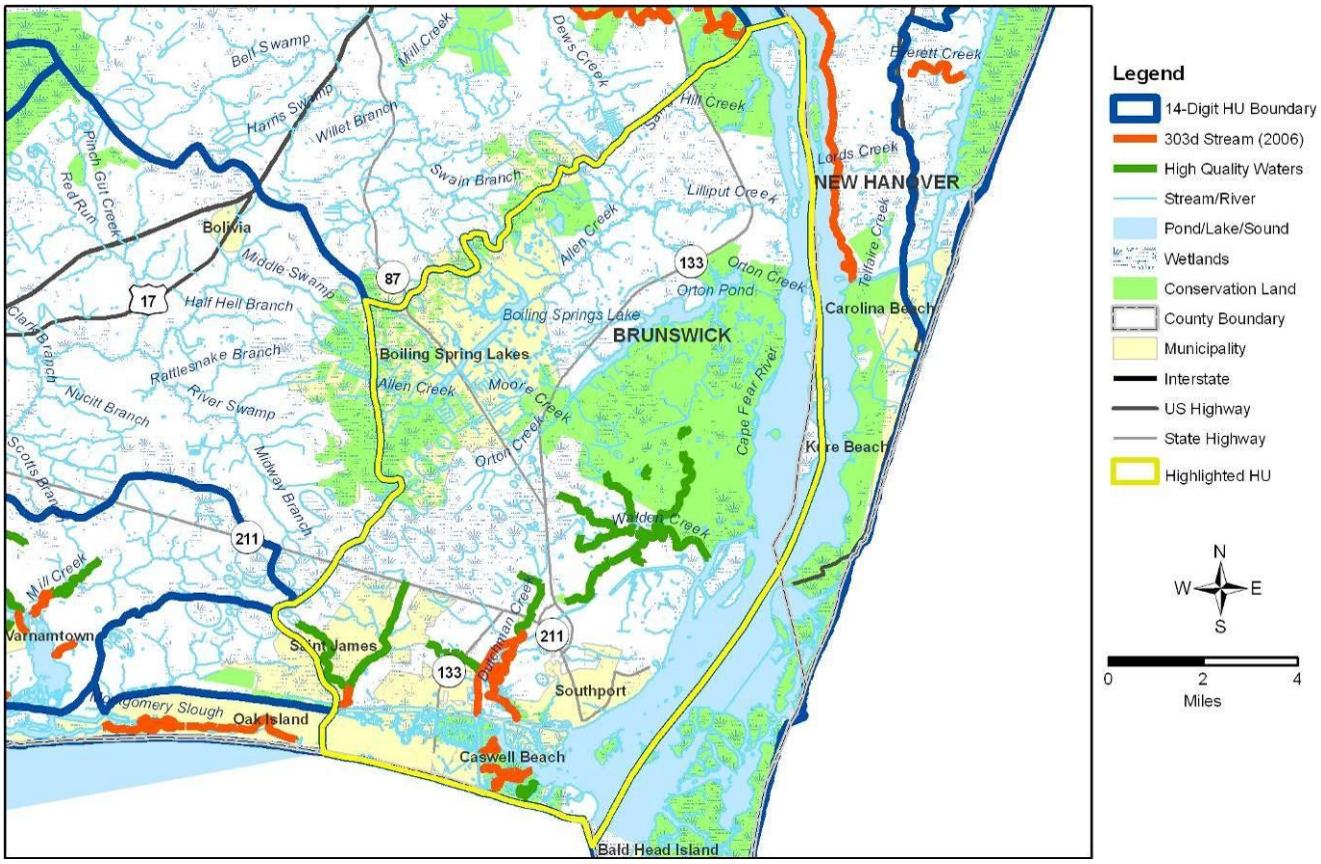
Cape Fear River: 03030004130010

This watershed is located in Cumberland County with Cape Fear River forming its western boundary. Visually, this watershed has maintained a rural/agricultural landscape. However, it contains the I-95 corridor and is located in close proximity to the City of Fayetteville. This watershed offers opportunities for restoration and preservation. Forty-eight percent of this watershed is poorly buffered. The goals for this HU should include restoring lost buffers and maintaining existing buffers.



Cape Fear River Estuary: 03030005070010

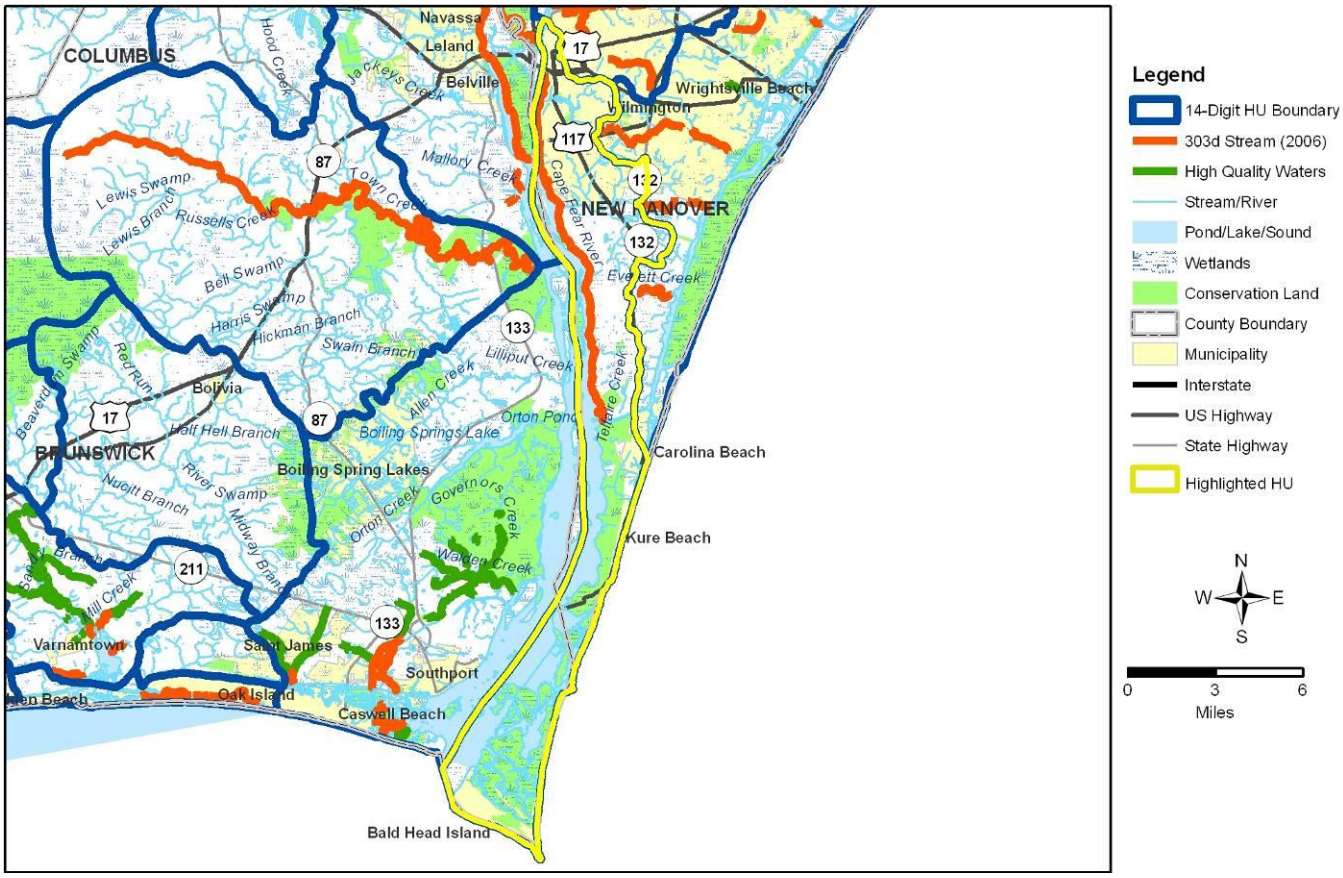
This Targeted Local Watershed is rated partially supporting and is on the DWQ 303(d) list for fecal coliform. The cumulative impacts from Wastewater Treatment Plant discharges in the subbasin as well as nonpoint source pollution are suspected to be contributing to impairment within this waterbody. Possible sources of nonpoint source pollution include marinas, canal systems and septic systems. Swamp water drainage may also be a source of low dissolved oxygen to waters feeding into the estuary. This local watershed has been impacted by urban stormwater runoff, failing septic tanks, channelized waters, draining wetlands and marinas leading to closed shellfish harvest areas. This watershed also contains fish nursery areas, and a Natural Heritage Program Priority Area for habitat conservation. The Boiling Springs and Southport areas are also experiencing some development pressure which could threaten future water quality within the local watershed. EEP has identified this watershed for a Local Watershed Planning effort in 2009.



Barnards Creek & Greenfield Lake: 03030005050010

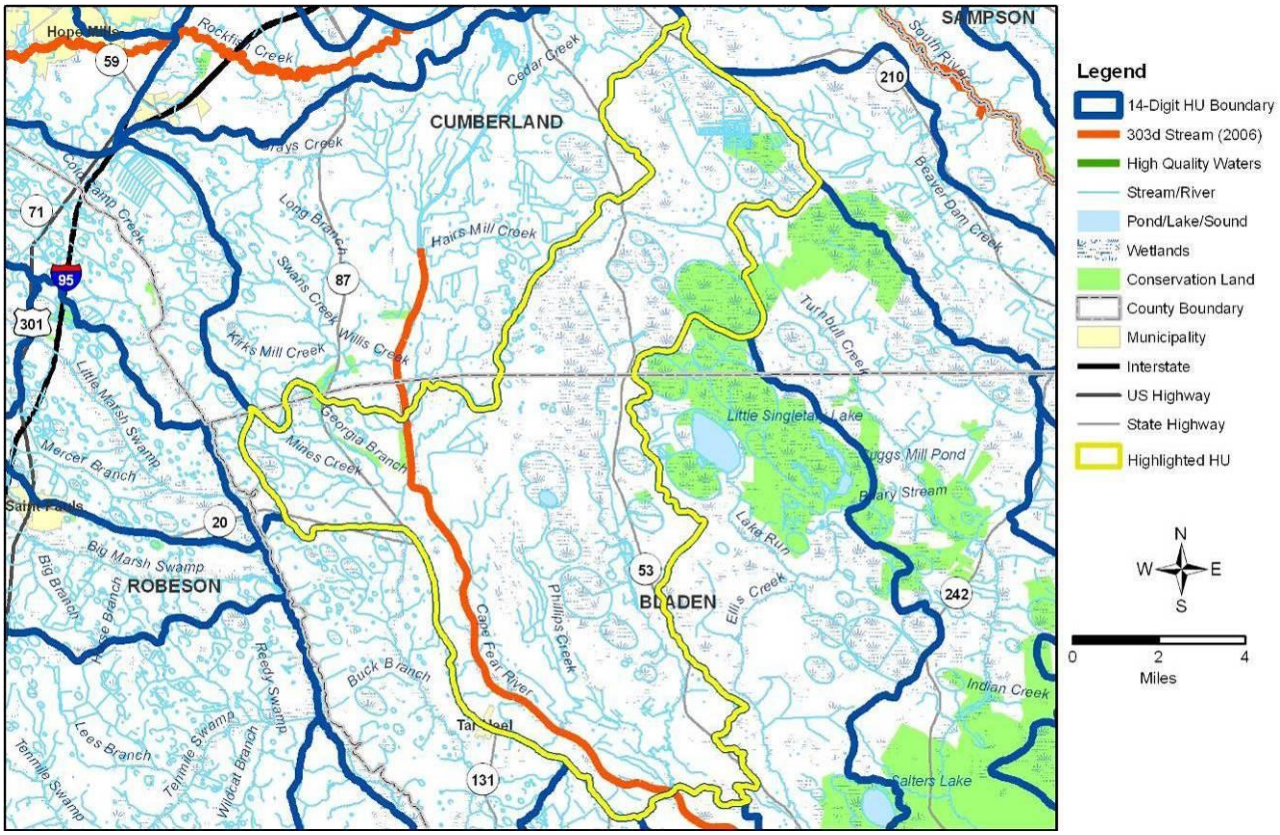
Barnards Creek drains into the Cape Fear River Estuary. It drains a 2,944 acre watershed that consists of is about 17% impervious surface coverage, and a population of 12,547. According to the "Environmental Quality of Wilmington and New Hanover County Watersheds 2006-2007" report produced by the Center for Marine Science at the University of North Carolina at Wilmington, this site had good water quality in terms of algal blooms, BOD, turbidity, and fecal bacteria. It had some issues with low dissolved oxygen, but no extreme problems.

This watershed also contains Greenfield Lake which drains a watershed of 2,560 acres, covered by about 36% impervious surface area. According to the "Environmental Quality of Wilmington and New Hanover County Watersheds 2006-2007" report produced by the Center for Marine Science at the University of North Carolina at Wilmington, all three tributaries to the lake suffered from severe low dissolved oxygen problems. All three of the tributaries also had frequent high fecal coliform counts, and maintained geometric mean counts well in excess of the state standard for human contact waters. In spring of 2005 and 2006 several steps were taken by the City of Wilmington to restore viability to the lake. A challenge for Greenfield Lake is to continue to reduce the frequency and magnitude of the algal blooms, which will lead to continuing dissolved oxygen improvements.



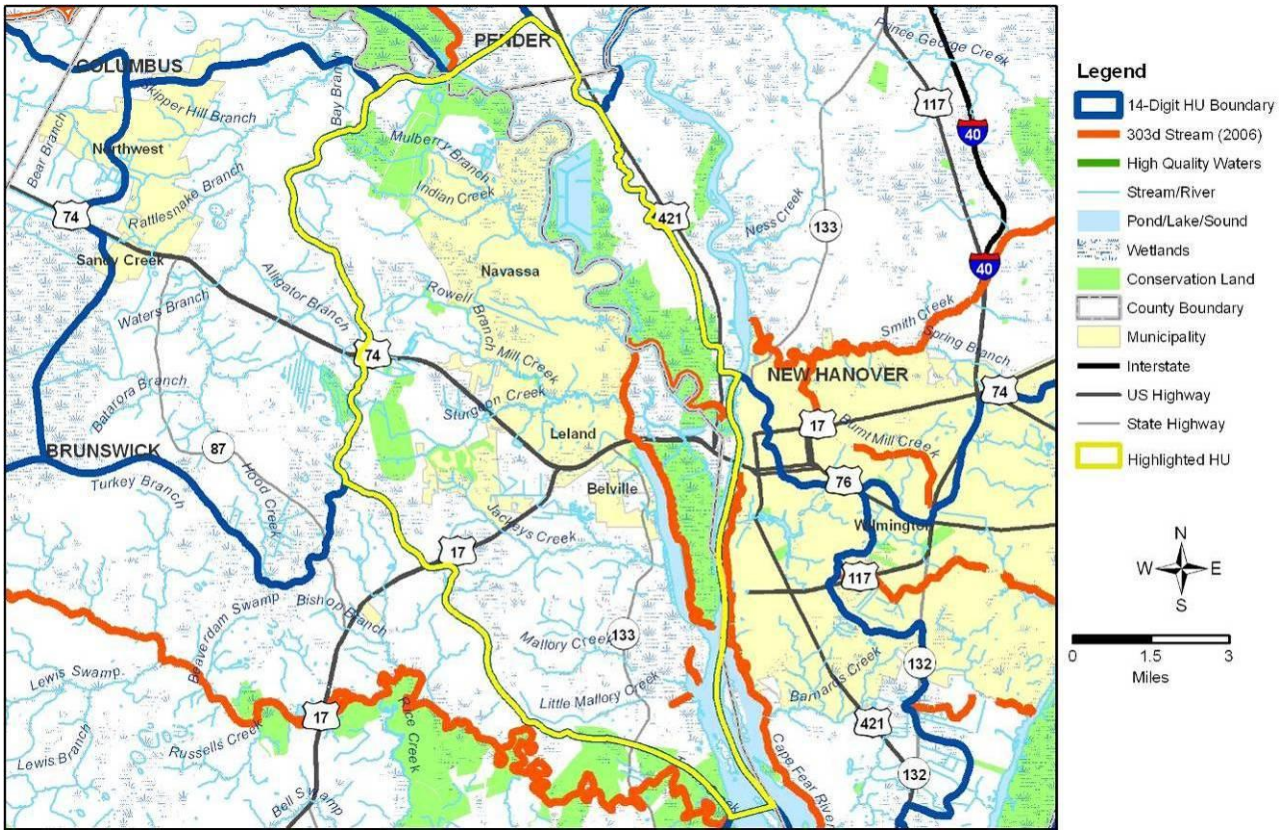
Harrisons Creek: 03030005010020

The Harrisons Creek Watershed was selected due to significant input from local resource professionals. The Harrisons Creek Watershed extends from southern Cumberland County near Fayetteville, southward along the Cape Fear River and includes all of Harrisons and Indian Creeks. Within this watershed, numerous significant Natural Heritage sites are found. Projections based on studies indicate an additional 40,000 people by 2011 in terms of the increase to the region's total population due to Military personnel and dependents. The Cape Fear River is on the DWQ 303 (d) list for standard violation – mercury. The focus in this watershed should be to preserve existing buffers and wetlands as development increases in the watershed.



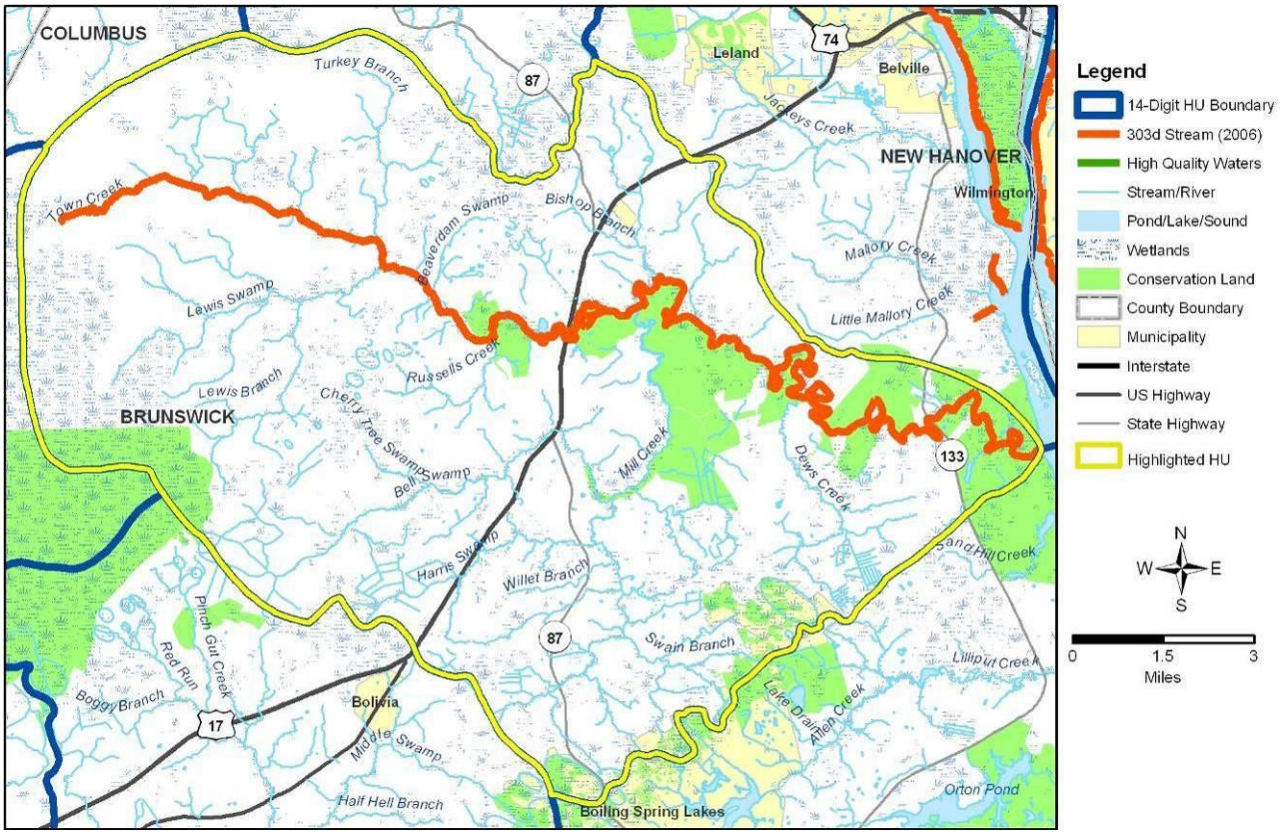
Brunswick River: 03030005040010

This watershed is in Brunswick and Pender Counties and contains the growing towns of Leland, Belville and Navassa. This watershed is the source of multiple creeks which drain to the Cape Fear and Brunswick River. It has a combination of high Significant Natural Heritage Area, conservation interest and heavy development (both industrial and residential). Brunswick River is on the DWQ 303 (d) list for low dissolve oxygen and pH. Potential sources of impairment are unknown. Goals for this watershed should be to work within existing conservation plans developed by land trusts and to protect/restore wetlands and stream buffer in the developing areas.



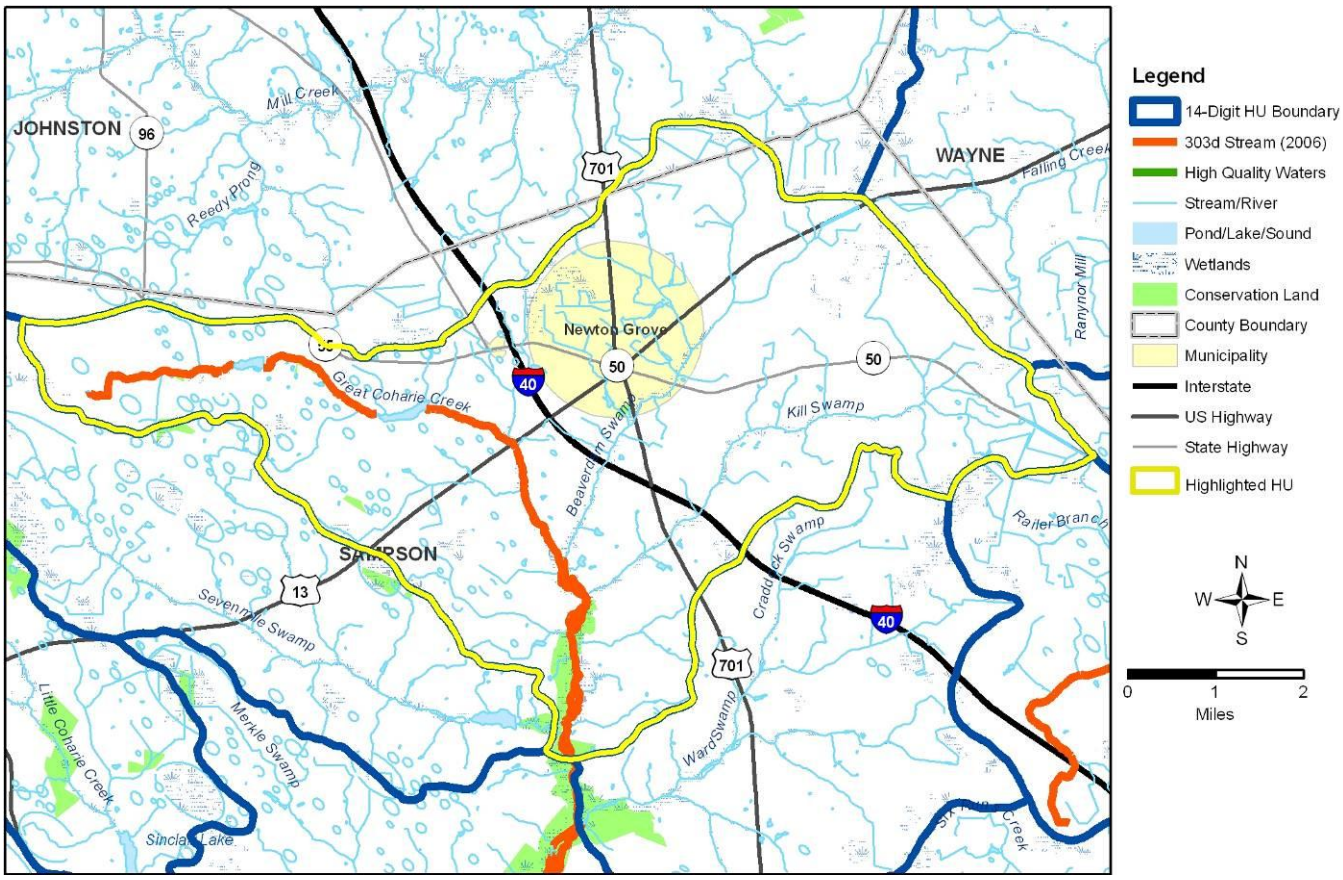
Town Creek: 03030005060010

The Town Creek Watershed was selected due to significant input from local resource professionals. This watershed is located in Brunswick County, one of the fastest growing counties in the state. Multiple organizations, including TNC, The NC Coastal Land Trust, Clean Water Management Trust Fund and EEP have actively participated in developing and implementing conservation plans for this watershed. Town Creek is on the DWQ 303(d) list for standard violation – mercury. Recommendations include working within the conservation plans of the existing land trusts and address restoration needs within the areas prioritized by the TNC and NC Coastal Land Trust. This watershed was selected for an EEP Local Watershed Planning effort in 2009.

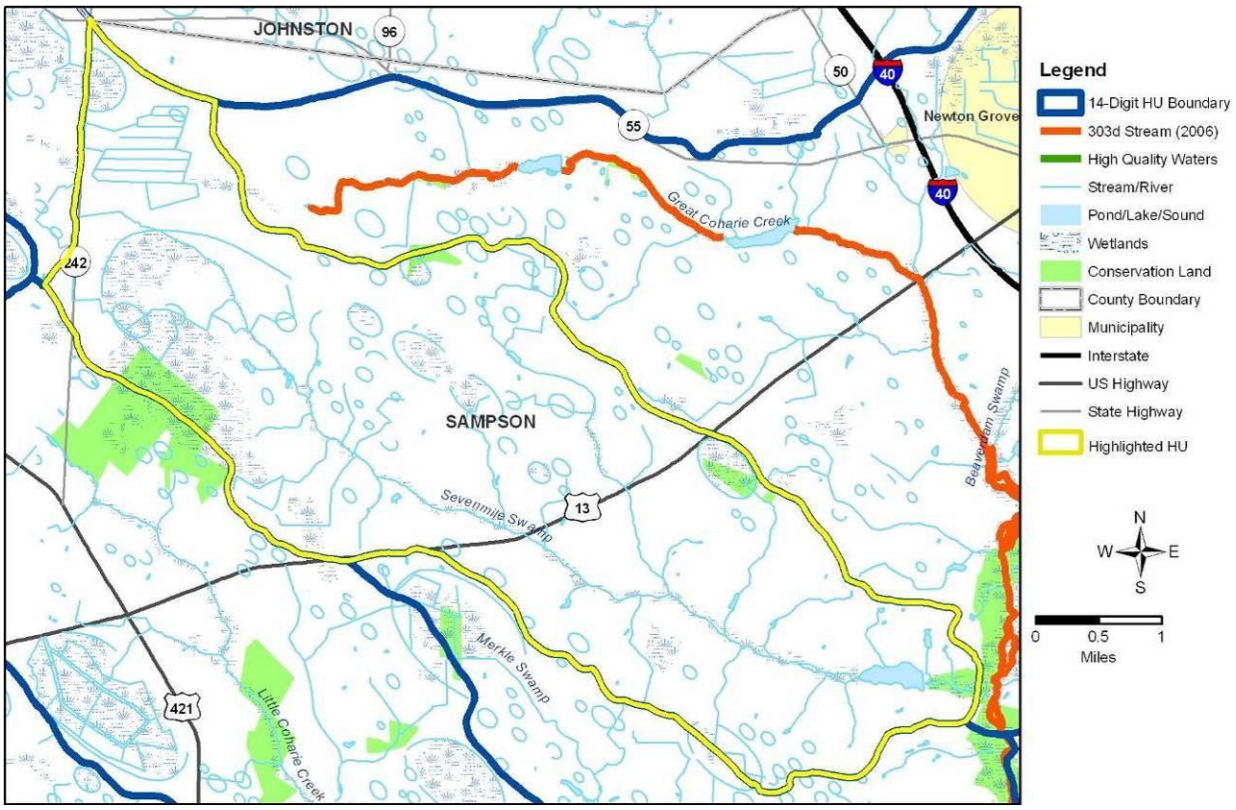


Great Coharie Creek: 03030006090010, 03030006090020, 03030006090015

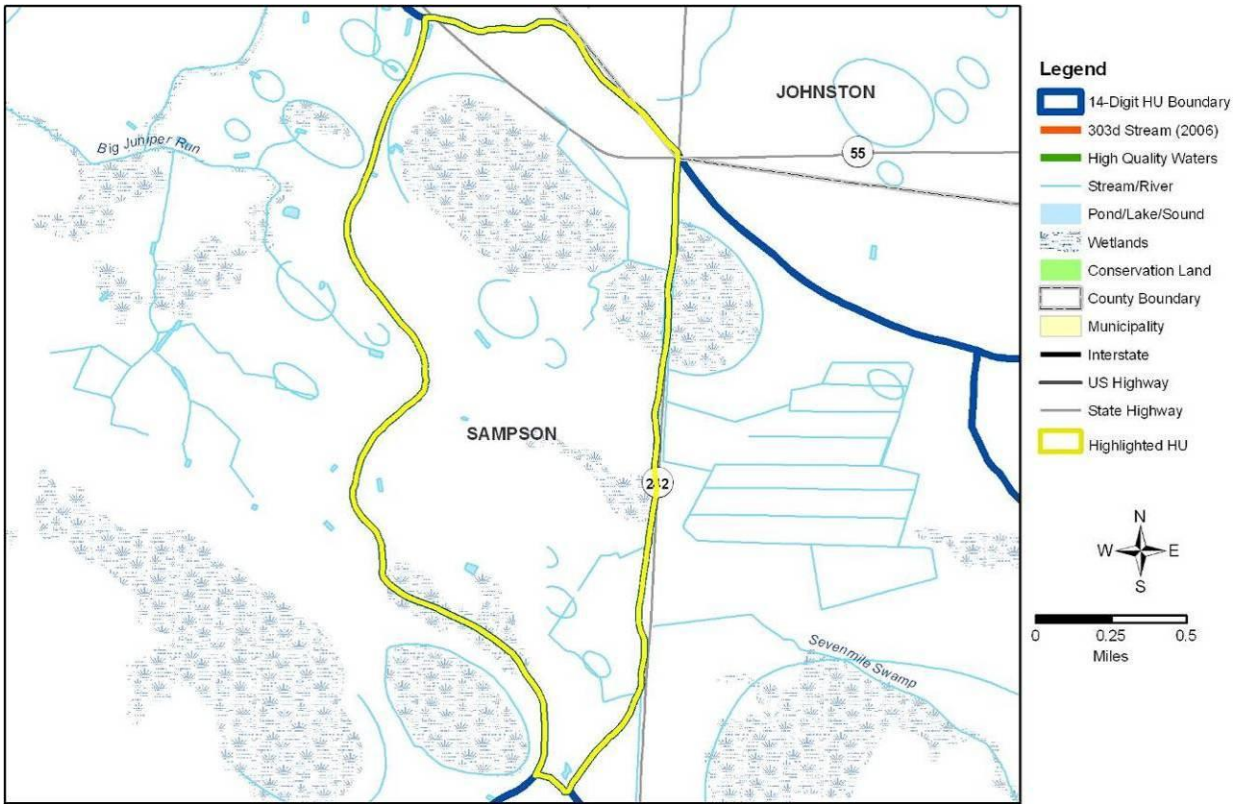
These three HUs were selected in 2008 for the Great Coharie Local Watershed Plan. The planning area is the headwaters of Great Coharie Creek, in the northern portion of Sampson County, including the Town of Newton Grove. In these watesheds, the headwaters of Great Coharie Creek is joined by Seven Mile Swamp and forms the main stem of Great Coharie Creek, where EEP has 4,850 acres of high quality preservation. This area has been designated as Significant Natural Heritage Area because it supports two populations of the Significantly Rare bluff oak (*Quercus austrina*). This site also contains extensive area of Cypress Gum Swamp natural community. The receiving waters for Great Coharie Creek have been identified by the Natural Heritage Program as the Coharie / Six Runs Creek Aquatic Habitat which contains populations of two rare fishes, Federal and State Species of Concern broadtail madtom *(Noturus* species) and State Special Concern thinlip chub (*Cyprinella* species). There are also 3 rare freshwater mollusks: State Threatened eastern lampmussel (*Lampsilisvradiata*), State Special Concern pod lance (*Elliptio folliculata*) and State Significantly Rare eastern creekshell (Villosa delumbis). The Great Coharie Creek from source to the Black River is Not Rated for aquatic life because of low dissolved oxygen. Great Coharie Creek is classified as C Sw, which acknowledges natural characteristics of swamps such as low DO. Great Coharie Creek is impaired in the fish consumption category for mercury.



HU 03030006090010



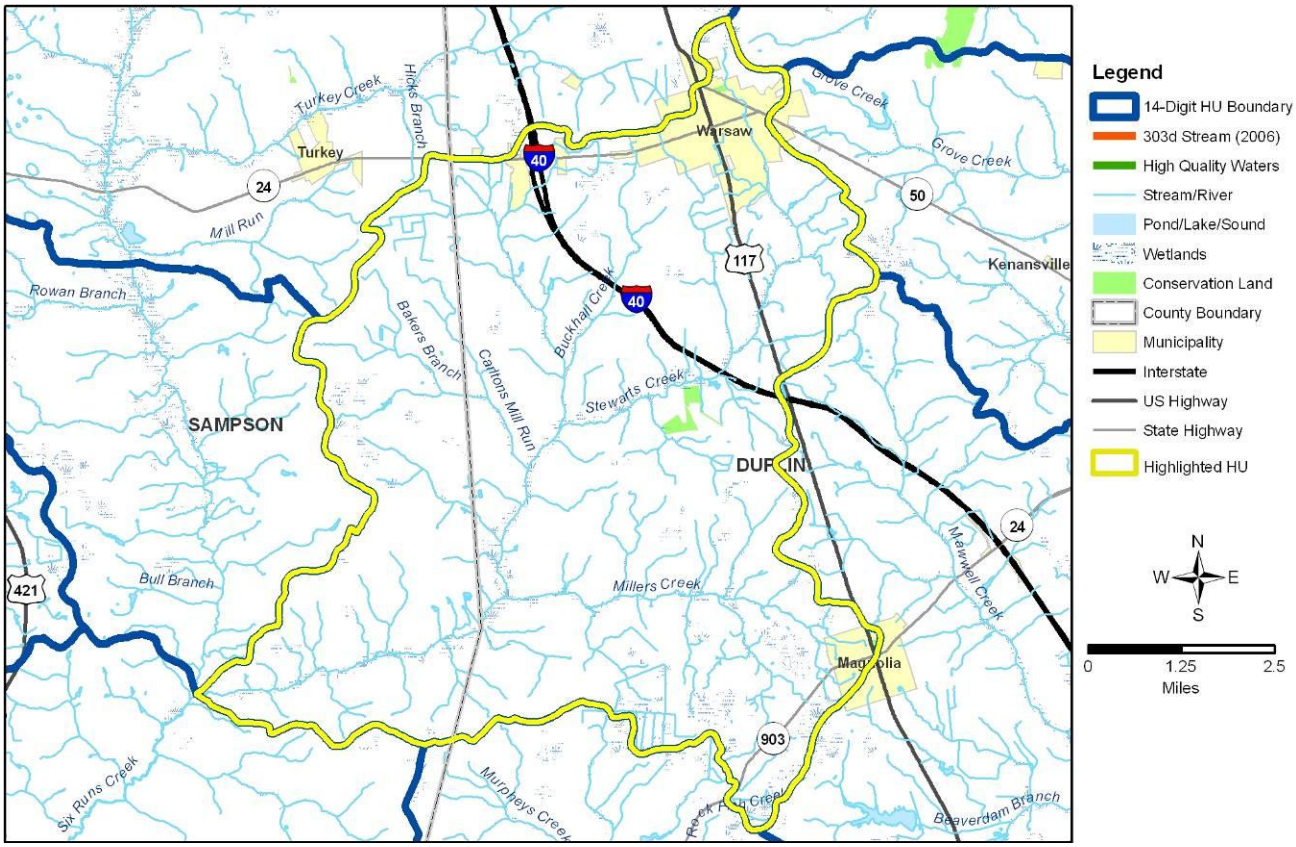
HU 03030006090020



HU 03030006090015

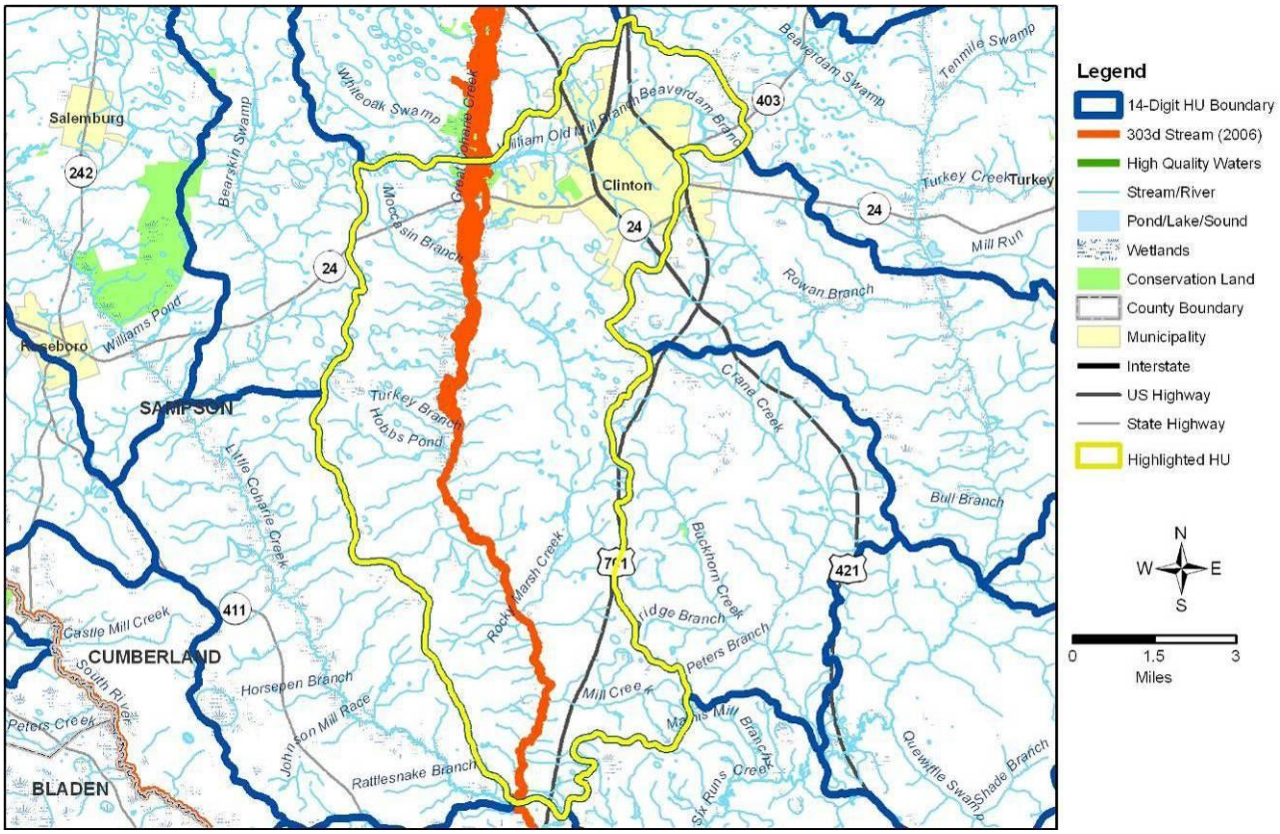
Stewarts Creek: 03030006110040

Stewards Creek is located in Sampson and Duplin Counties and contains the town of Warsaw and Magnolia. It was listed as a TLW in 2001 because it was on the DWQ 303(d) list of impaired waters. The stream was retested and removed from the 303(d) list in 2004 due to a bioclassification TMDL study done by DWQ. This watershed remains a TLW due to the number of animal operations and potential mitigation opportunities in this area.



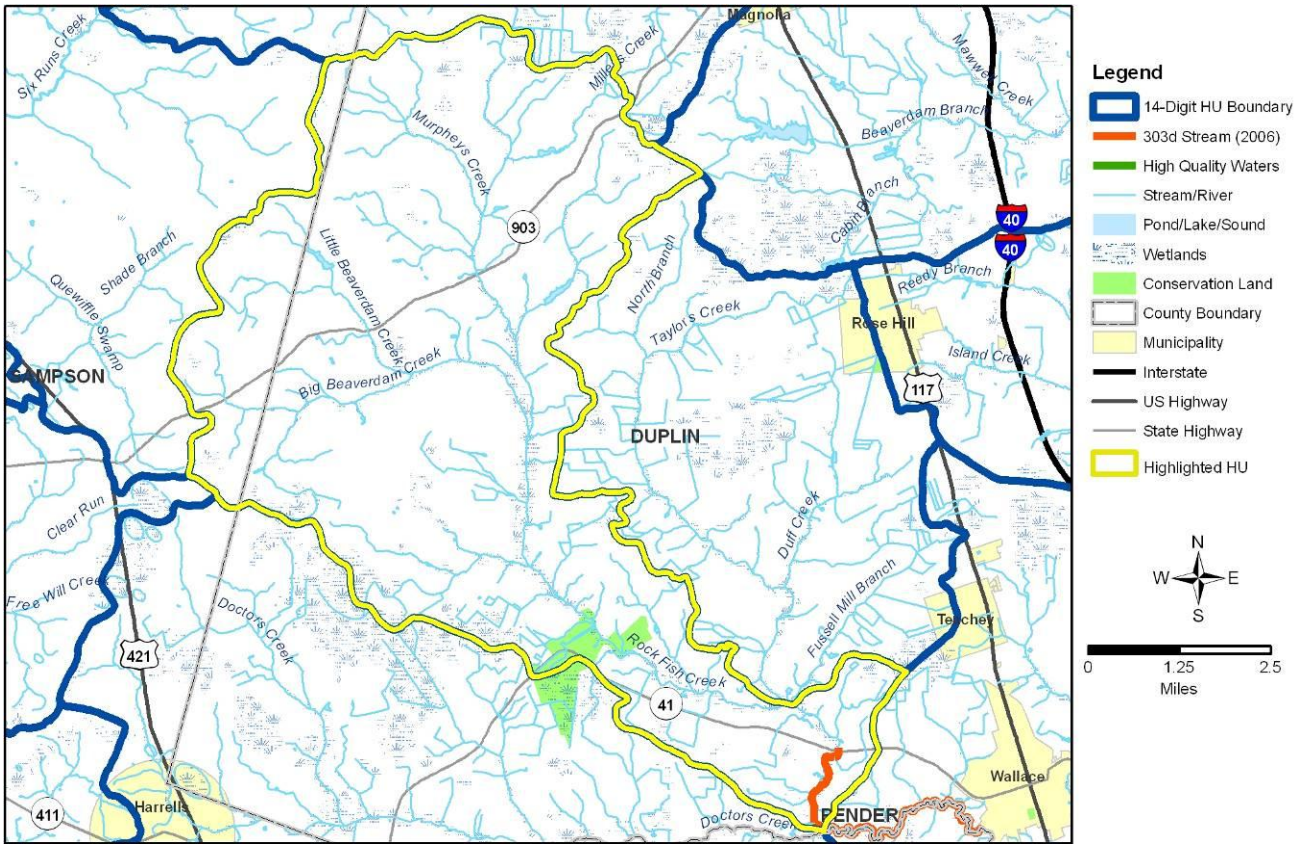
Great Coharie Creek: 03030006090060

This watershed is in Sampson County and contains the Town of Clinton. The Great Coharie Creek is in this watershed and contains Significant Natural Heritage Area and Natural Heritage Elements of Occurrence. Data from the *Environmental Assessment of the Lower Cape Fear River System* (Center for Marine Science, UNCW, 2005) shows fair water quality for fecal coliform and nitrates, which reflects a condition that needs improvement. NC Wildlife Resources Commission reported low dissolved oxygen at a monitoring site below this HU, just before Great Coharie Creek enters the Black River. EEP is conducting a Local Watershed Plan in the headwaters of the Great Coharie Creek with a focus on restoration and agricultural BMPs.



Rock Fish Creek: 03030007090010, 03030007090040 & 03030007090060

Rock Fish Creek drains a large portion of Pender and Duplin Counties and the Town of Wallace. These 3 municipalities have worked to clean out the creek near and upstream of Wallace due to drainage issues. Each of these Targeted Local Watersheds contains segments (starting in the headwaters) of Rock Fish Creek which contains a total of 8.7 miles of partially supporting waters. This waterbody is on the DWQ 303(d) list for impaired biological integrity with the source of impairment undetermined. Goals for this watershed should be to work with the municipalities to repair buffer and conduct restoration on Rock Fish Creek.



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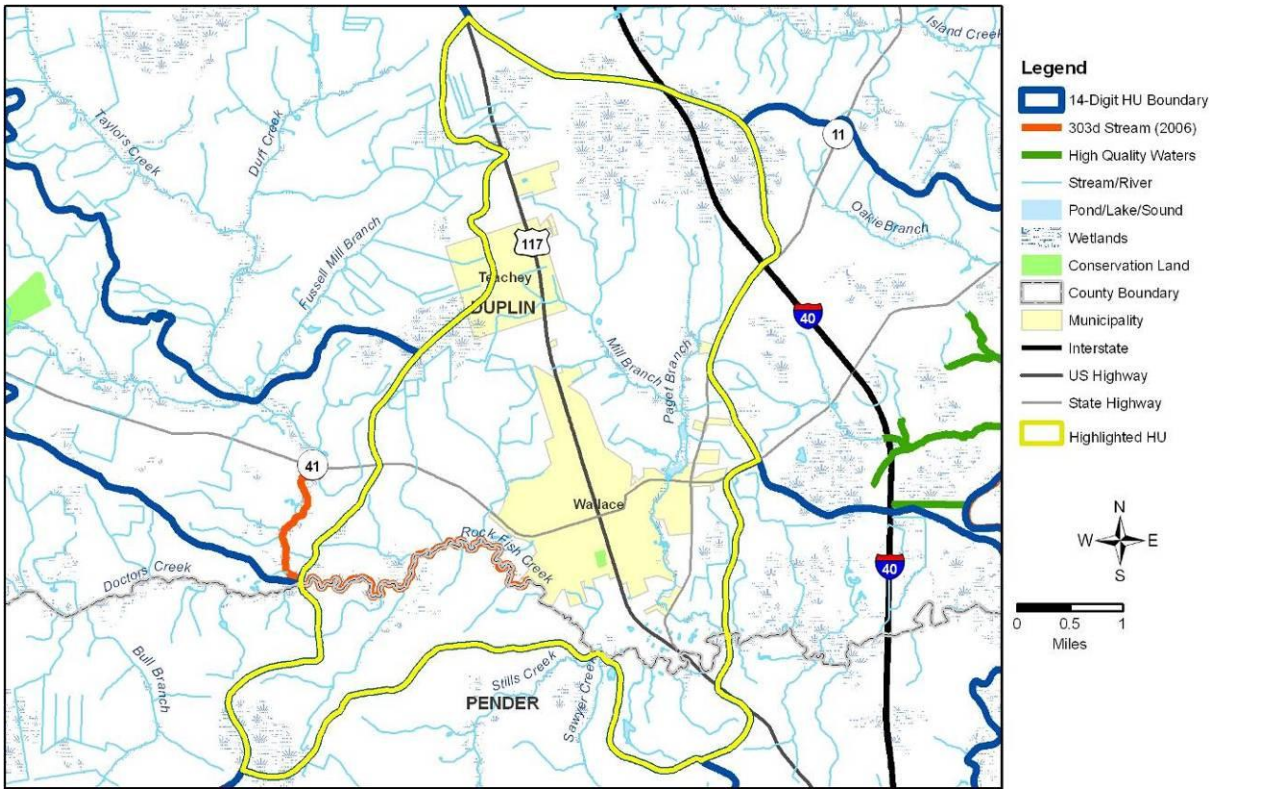
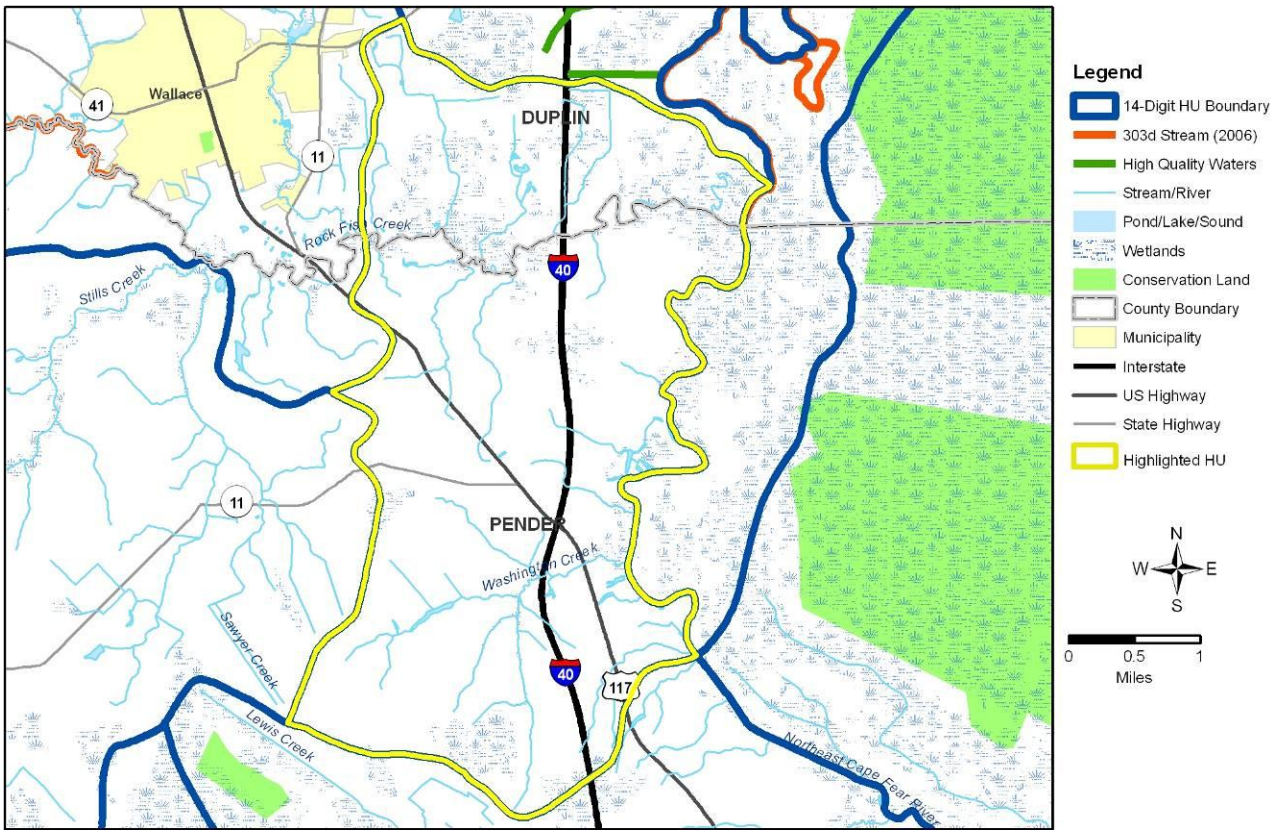


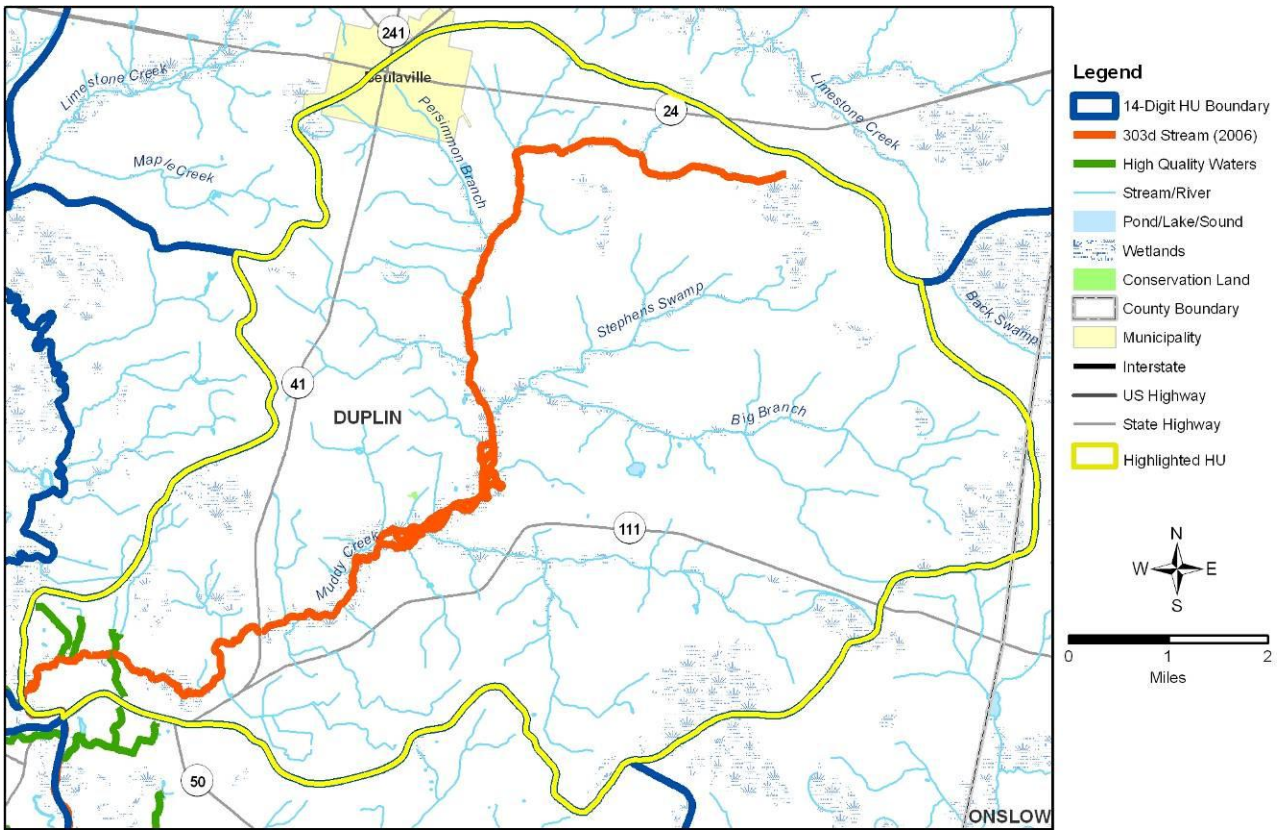
HU 03030007090040



HU 03030007090060

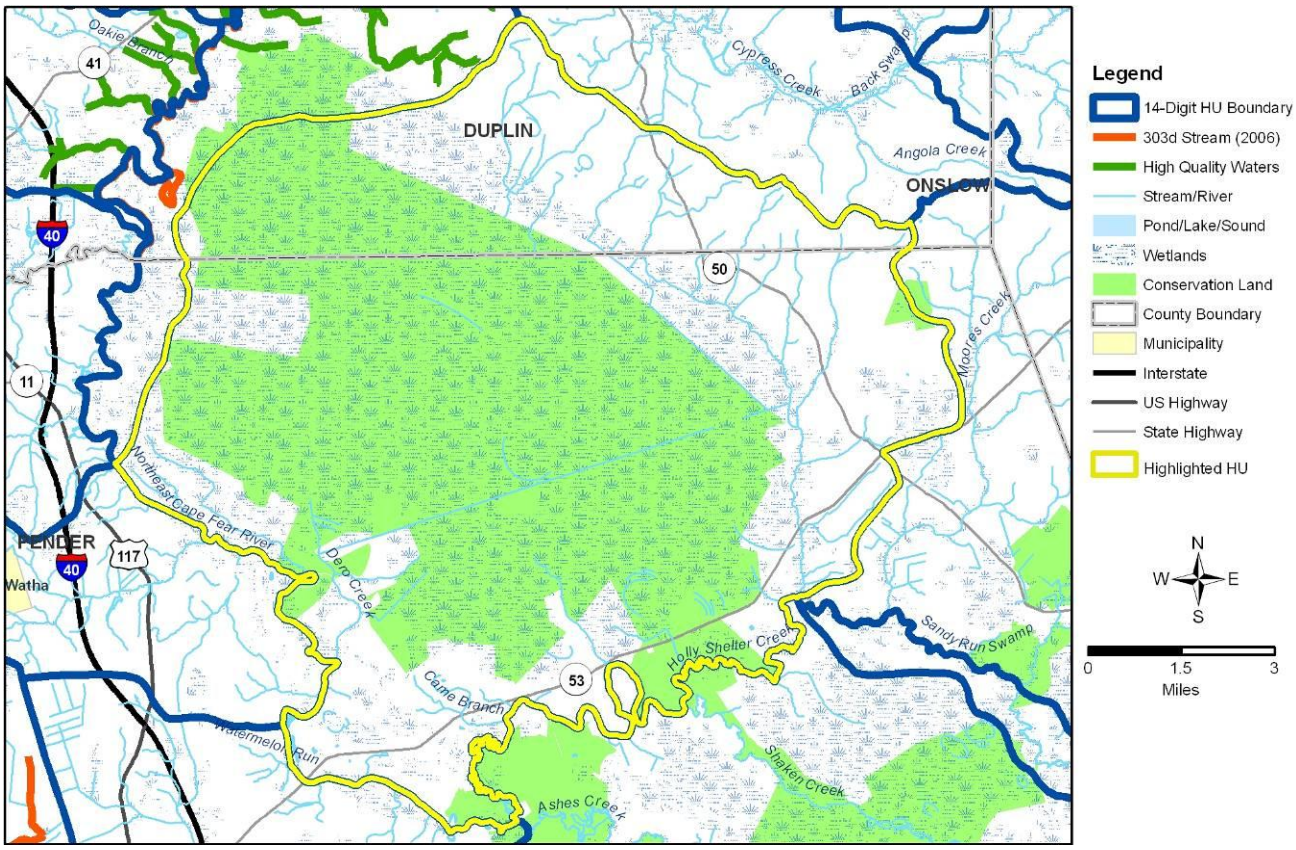
Muddy Creek: 03030007060010

In 1993, this stream was originally not rated because of its small size, however since Hurricane Fran in 1996, stream size is significantly larger. This Targeted Local Watershed contains Muddy Creek which is rated partially supporting for 14 total miles. Impairment could be a result of nonpoint sources of pollution. This watershed also contains many hog operations. Muddy Creek from source to Northeast Cape Fear River (14 miles) is Impaired for aquatic life because of a Fair benthic community rating. Aquatic habitat was good at the site, suggesting that the water quality is degraded. There are 98 animal operations and one NPDES wastewater discharger in the watershed that may be the sources of the degraded water quality.



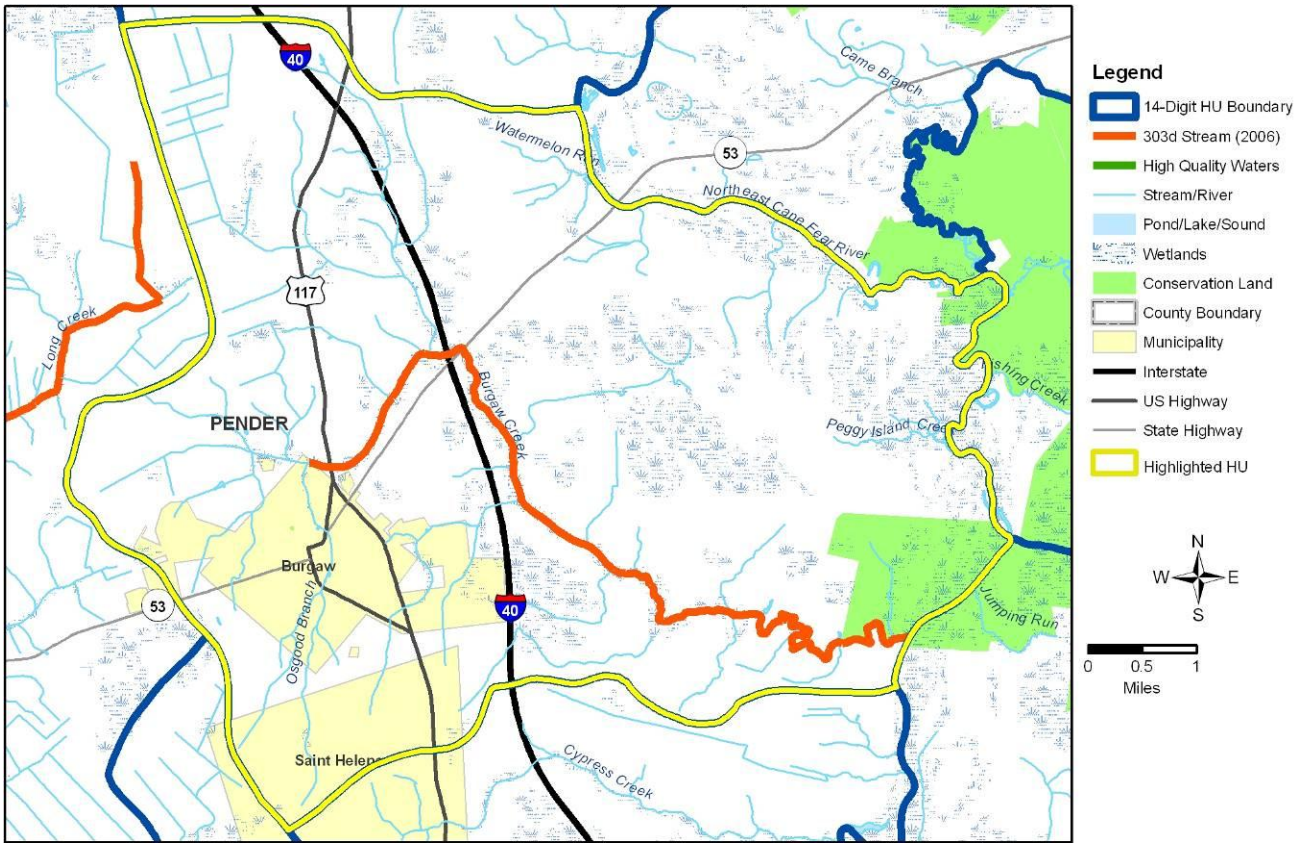
Angola Creek: 03030007100010

Half of this watershed has the designation of Significant Natural Heritage Area; most of this designation is for Angola Bay, a 30-square-mile domed pocosin. Domed pocosins are known only from the Coastal Plain of the Carolinas. Natural communities include Low Pocosin, Pond Pine Woodland, and Wet Pine Flatwoods. Angola Bay provides habitat for Redcockaded Woodpeckers, and rare plants. Such a large expanse of pocosin also provides habitat for black bears and other wildlife. Most of the site is a game land owned by the NC Wildlife Resources Commission. This watershed also contains Angola Creek Flatwoods, owned by The Nature Conservancy. Prior to the protection of these areas, extensive ditching and draining took place. Potential to work with WRC and TNC to do wetland restoration or additional preservation would be the goals here.



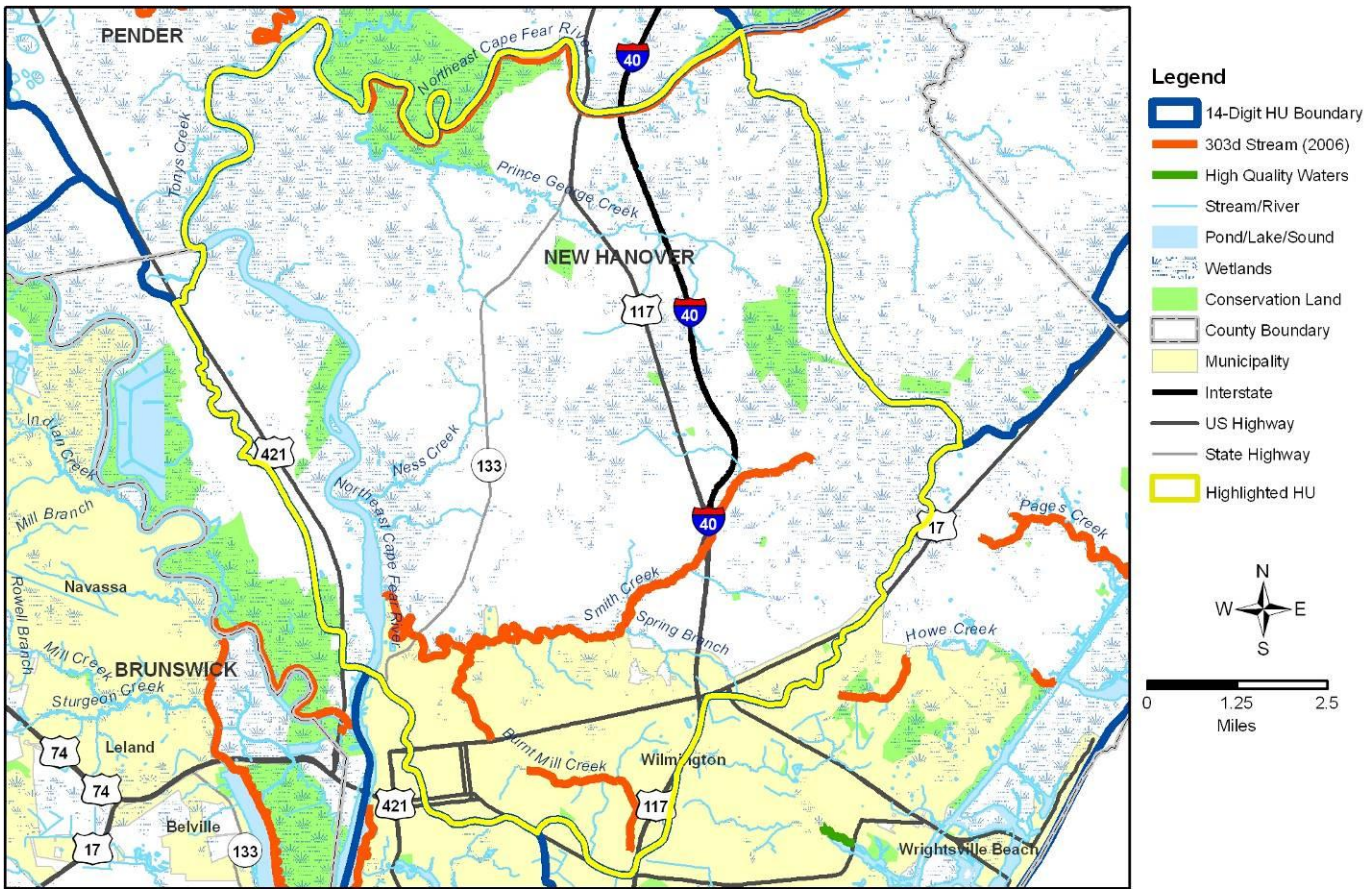
Burgaw Creek: 03030007110020

This TLW was listed in 2000 based on water quality data and input from stakeholders. The Lower Cape Fear River Program identified low chlorophyll a as a source of impairment to Burgaw Creek. The stream is currently on the DWQ 303(d) list as not rated for aquatic life. This watershed also contains Significant Natural Heritage Areas as part of the Cape Fear Floodplain. At the Resource Professionals Meeting held in 2000, general comments were made about eroding streambanks along Osgood Canal (through downtown Burgaw) causing a potential threat to water quality. Other comments made at the meeting concerning potential threats to water quality along Burgaw Creek included: increasing development and sprawl along Burgaw Creek, stream channelization, and agricultural activities. Goals in this watershed should be restoration.



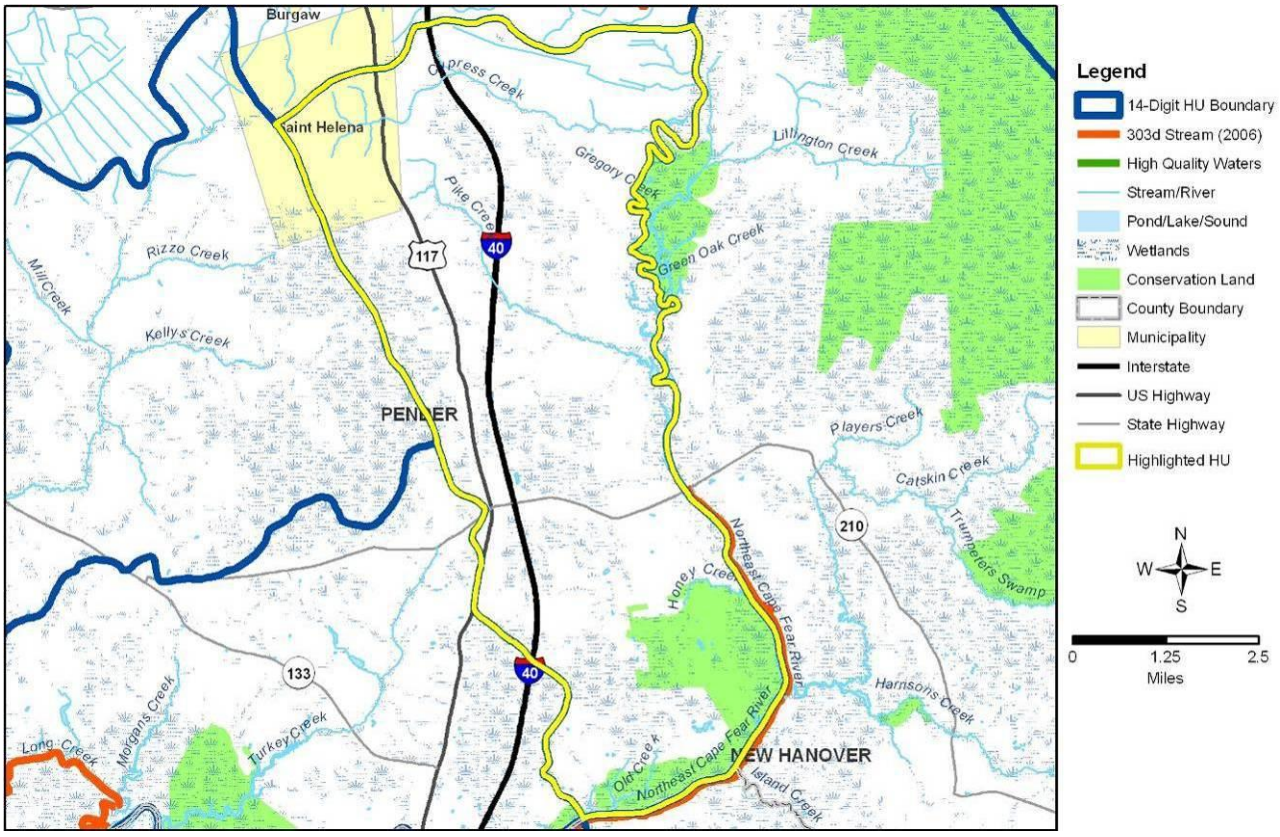
Burnt Mill Creek / Smith Creek /Northeast Cape Fear: 03030007140010

This watershed was identified as a TLW in 2001 and then became the first local watershed planning effort called the New Hanover County LWP. The primary goals that came from the local watershed plan are: (1) improving and protecting water quality, (2) addressing growth and development pressures on the watershed, (3) improving flood protection and (4) preserving wildlife habitat. NC Watershed Education for Community Organizers went on to lead restoration efforts in Burnt Mill Creek using an EPA 319 grant. Burnt Mill Creek, from source to Smith Creek (5.8 miles) is Impaired for aquatic life because of a Poor benthic community rating. A Collaborative Assessment of Watersheds and Streams (CAWS) in 2003 indicated that the benthic community in Burnt Mill Creek was primarily impacted by toxicity and sedimentation, with lack of instream habitat and nutrient enrichment as chronic stressors to the benthic community. The watershed drains a highly urbanized portion of Wilmington. Smith Creek, from source to Northeast Cape River (11.1 miles) is currently impaired for aquatic life because of a Severe benthic community rating. Northeast Cape Fear river is on the 303(d) list for fish consumption – mercury. Goals for this watershed are to work with DWQ, New Hanover County and the City of Wilmington to address the goals identified in the local watershed plan.



Northeast Cape Fear River: 03030007110030

This watershed is located in Pender County between Burgaw and New Hanover County Local Watershed Planning area. It is the watershed for Cypress Creek and Pike Creek, which drain to the Northeast Cape Fear River on the eastern boundary of the watershed. Though currently less than 6% developed, this watershed contains the I-40 corridor and is being developed. Restoration opportunities in existing agricultural areas look promising.



Information on Watersheds with removed TLW designation

This section contains information on HUs that had their TLW designation removed. This change in designation affected three TLWs in the Cape Fear.

03030002040010: Big Alamance Creek

This section of Big Alamance was included in the 2001 RBRP because of its Water Supply Watershed designation and concerns over NPS pollution. Since that time, the waters of Big Alamance Creek have been classified as fully supporting based on DWQ monitoring and so there are no impaired waters in the HU. Additionally, data does not support prioritizing the HU for natural resource protection (few NHEO and little SNHA).

03030002030050: Service Creek

Service Creek is a small HU on the outskirts of Graham. The HU is bisected by the Haw River, a portion of which was listed as impaired in 2006. In 2008, this same portion was proposed for removal from NC's impaired waters list. The area has few Natural Heritage Elements or SNHAs.

03030004050020: Barbeque Creek

Barbeque Creek is a rural HU. Streams in the HU meet their designated use and bioclassification of its waters by DWQ have improved. Given that biotic conditions are improving, the need to prioritize other areas of the Cape Fear River Basin for restoration and preservation outweigh the need to prioritize this HU.

References

Center for Marine Science, UNCW. 2005. Environmental Assessment of the Lower Cape Fear River System. Online at http://www.uncwil.edu/cmsr/aquaticecology/lcfrp/WQ%20Reports/LCFRP%202005%20report/LCFR%202005%20report.pdf

Harnett County Zoning Map, 2006.

Cumberland County 2010 Land Use Plan

County of Hoke Land Use Plan, 2005.

Homer, C. C. Huang, L. Yang, B. Wylie and M. Coan. 2004. Development of a 2001 National Landcover Database for the United States. Photogrammetric Engineering and Remote Sensing, Vol. 70, No. 7, July 2004, pp. 829-840. Online at http://www.mrlc.gov/mrlc2k_nlcd.asp

NC Center for Geographic Information and Analysis (2008). Unpublished data delivered to NC EEP documenting GIS analytical steps used to estimate watershed-based metrics.

NC Department of Agriculture. 2007. Unpublished data provided to NC EEP.

NC DWQ. 2005. Basinwide Planning Program: October 2005 Cape Fear River Basinwide Water Quality Plan. Online at http://h2o.enr.state.nc.us/basinwide/draft.CPFApril2005.htm

NC DWQ. 2006. Final North Carolina Water Quality Assessment and Impaired Waters List (2006 Integrated 305(b) and 303(d) Report). Online at: http://h2o.enr.state.nc.us/tmdl/General_303d.htm#Downloads

NC Natural Heritage Program[1]. 2007. Natural Heritage Element Occurrences. Data received on October 2007.

NC Natural Heritage Program[2]. 2007. Significant Natural Heritage Areas. Data received on October 2007.

NC Natural Heritage Program[3]. 2007 An Inventory of the Significant Natural Areas of Harnett County, North Carolina. Online at http://www.ncnhp.org/Images/Harnett030507.pdf

NC Natural Heritage Program[4]. 2007. An Inventory of the Significant Natural Areas of Sampson County, North Carolina. Online at http://www.ncnhp.org/Images/Sampson_032007.pdf

NC Natural Heritage Program. 2005. An Inventory of the Significant Natural Areas of Bladen County, North Carolina. Online at http://www.ncnhp.org/Images/Bladen09_28_06.pdf

NC Natural Heritage Program. 2002. An Inventory of the Significant Natural Areas of Cumberland County, North Carolina. Online at http://www.ncnhp.org/Images/CumberlandSummary7_14_06.pdf

NC Natural Heritage Program. 2004. An Inventory of the Significant Natural Areas of Hoke County, North Carolina. http://www.ncnhp.org/Images/Hoke9-27-05.pdf

NC Wetland Restoration Program. 2001. Watershed Restoration Plan for the Cape Fear River Basin. 2001. http://www.nceep.net/services/restplans/cape_fear_2001.pdf

NC Wildlife Resources Commission. 2005. North Carolina Wildlife Action Plan. Raleigh, N.C. Pp577. Online at http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c1_3.htm

Watershed Needs Assessment Team. 2003. Report from the Watershed Needs Assessment Team to the Mitigation Coordination Group. Online at http://www.nceep.net/news/reports/WNAT%20Mit%20Group%20Final.pdf

US Department of Agriculture Natural Resource Conservation Service. 1998. Hydrologic Units - North Carolina Subbasins: USDA, Natural Resources Conservation Service, Raleigh, North Carolina.

US Fish and Wildlife Service. 2008. Memorandum on Restoration Planning Prioritization for the Upper Cape Fear and Upper Roanoke River Basins.

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Definitions

EEP – The North Carolina Ecosystem Enhancement combines existing wetlands restoration initiatives (formerly the Wetlands Restoration Program or NCWRP) of the N.C. Department of Environment and Natural Resources with ongoing efforts by the N.C. Department of Transportation (NCDOT) to offset unavoidable environmental impacts from transportation-infrastructure improvements.

NCWRP – The North Carolina Wetlands Restoration Program was a wetland restoration program under NC DENR and a predecessor of the NCEEP.

USGS – United States Geological Survey

8-digit Catalog Unit (CU) – The USGS developed a hydrologic coding system to delineate the country into uniquely identified watersheds that can be commonly referenced and mapped. North Carolina has 54 of these watersheds uniquely defined by an 8-digit number. EEP typically addresses watershed – based planning and restoration in the context of the 17 river basins (each has a unique 6-digit number), 54 catalog units and 1,601 14-digit hydrologic units.

14–digit Hydrologic Unit (HU) – In order to address watershed management issues at a smaller scale, the U.S. Natural Resources Conservation Service (NRCS) developed methodology to delineate and uniquely identify watersheds at a scale smaller than the 8-digit catalog unit. A hydrologic unit is a drainage area delineated to nest in a multilevel, hierarchical drainage system. Its boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waters. North Carolina has 1,601 14-digit hydrologic units.

TLW - Targeted Local Watershed, are 14-digit hydrologic units which receive priority for EEP planning and restoration project funds.

RBRP - The River Basin Restoration Priorities are documents that delineate specific watersheds (Targeted Local Watersheds) within a River Basin that exhibit both the need and opportunity for wetland, stream and riparian buffer restoration.

Watershed Restoration Plan – Older versions of RBRP documents were called Watershed Restoration Plans. In essence, they are the same thing.

DWQ – North Carolina Division of Water Quality

GIS - A geographic information system integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.