Lumber
River Basin Restoration
Priorities 2008

Ecosystem Enhancement
PROGRAM

TABLE OF CONTENTS

This document was updated by Michele Drostin, eastern watershed planner.

Cover Photo: Mountain Creek - Hoke County

Introduction

This document, prepared by the North Carolina Ecosystem Enhancement Program (EEP), presents a description of Targeted Local Watersheds within the Lumber River Basin. This is an update of the original document developed in 2003 by the Wetlands Restoration Program (NCWRP), *Lumber River Basin Watershed Restoration Plan, December 2003.*

This plan reviews the whole Lumber River Basin (USGS Catalog Units 03040203, 03040204, 03040206 and 03040207). The original plan selected 20 watersheds to be targeted for stream, wetland and riparian buffer restoration and protection and watershed planning efforts. In 2005, an additional 4 watersheds were identified as Targeted Local Watersheds and addressed in the *Lockwoods Folly Local Watershed Plan*. This document presents an additional 5 Targeted Local Watersheds.

This document is a supplement to the *Lumber River Basin Watershed Restoration Plan, December 2003* and draws information from the detailed document, *2003 Lumber River Basinwide Water Quality Plan* and the *NCDENR Division of Water Quality Basinwide Assessment Report - Lumber River Basin - April 2007*. Therefore, this document does not provide detailed information found in those documents but provides a quick overview of EEP, the criteria EEP uses to select new Targeted Local Watersheds and then describes the newly selected Targeted Local Watersheds.

In past documents, watersheds were delineated by the NCDWQ "subbasin" units and the smaller Targeted Local Watersheds were defined by NRCS 14-digit hydrologic unit (HU). In this document, the watersheds are defined by the USGS 8-digit cataloging units and the Targeted Local Watersheds continue to be defined by the NRCS 14-digit hydrologic unit.

What is a River Basin Restoration Priority?

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.

EEP develops River Basin Restoration Priorities (RBRPs) to guide its mitigation activities within each of the 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, or Targeted Local Watersheds (TLWs), are 14-digit hydrologic units 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.

Criteria for selecting Targeted Local Watersheds

EEP evaluates a variety of GIS data and resource and planning documents on water quality and habitat conditions in each river basin 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 *opportunity* indicates the potential for local partnerships in restoration and conservation work.

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

Assets: In order to gauge the natural resource value of each watershed, EEP considers the amount of forested land, land in public or private conservation, riparian buffer condition, high quality resource waters, and natural heritage elements.

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 projects, and land conservation projects. EEP also considers the potential for partnership opportunities by consulting with local, state, and federal resource agencies and conservation organizations, identifying their priority areas.

Local Resource Professional Comments/Recommendations: The 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), and local/regional land trusts and watershed organizations are considered heavily in the selection of Targeted Local Watersheds. 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 local water resource protection initiatives that provide good partnership opportunities for EEP restoration and preservation projects and Local Watershed Planning initiatives.

Lumber River Basin Overview

The Lumber River basin encompasses an area of 3,343 square miles in all or part of 10 counties including Brunswick, Columbus, Bladen, Robeson, Cumberland, Hoke, Scotland, Richmond, Moore and Montgomery. Larger municipalities include Lumberton, Laurinburg, Southern Pines, Pinehurst and Whiteville. Though defined as one basin, there are actually four different watersheds in the Lumber River Basin. These are the Lumber River, the Waccamaw River, the headwaters of the Little Pee Dee and the coastal watershed of the Shalotte /Lockwoods Folly Rivers.

The Lumber River begins at the headwaters known as Drowning Creek, in the counties of Moore and Montgomery, in the Sandhills ecoregion. This area is largely forested with the populations in the upper portion of the basin primarily concentrated around Southern Pines, Pinehurst and Aberdeen. Naked Creek and Rocky Ford Branch are listed as Outstanding Resource Waters. The main stem of the Lumber River lies in the Coastal Plain ecoregion. The Lumber River State Park contains 7,937 acres of land along the main stem. A total of 115 miles of the Lumber River is of State Natural and Scenic Water designation and 81 miles have also been designated as a National Wild and Scenic Water. The Lumber River flows through Lumberton, a highly-developed urban area. The river crosses the boarder near Fair Bluff. Just pass the border, the Lumber River joins the Little Pee Dee River which will flow to the Pee Dee River and drain to Winyah Bay.

Waccamaw River Watershed contains Lake Waccamaw State Park. Lake Waccamaw is the largest natural bay lake in southeastern North Carolina. Below Lake Waccamaw, the river flows through the largest remaining cypress/tupelo-gum blackwater swamp in North Carolina. Though not hydrologically connected in North Carolina to the Lumber River, the Waccamaw River also joins with the Pee Dee River in South Carolina.

The headwaters of the Little Pee Dee are located in the counties of Scotland, Robeson and part of Richmond. This is a small watershed defined by sandy substrate. The City of Laurinburg and Town of Maxton are the largest populated areas in this watershed.

Finally, included in the delineation of the Lumber River Basin is a sub-basin which includes the Shalotte River and Lockwoods Folly River. The watersheds of these two rivers are contained within Brunswick County and drain directly to the Atlantic Ocean. This watershed is primarily forested but Brunswick County is one of the fastest growing counties in the state. Primary concerns in this watershed center around nutrients and fecal coliform in the estuarine system.

The Lumber River Basin contains four USGS 8-digit Catalog Units (03040203, 03040204, 03040206 and 03040207) and 102 NRCS 14-digit Hydrologic Units. The original plan selected 20 watersheds to be targeted for stream, wetland and riparian buffer restoration and protection and watershed planning efforts. In 2005, an additional 4 watersheds were identified as Targeted Local Watersheds and addressed in the *Lockwoods Folly Local Watershed Plan*. This document presents an additional 5 Targeted Local Watersheds.

Lumber River Basin Restoration Goals

Based on an assessment of existing watershed characteristics and resource information, EEP has developed restoration goals for the Lumber River Basin. The goals have been broken down by 8-digit CU, in order to better describe more specific goals. The goals reflect EEP's focus on restoring wetland and stream functions such as maintaining and enhancing water quality, restoring hydrology, and improving fish and wildlife habitat.

03040203 (Lumber River)

This Catalog Unit (CU) is by far the largest in the Lumber River Basin. It spans from the headwaters of the Lumber River to where the Lumber crosses the boarder into South Carolina. Municipalities include Southern Pines, Aberdeen, Raeford, Maxton, Red Springs, St. Pauls, Lumberton, Fairmont, and Fair Bluff. There are 51 14-digit HUs in this Catalog Unit. Twelve have been identified as Targeted Local Watersheds. Seven were identified in 2003 and 5 more have currently been targeted.

The headwaters of the Lumber River, Naked Creek and Drowning Creek, and segments of the Lumber River have been classified as either High Quality Waters or Outstanding Resource Waters. Significant portions of the headwaters and area above Lumberton are designated Water Supply Watersheds. Portions of the Lumber River have been designated as a National Wild and Scenic River, as a state Natural and Scenic River System, and as part of the North Carolina state park system (Lumber River State Park). Most of the waters are also classified as Swamp Waters (Sw) and may have naturally low dissolved oxygen concentrations and pH.

Mill Branch, two segments of Porter Swamp and Little Raft Swamp are on the 303(d) list for impairment to biological integrity. Additional identified problems are water quality and aquatic degradation issues related to unbuffered stream segments, proximity to projected Department of Transportation impacts, lack of buffer in agricultural areas and increased impervious surface. Restoration goals should include replacing buffer, repairing channelized streams and preservation of existing resources.

03040204 (Headwaters of Little Pee Dee)

Streams in this CU make up the headwaters of the Little Pee Dee River The City of Laurinburg and the Town of Maxton are the largest urban areas and dischargers in this region. There are 17 HUs in this Catalog Unit. Three were selected as Targeted Local Watersheds in 2003 based on local resource professional input. According to the NC Division of Water Quality (DWQ), water quality in this watershed has been stable since 2001. There are no streams on the 303(d) list of impaired waters.

Restoration goals for this catalog unit include buffering waterways and implementation of stormwater and agricultural BMPs.

03040206 (Waccamaw River)

This CU contains Lake Waccamaw, Big Creek, Bogue Swamp, Waccamaw River, Juniper Creek and White Marsh. Land use is mainly forest with some developed areas around Lake Waccamaw, Tabor City, Whiteville, and Chadbourn. Both Tabor City and Whiteville have waste water treatment plants.

This CU contains 22 14-digit HUs. Six were identified as Targeted Local Watersheds in 2003 primarily for their Significant Natural Heritage Areas containing rare plant and aquatic species. No additional TLWs were added this year. Lake Waccamaw is on the 303(d) list for standard fish advisory for mercury.

Restoration goals for this watershed are primarily related to continued assistance with preservation.

03040207 (Shalotte and Lockwoods Folly Rivers)

Eight of the 12 HUs in this Catalog Unit are Targeted Local Watersheds. These were either targeted in 2003 or during the Local Watershed Planning area selection in 2005. The 4 additional HUs not targeted are barrier islands or coastal marshes containing Bird Island, Sunset Beach, Ocean Isle Beach, Gause Landing and Holden Beach.

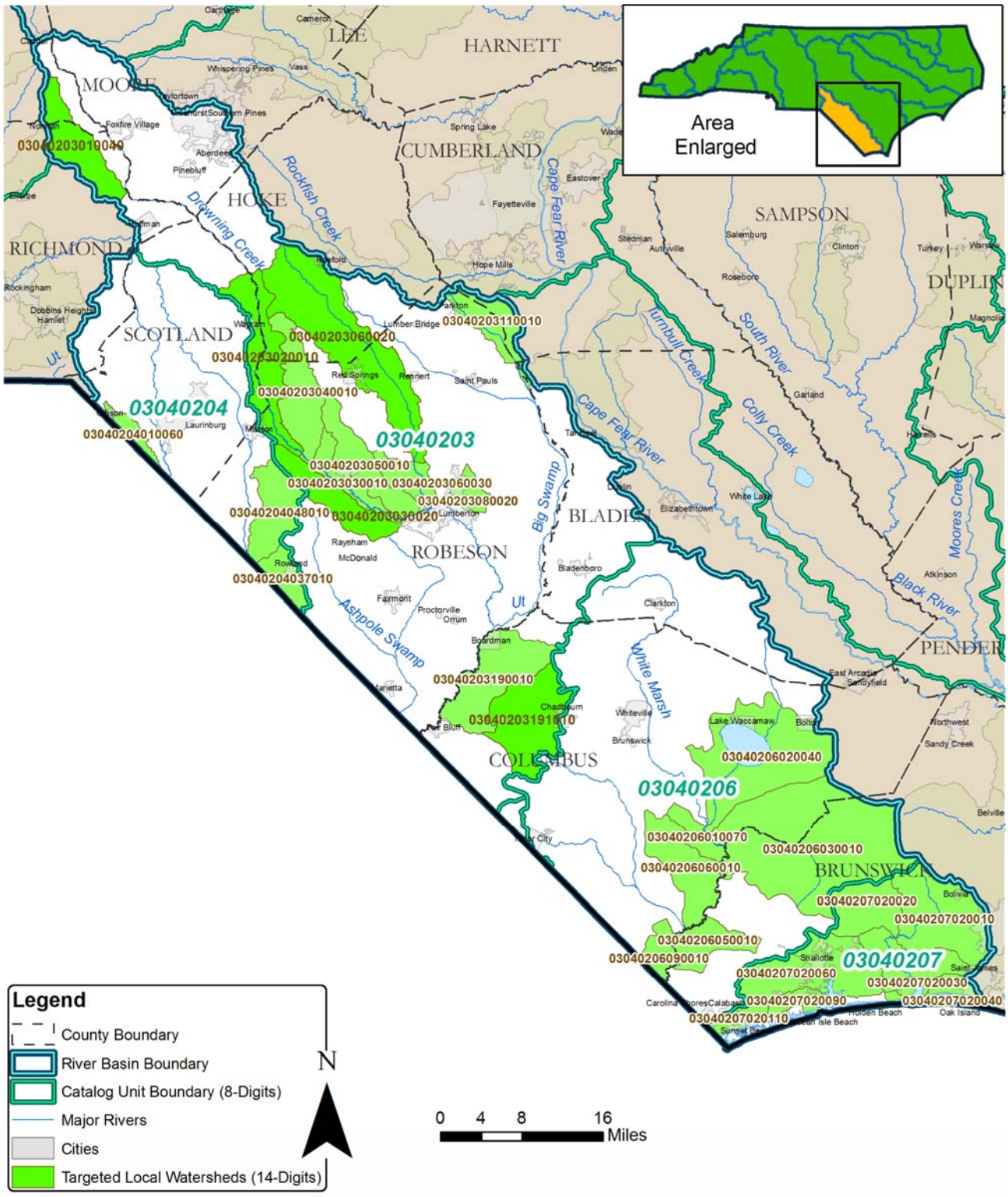
Six of the 8 TLWs were selected because of impaired waters. Upper Lockwoods Folly and Royal Oak Swamp were added to the list during the development of the Lockwoods Folly LWP because they serve as the headwaters of the Lockwoods Folly River.

In the upper portions of the waterways, DWQ has reported low dissolved oxygen and pH, possibly due to swamp water conditions. However, the lower portions of Lockwoods Folly, Shalotte River, Saucepan, Calabash River and the Intracoastal Waterway are closed for shellfish due to fecal coliform bacteria. The Lockwoods Folly LWP also noted increase in nutrients.

The goals for this CU should be to encourage Low Impact Development, develop strong stormwater BMP requirements for new development and find funding for stormwater retrofits, especially in the developed areas near the Intracoastal Waterway.

Lockwoods Folly River

Lumber River Basin and Targeted Local Watershed Map



Targeted Local Watershed Summary Table

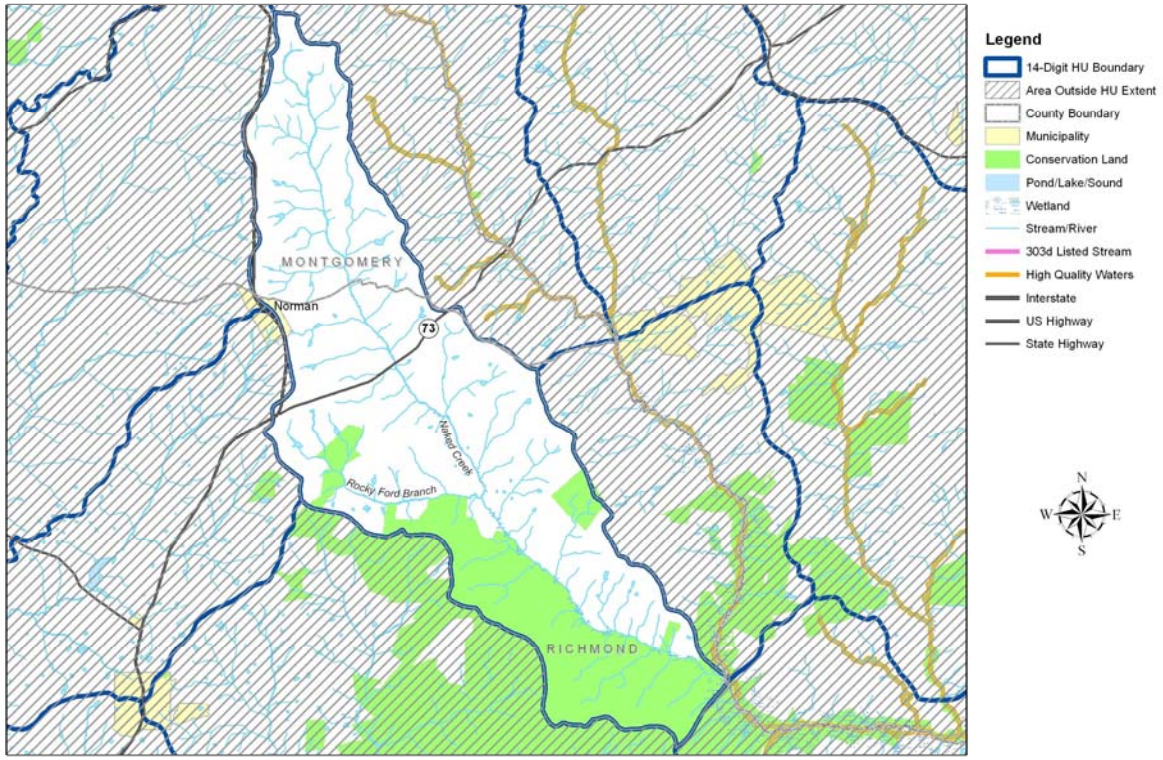
14-Digit Hydrologic Unit	Stream Name	303(d) listed	Area Sq Miles	Stream Miles	% Area Forest or Wetlands	% Area Agriculture	% Stream Miles HQW or ORW	% Stream Miles of WSW	% Area SNHA	# NHEO	% Area Land in Conservation	% Impervious Surface	% Stream Without Buffer	TLW date
Lumber River (03040203)														
03040203010040	Naked Creek		39	91	55	36	100	0	2	55	24	0.67	16	2008
03040203020010	Lumber River		54	113	50	41	86	7	18	57	7	1.54	55	2008
03040203030010	Mill Branch	yes	19	61	39	50	82	1	2	11	3	2.22	52	2003
03040203030020	Back Swamp		34	69	45	49	7	45	0	1	0	0.96	44	2008
03040203040010	Gum Swamp		40	125	37	59	6	0	0	3	1	0.53	69	2003
03040203050010	Bear Swamp		33	94	33	59	14	57	0	3	0	1.60	53	2003
03040203060020	Little Raft Swamp	yes	110	265	44	49	0	9	4	74	2	1.15	51	2008
03040203060030	Lower Raft Swamp		18	45	40	51	13	87	0	0	1	2.05	49	2003
03040203080020	Ivey Branch		11	30	31	38	0	0	0	1	0	10.68	63	2003
03040203110010	Buckhorn Swamp		31	92	42	52	0	0	0	2	0	0.83	60	2003
03040203190010	Porter Swamp	yes	54	156	55	40	0	0	11	44	9	0.67	49	2003
03040203191010	Porter Swamp	yes	58	182	41	54	0	0	0	3	0	0.92	54	2008
Little Pee Dee Headwaters (03040204)														
03040204010060	Panther Swamp/Bear Creek		9	12	36	57	0	0	2	1	0	0.95	50	2003
03040204037010	Mitchell Swamp		17	39	26	64	0	0	0	0	0	1.68	66	2003
03040204048010	Wilkinson Creek		34	80	37	59	0	0	0	3	0	0.38	55	2003
Waccamaw River (03040206)														
03040206010070	Upper Waccamaw River		13	17	76	20	0	0	12	59	3	0.34	28	2003
03040206020040	Lake Waccamaw	yes	105	172	64	19	17	0	38	134	24	0.43	33	2003
03040206030010	Juniper Swamp		172	164	78	20	0	0	24	255	26	0.16	27	2003
03040206050010	Middle Waccamaw River		25	39	69	27	0	0	12	56	5	0.36	30	2003
03040206060010	Gore Creek		42	62	61	36	0	0	4	30	0	0.30	43	2003
03040206090010	Big Creek		14	17	77	18	0	0	14	39	0	0.38	18	2003

14-Digit Hydrologic Unit	Stream Name	303(d) listed	Area Sq Miles	Stream Miles	% Area Forest or Wetlands	% Area Agriculture	% Stream Miles HQW or ORW	% Stream Miles of WSW	% Area SNHA	# NHEO	% Area Land in Conservation	% Impervious Surface	% Stream Without Buffer	TLW date
Shalotte and Lockwoods Folly Rivers (03040207)														
03040207020010	Upper Lockwoods Folly		67	125	75	22	0	0	33	70	13	0.44	26	2005
03040207020020	Royal Oak Swamp		33	52	78	20	0	0	24	108	18	0.32	24	2005
03040207020030	Lockwoods Folly	yes	38	71	63	22	33	0	25	36	2	2.03	28	2003
03040207020040	Intracoastal WW	yes	8	9	71	16	0	0	72	27	6	1.86	54	2005
03040207020050	Montgomery Slough	yes	8	11	31	4	0	0	8	28	1	12.01	36	2005
03040207020060	Shalotte River	yes	65	138	58	26	30	0	5	22	0	2.84	36	2003
03040207020090	Saucepan Creek	yes	10	23	63	18	19	0	1	6	0	2.43	29	2003
03040207020110	Calabash River	yes	11	21	44	19	0	0	9	21	0	6.26	53	2003

HQW – High Quality Waters (defined on page 40)
ORW – Outstanding Resource Waters (defined on page 41)
WSW – Water Supply Watershed (defined on page 42)
SNHA – Significant Natural Heritage Area (defined on page 42)
NHEO – Natural Heritage Element of Occurrence (defined on page 41)

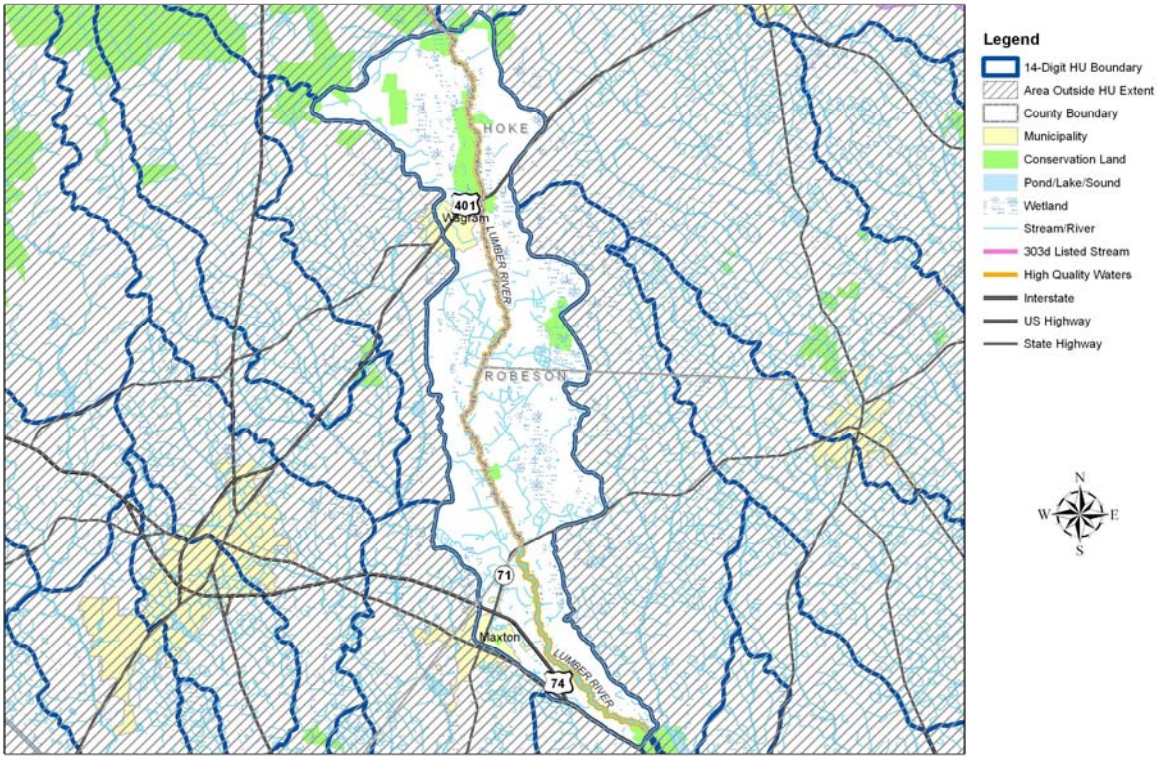
Discussion of Targeted Local Watersheds in the Lumber River Basin

03040203010040 (Naked Creek)



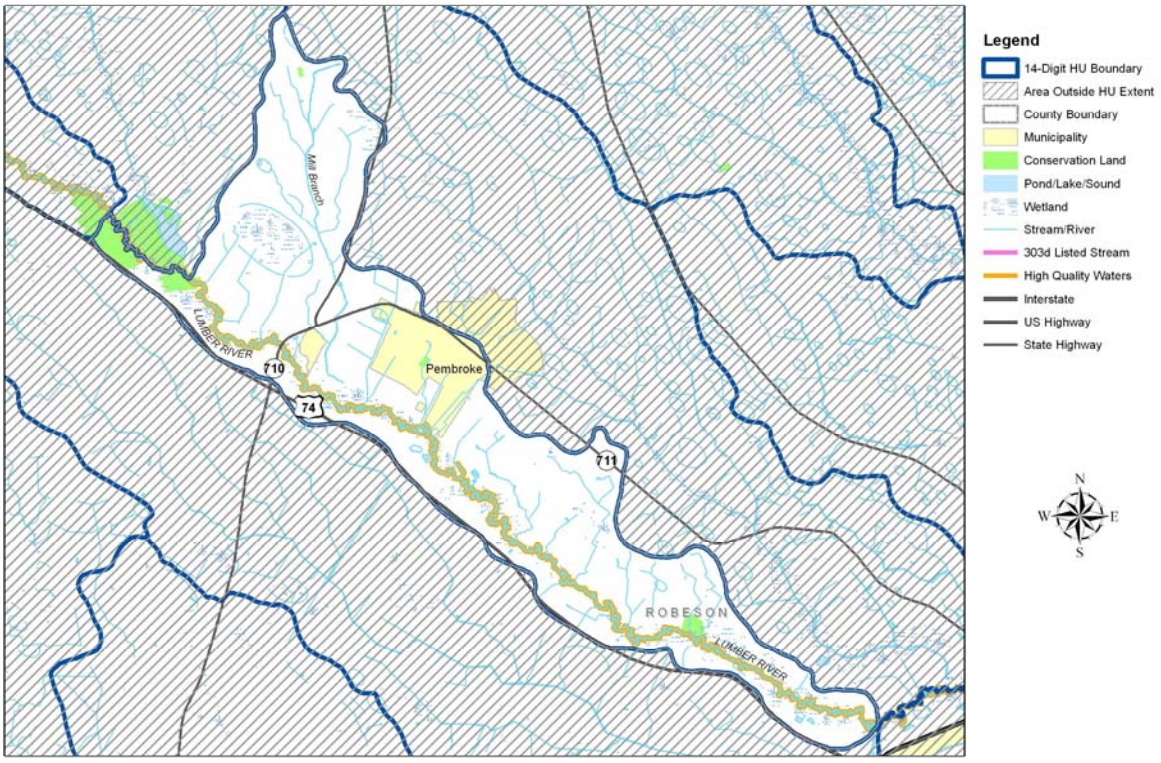
Naked Creek is located in the headwaters of the Lumber River. It has been selected as a Targeted Local Watershed (TLW) in 2008 primarily for its high level of assets. All of its 91 miles of stream have been designated Outstanding Resource Waters. There is already a significant focus from conservation groups in this area. Potential impacts may come from transportation improvement projects and a high number of animal operations.

03040203020010 (Lumber River)



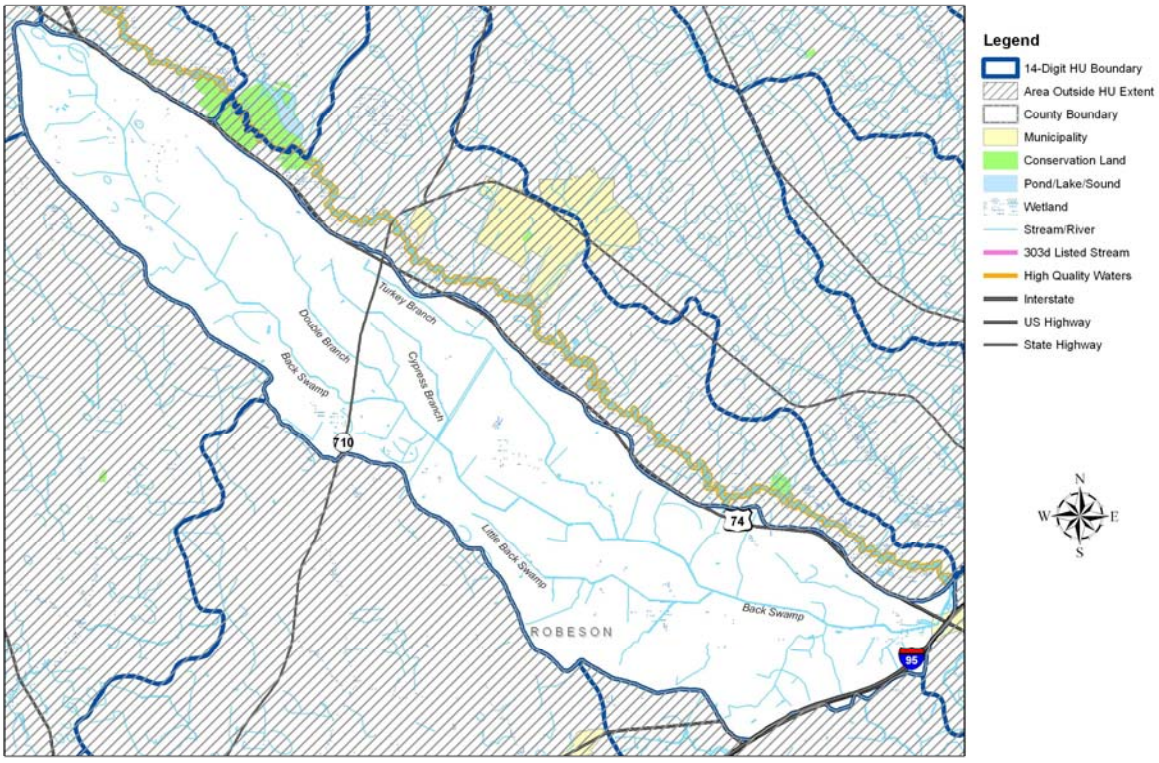
This watershed contains the upper trunk of the Lumber River and is located in Hoke and Robeson counties. It has been selected as a TLW for its mix of assets and problems. The extent of the Lumber River within this watershed is designated High Quality Waters and 18% of the watershed has been designated Significant Natural Heritage Area. There is already a focus by conservation groups and funding sources to protect this watershed. Potential impacts may come from lack of buffered waterways and animal operations.

03040203030010 (Mill Branch)



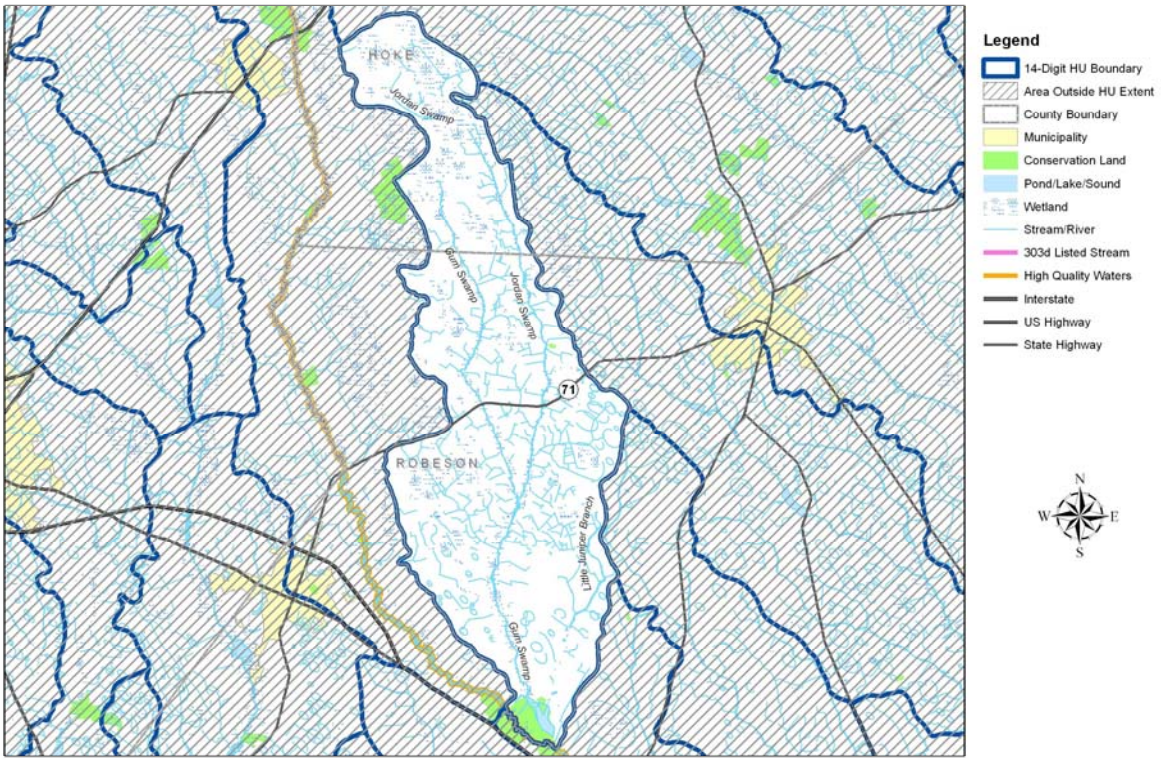
Mill Branch watershed was listed as a TLW in 2003 based on resource professional input and selected as one of two watersheds for the Bear Swamp Local Watershed Plan.
This watershed and Bear Swamp watershed were selected for the plan due to water quality and aquatic degradation issues related to unbuffered stream segments, proximity to projected Department of Transportation impacts and important habitat values identified within the area. The extent of the Lumber River in this watershed has been designated High Quality Waters and contains a reach of the National Wild and Scenic River and numerous plant and animal species with special status. Mill Branch, from source to Lumber River, was just placed on the 303(d) list as impaired for biological integrity in 2008 by NCDWQ. The land use is primarily agriculture outside of the City of Pembroke.

03040203030020 (Back Swamp)



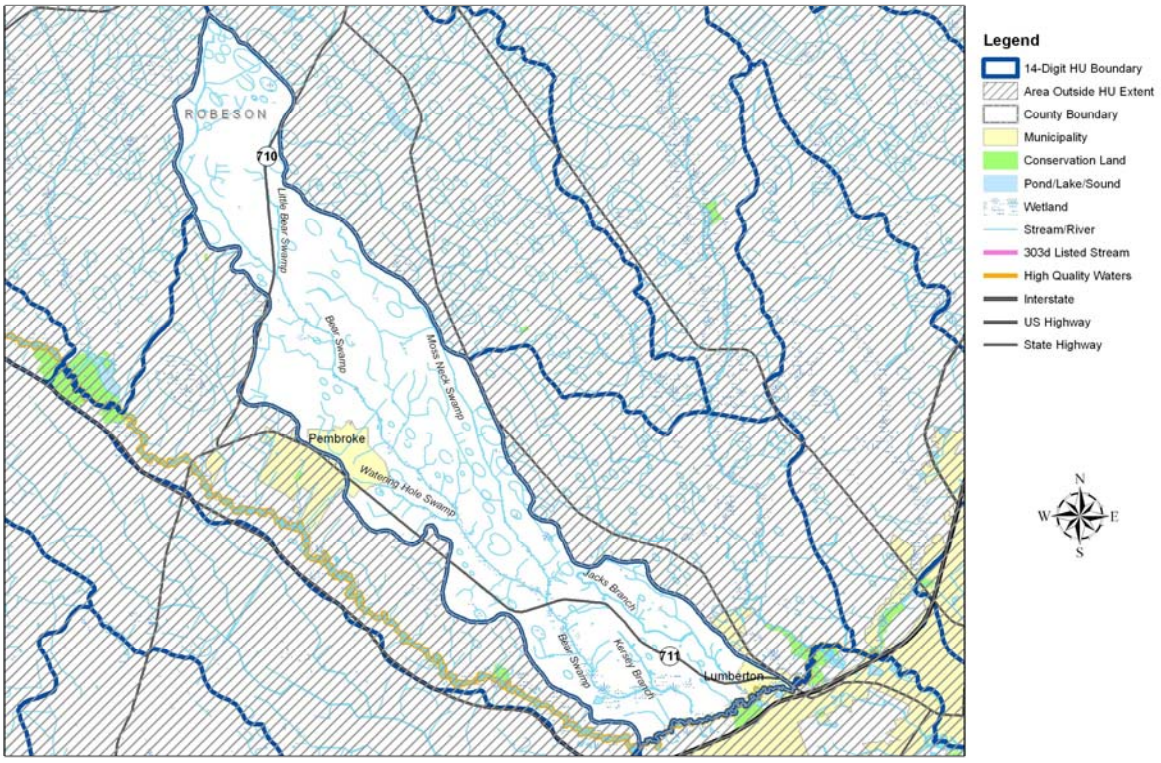
Back Swamp was selected as a Targeted Local Watershed in 2008. This watershed feeds the Lumber River and is located in Robeson County. The elements that stood out in this watershed were that an extensive amount of road improvements are occurring throughout this watershed and 45% of the watershed is designated as a Water Supply Watershed, serving the town of Lumberton. The concern for this watershed is increased impervious surface and the pollutants associated with roadways.

03040203040010 (Gum Swamp)



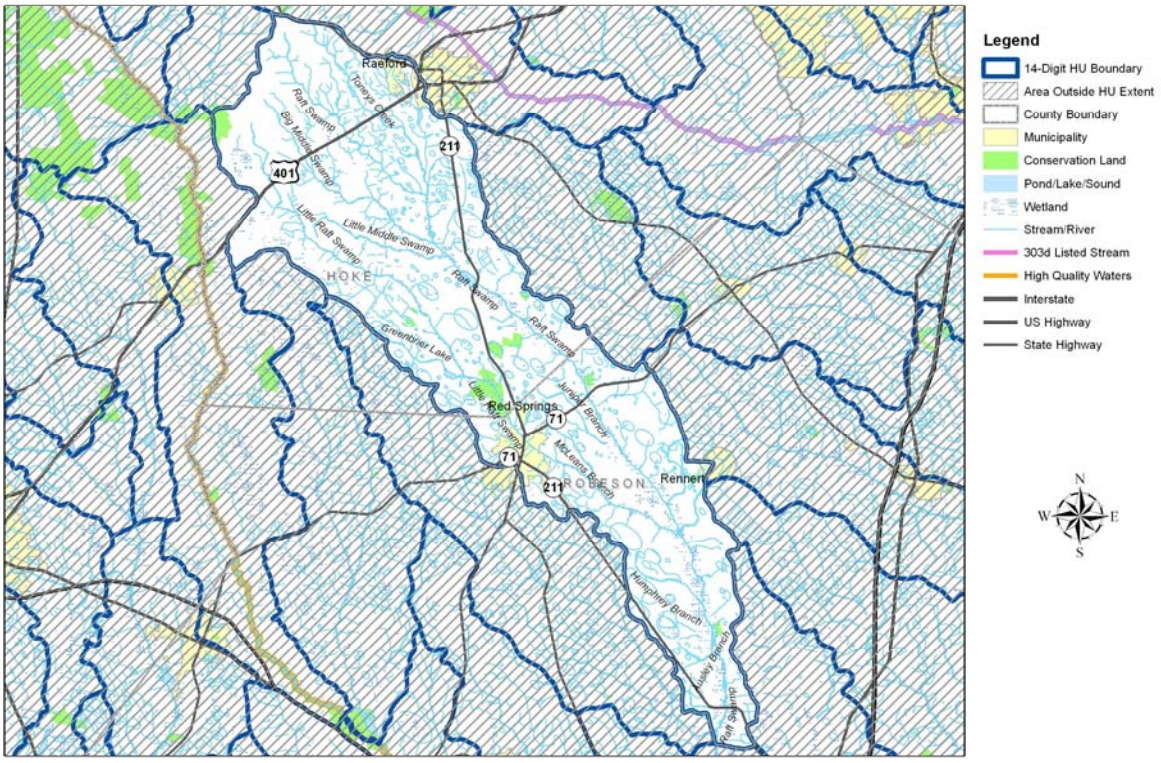
Gum Swamp watershed was selected as a TLW in 2003 based on local resource professional input. This watershed has 125 miles of stream with 70% not having buffer. The primary land use in this watershed is agriculture. Six percent have been identified as High Quality Waters.

03040203050010 (Bear Swamp)



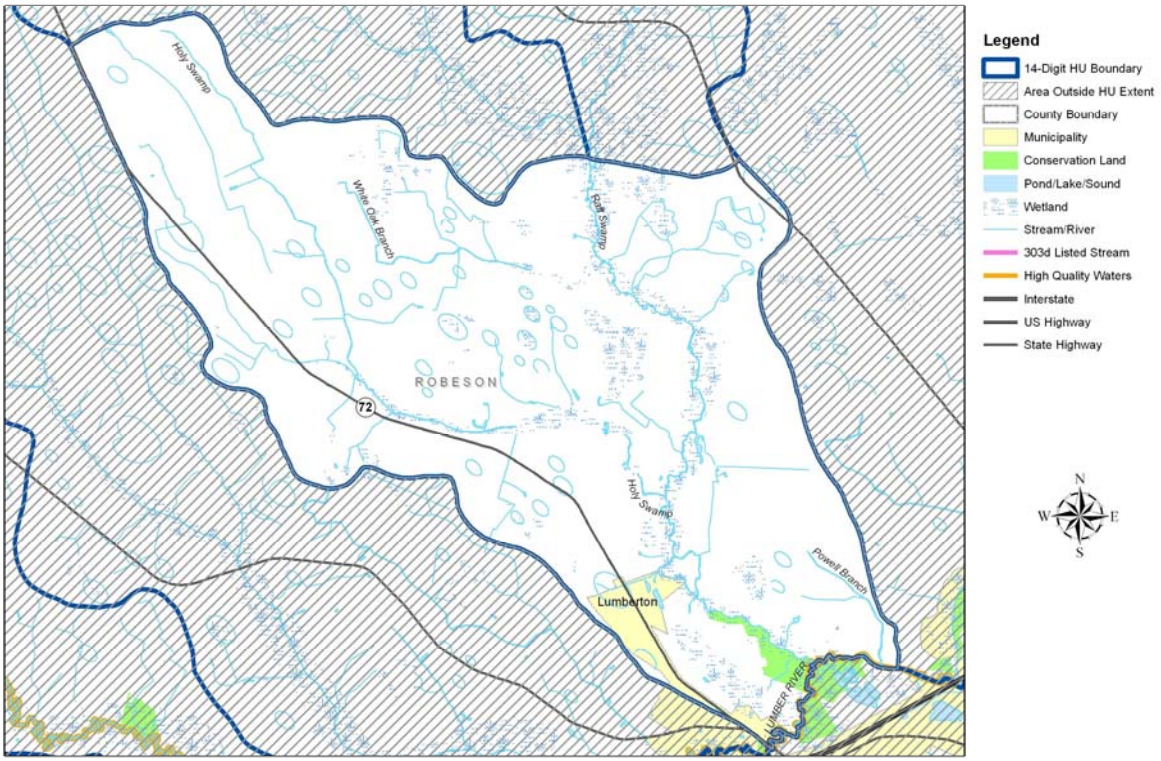
Bear Swamp watershed was the second HU, along with Mill Branch, selected for the Bear Swamp Local Watershed Plan. This watershed is primarily agriculture outside of the City of Pembroke. Issues identified in the LWP included lack of buffer, clearing of habitat, channelization and increased impervious surface area. Addressing these issues would help reduce the primary pollutants, sediment, nutrients and stormwater.

03040203060020 (Little Raft Swamp)



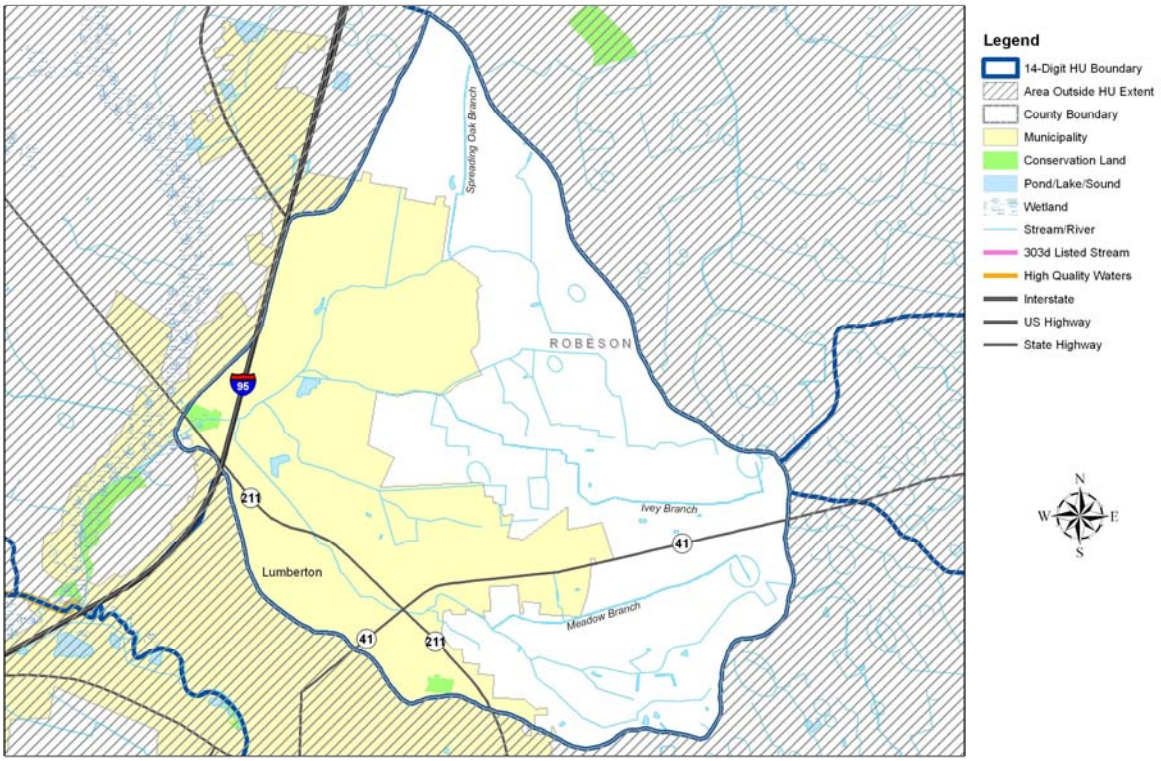
This watershed was selected as a TLW in 2008 due to the fact that Little Raft Swamp has just been put on the 303(d) list as impaired for biological integrity. This is a very wet watershed, with 265 miles of stream. Red Springs is in the middle of this watershed with Raeford in the northeast corner. There are several major roadways that intersect this watershed and additional transportation improvement projects are planned in this watershed.

03040203060030 (Lower Raft Swamp)



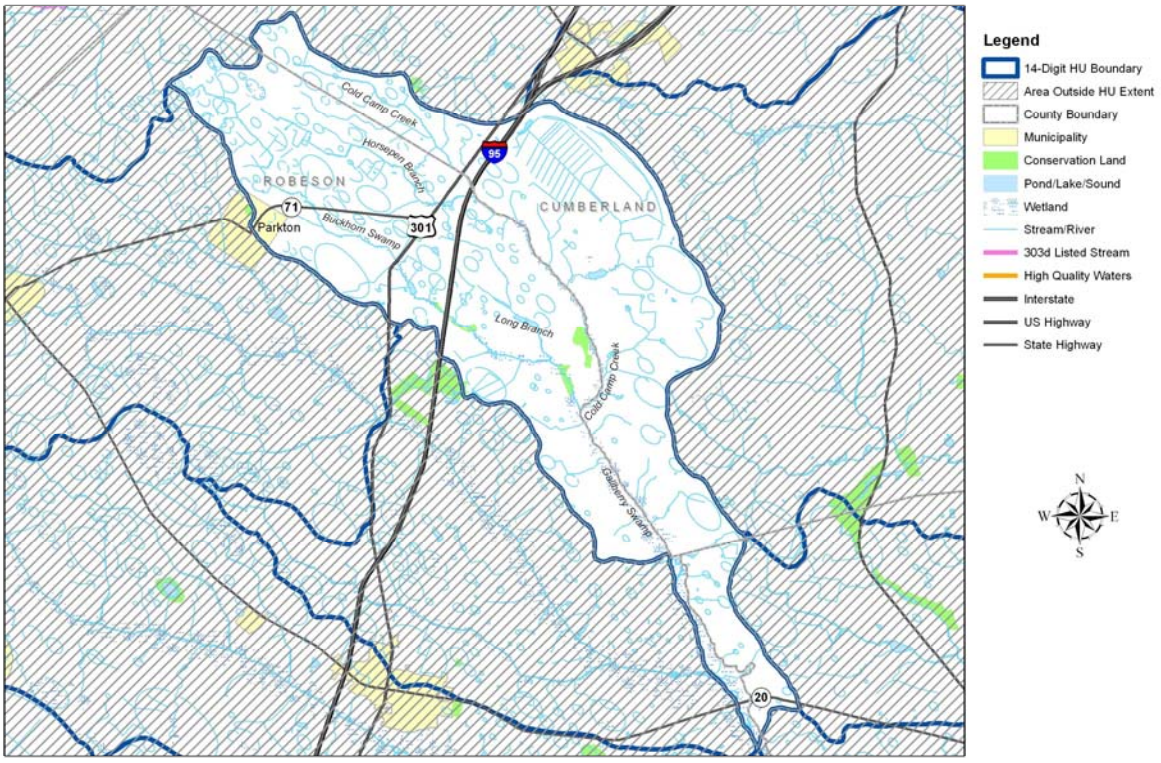
Lower Raft Swamp was selected as a TLW in 2003 based on local resource professional input. A large portion of this watershed is Water Supply Watershed for the City of Lumberton and 13% of the streams are High Quality Waters.

03040203080020 (Ivey Branch)



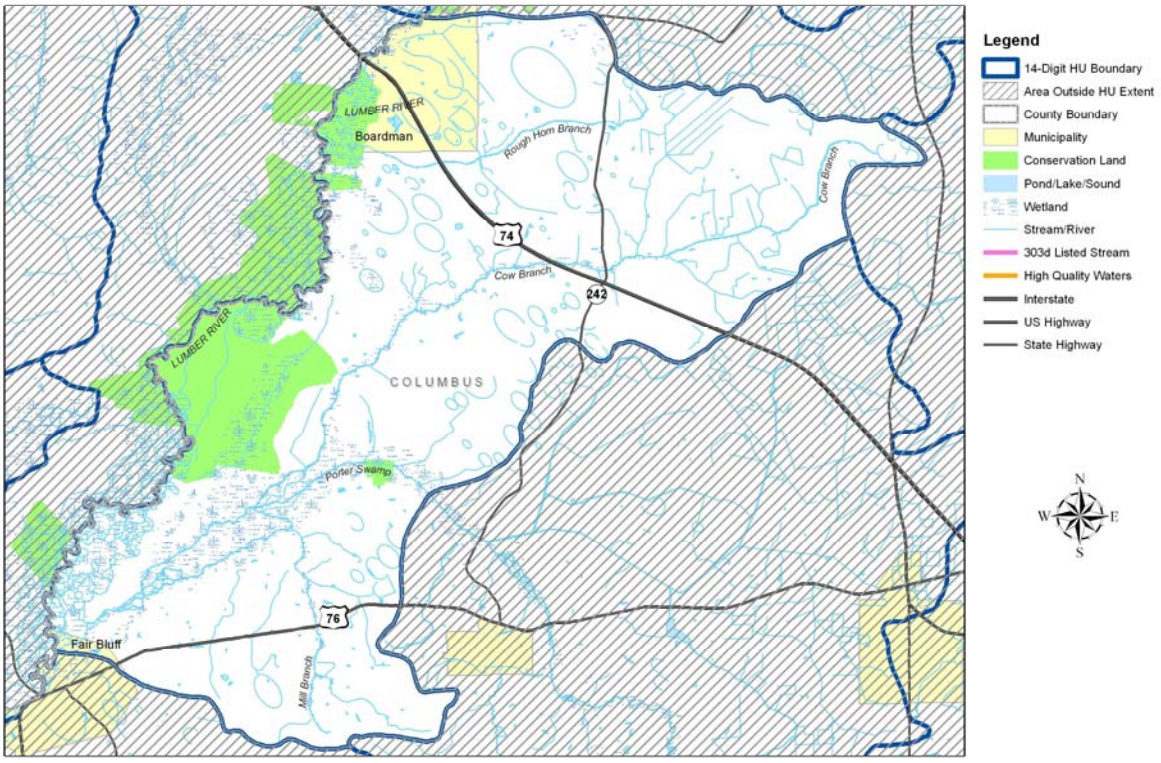
Ivey Branch and Meadow Branch are located in this watershed, which contains a large portion of Lumberton. The watershed was selected as a TLW in 2003 because it has High Quality Waters, is a Water Supply Watershed and was impacted by a transportation project. In addition, this watershed has 10.68% impervious surface and 63% of the streams are not buffered.

03040203110010 (Cold Camp Creek)



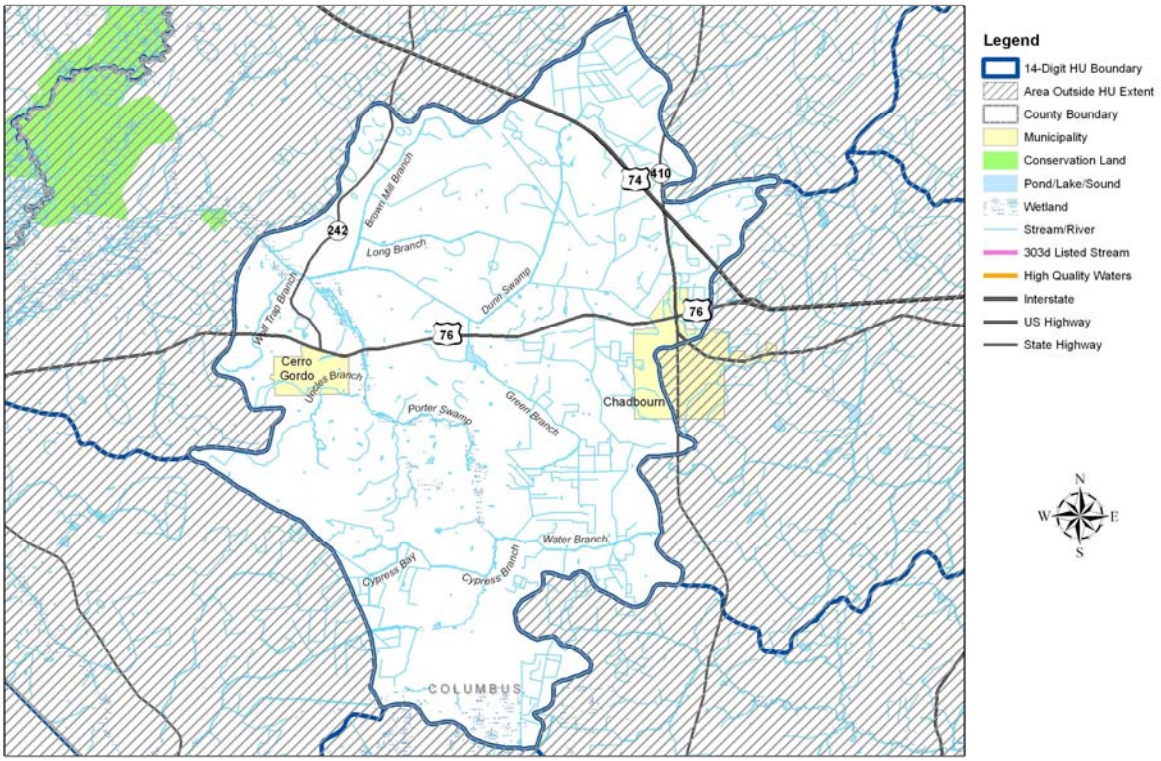
Cold Camp Creek was selected as a TLW in 2003 based on resource professional input. The creek is severely channelized and is intersected by the I-95 corridor. Sixty percent of the streams are not buffered. Restoration opportunities may be found in restoring channelized or ditched waterways.

03040203190010 (Porter Swamp)



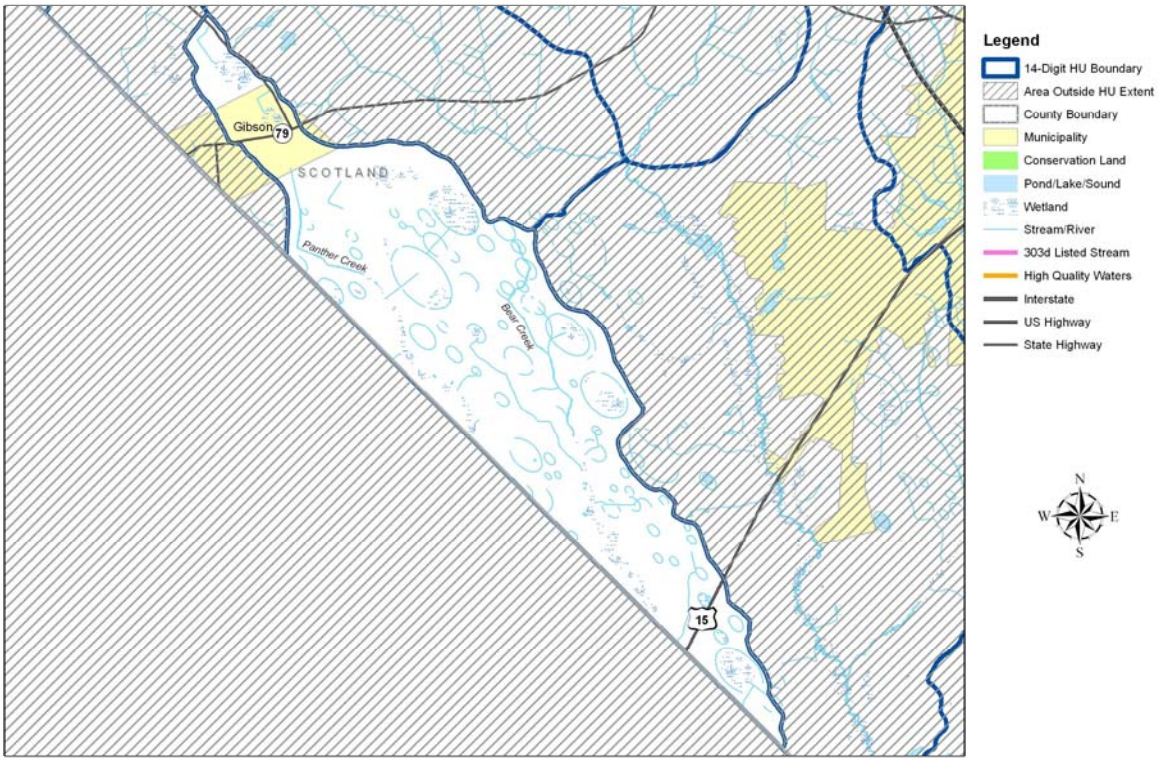
This watershed was selected as a TLW in 2003. It is located in Columbus County and contains the town of Boardman and a portion of Fair Bluff. It has a significant amount of Significant Natural Heritage Area and Natural Heritage Elements of Occurrence, primarily related to The Lumber River, which boarders this HU. Since 2003, Porter Swamp has been placed on the 303(d) list as impaired for biological integrity. Porter Swamp enters the Lumber River in this watershed.

03040203191010 (Porter Swamp)



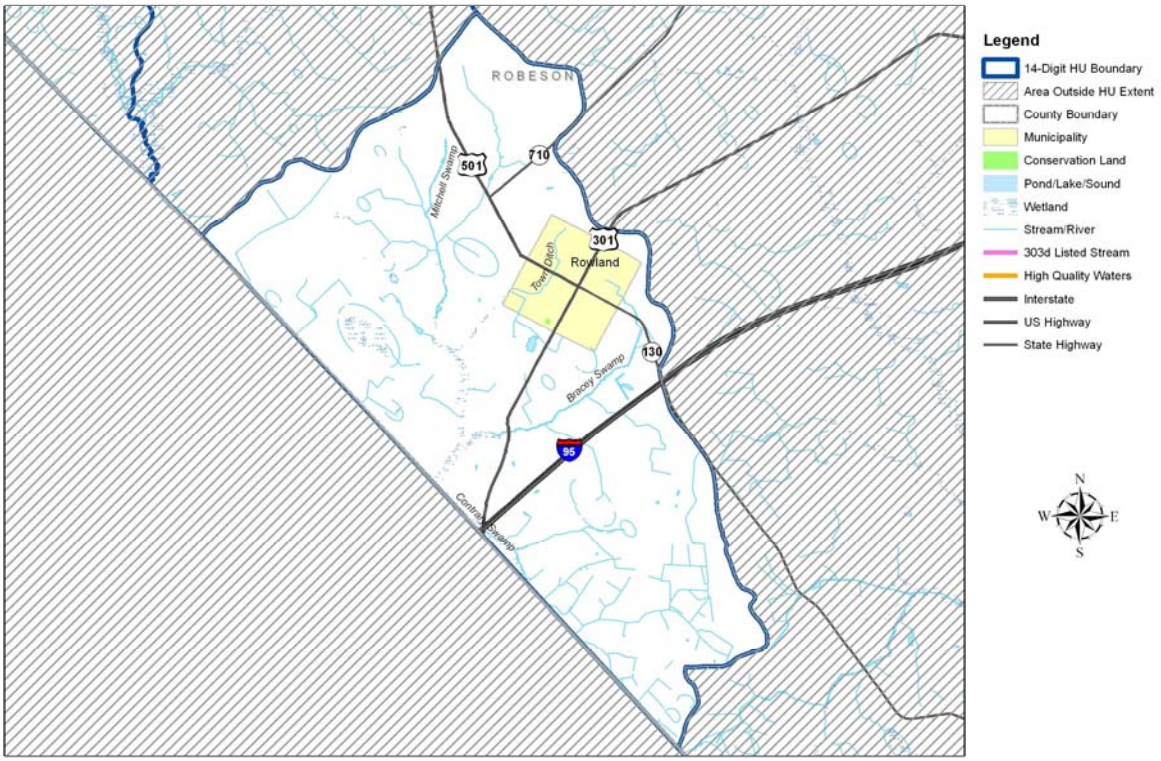
This HU was selected as a TLW in 2008 primarily because it has recently been listed on the 303(d) list as impaired for biological integrity. This is the upstream segment of Porter Swamp, which enters the previously described HU containing the lower segment of Porter Swamp.

03040204010060 (Panther Swamp/Bear Creek)



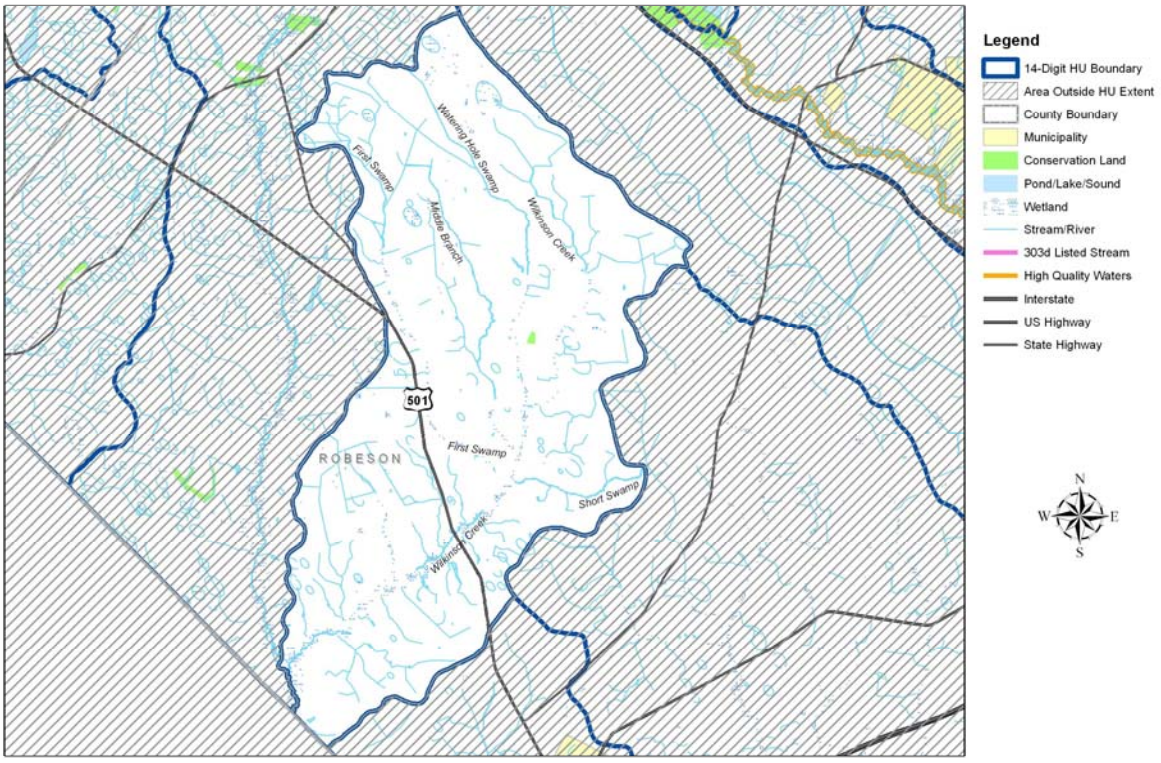
This is a small watershed, with only 12 miles of stream, on the South Carolina Boarder. It contains the town of Gibson in Scotland County. This watershed was selected as a TLW in 2003 based on local resource professional input. This watershed is the headwaters of the Little Pee Dee River that is located in South Carolina.

03040204037010 (Mitchell Swamp)



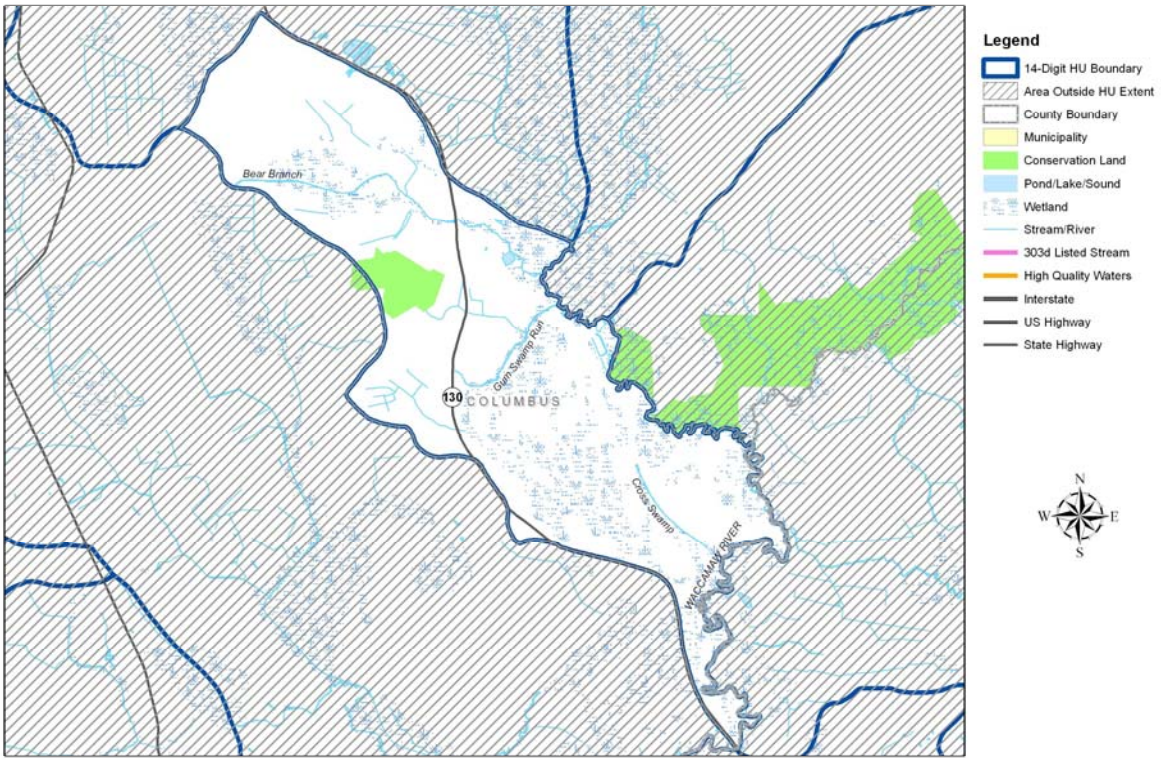
Mitchell Swamp is located in Robeson County on the boarder of South Carolina. It was selected as a TLW in 2003 based on local resource professional input. This watershed has 64% agricultural land use and 66% of the streams are without buffer.

03040204048010 (Wilkinson Creek)



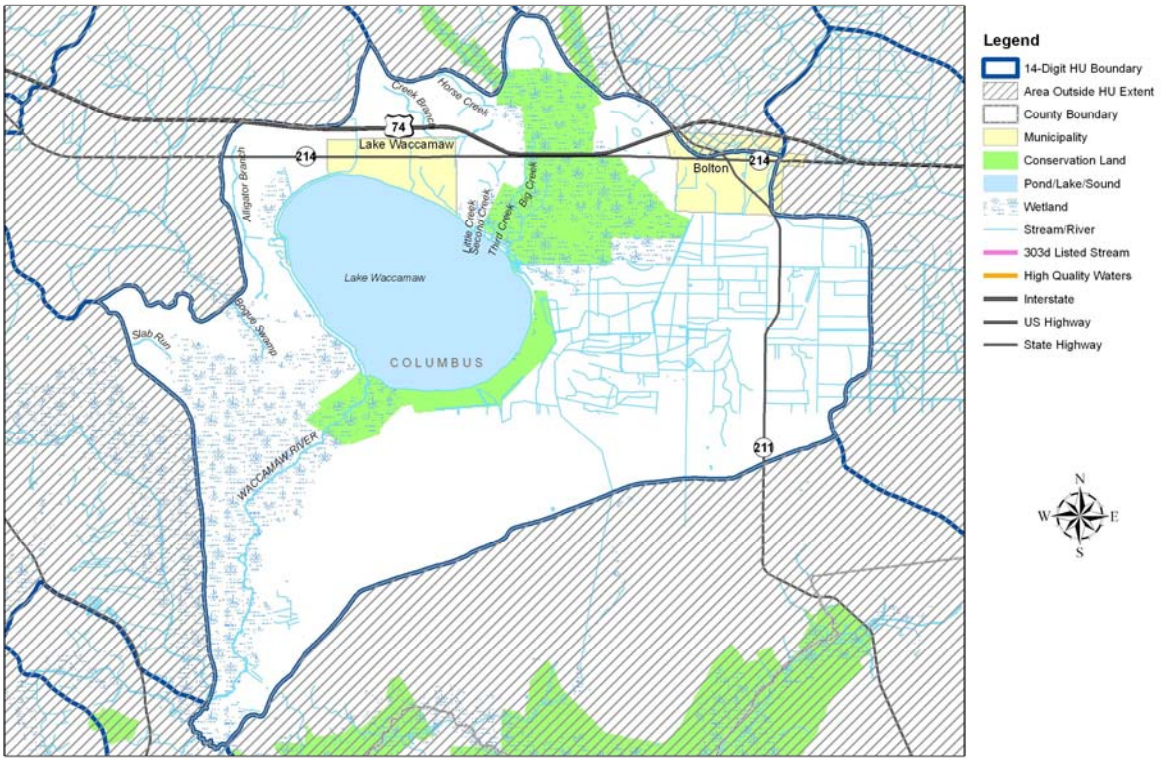
Wilkinson Creek was selected as a TLW in 2003 based on local resource professional input. It is located in Robeson County, on the boarder of South Carolina. This watershed has 59% agricultural land use and 55% of its waterways are not buffered.

03040206010070 (Upper Waccamaw River)



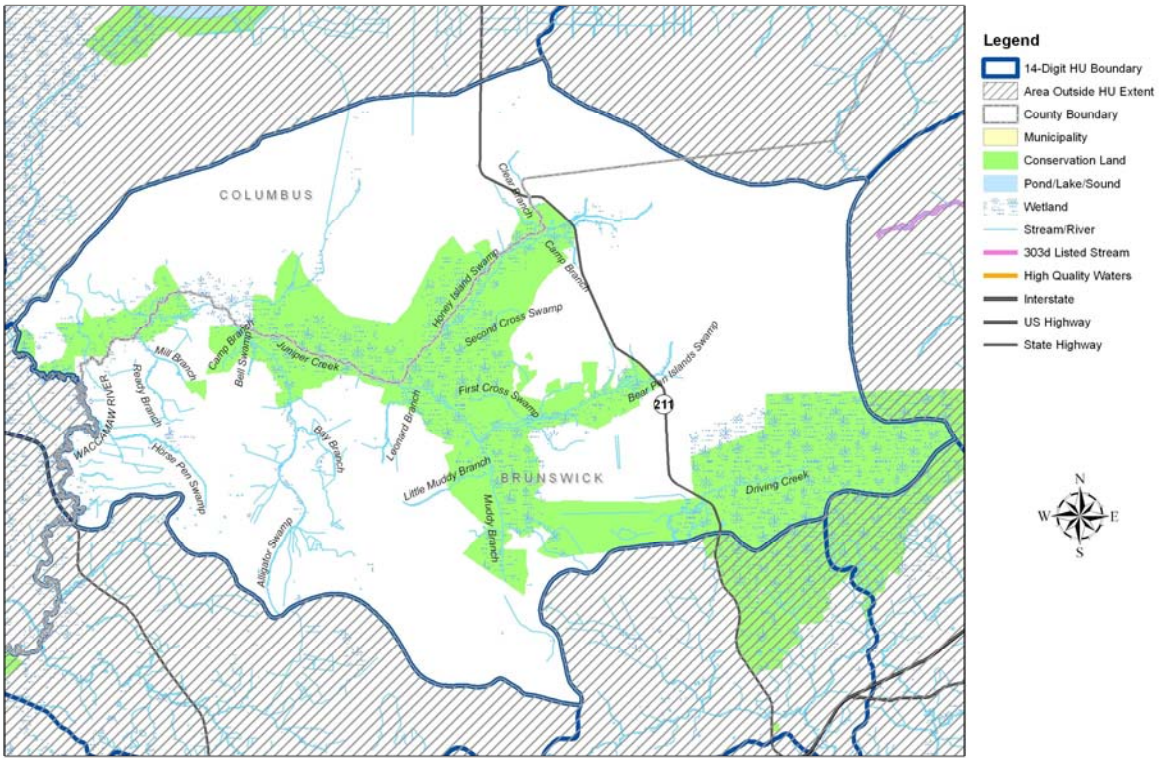
This TLW was selected in 2003 due to its high number of Natural Heritage Elements of Occurrence. This is a small, primarily forested, watershed below Lake Waccamaw. According to the NC Natural Heritage Program, Upper Waccamaw Swamp is the most extensive blackwater Cypress--Gum Swamp community in the state. Among the rare plant species are the swamp forest beaksedge (*Rhynchospora decurrens*). The swamp has floodplain islands with three highly unusual natural communities that are similar to Nonriverine Wet Hardwood Forest, Mesic Mixed Hardwood Forest, and Coastal Fringe Evergreen Forest communities.

03040206020040 (Lake Waccamaw)



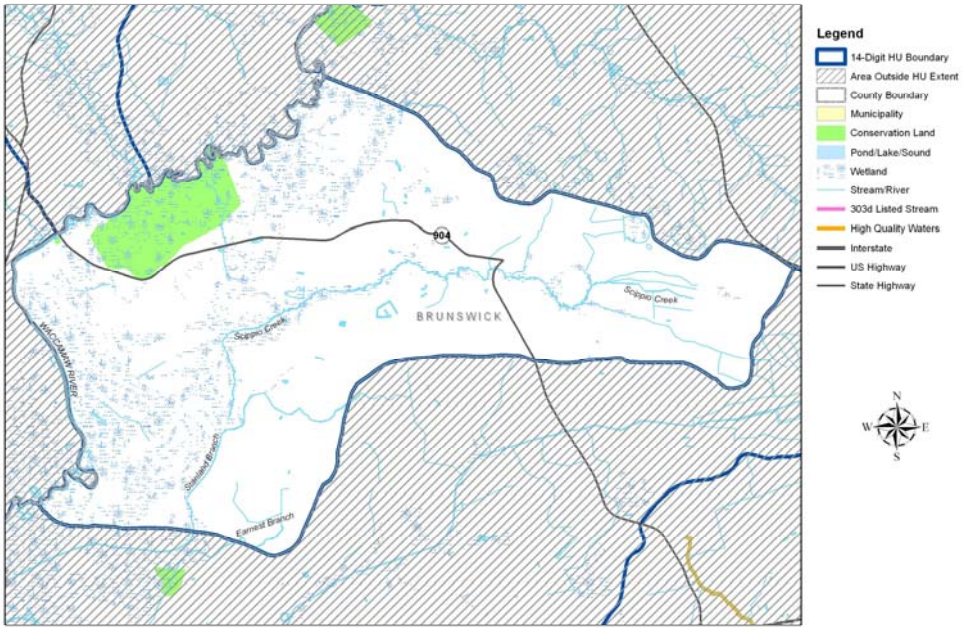
This watershed contains Big Creek, which drains into Lake Waccamaw, as well as portions of Waccamaw River, that drain from Lake Waccamaw. This TLW was selected in 2003 due to its extensive Significant Natural Heritage Areas. The lake provides habitat for the greatest concentration of endemic animals in the state, with eight species that are found only in the lake or adjacent waters. A number of rare plant species grow here, with several that are known in the state only from this location or a few others. From its beginning at Lake Waccamaw, the Waccamaw River provides habitat for a number of rare aquatic plant and animal species. It has high quality aquatic habitat with numerous rare animal and plant species, including endemic Carolina Pygmy Sunfish. The river has channel bars that when exposed have an unusually diverse herb community with species not found on other blackwater rivers. Lake Waccamaw was listed as impaired for mercury in 2006.

03040206030010 (Juniper Creek)

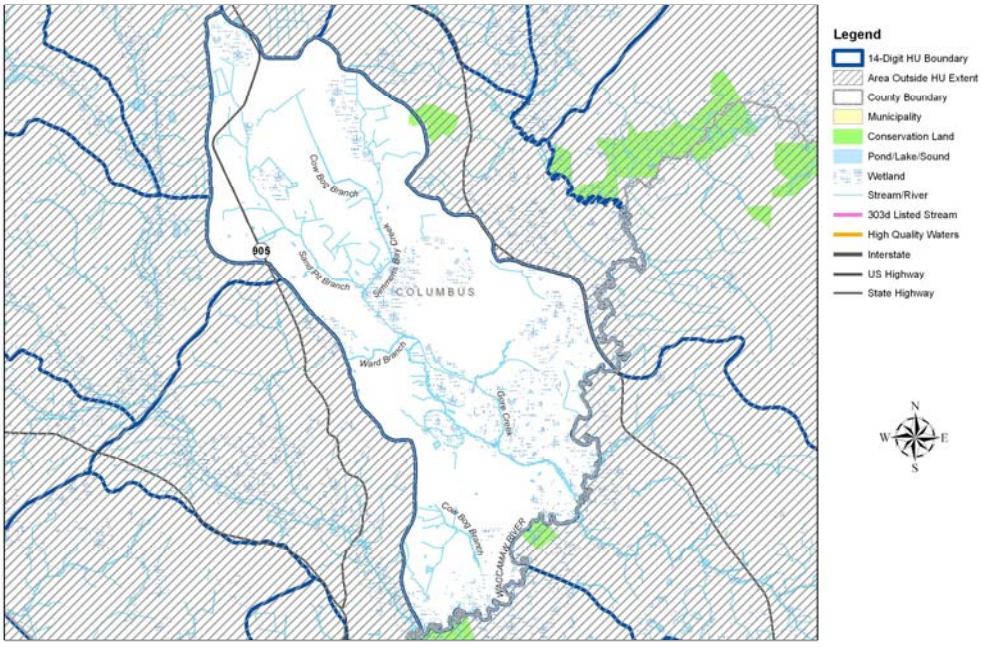


This watershed contains the Juniper Creek floodplain, which is a 13,000 acre area connecting the Green Swamp to the Waccamaw River system. It provides habitat for the Carolina pygmy sunfish. Rare plants include sarvis holly (*Ilex amelanchier*). It was selected as a TLW in 2003 for its extensive Significant Natural Heritage Area and Elements of Occurrence. Half of the Green Swamp Preserve, owned by The Nature Conservancy, is in this watershed. In recent years, TNC and other entities have purchased most of the riparian area floodplain Juniper Creek from International Paper.

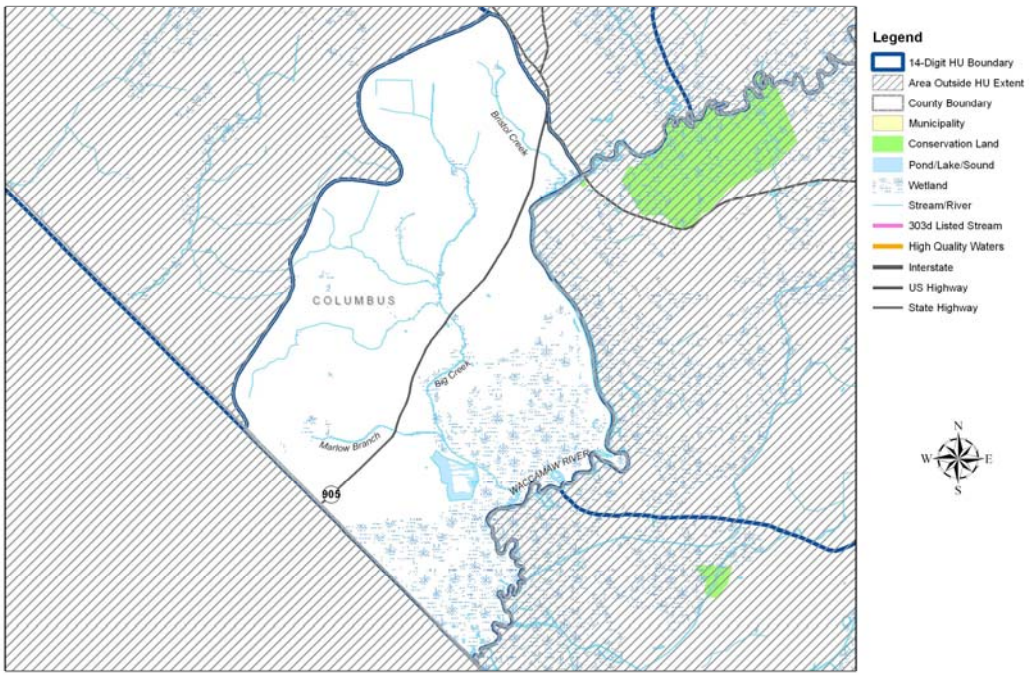
03040206050010 (Middle Waccamaw River)



03040206060010 (Gore Creek)



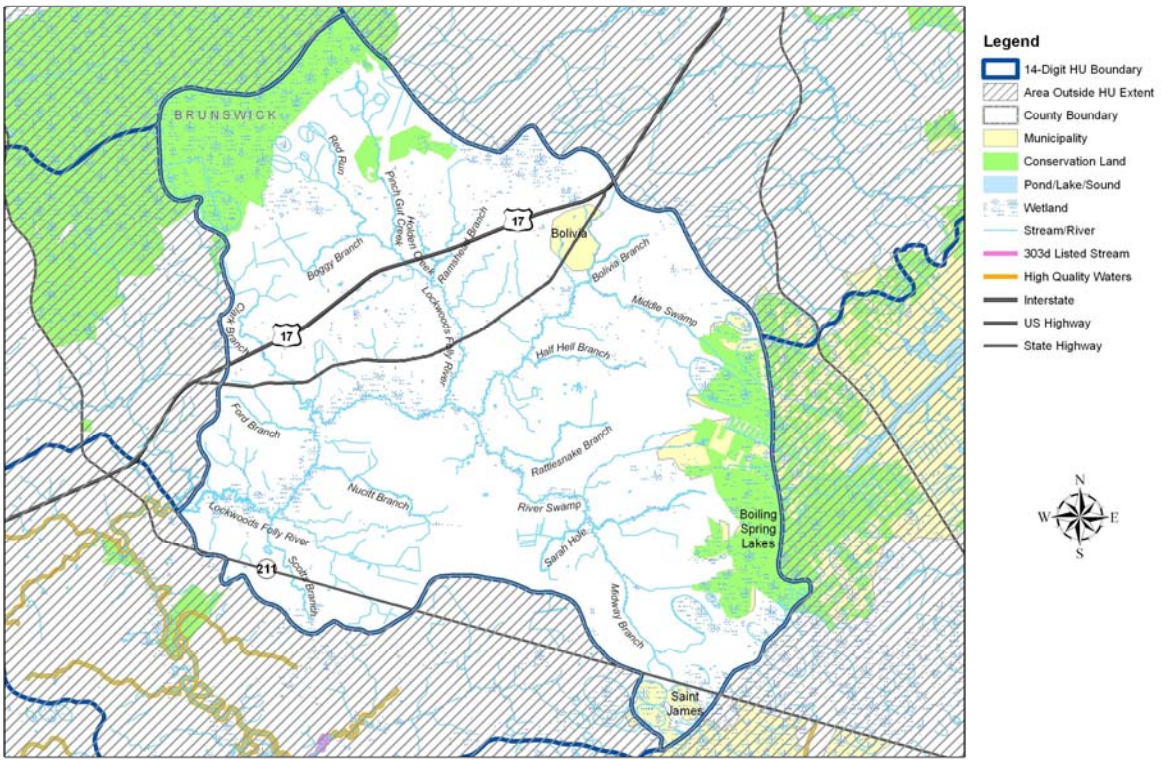
03040206090010 (Big Creek)



Middle Waccamaw River, Gore Creek and Big Creek watersheds are down stream of the previously mentioned watersheds of Juniper Creek, Lake Waccamaw and Upper Waccamaw River. They were selected as TLWs in 2003 for their Significant Natural Heritage Areas. These 3 watersheds feed into the Waccamaw River and address the continued need for protection of these natural aquatic areas.

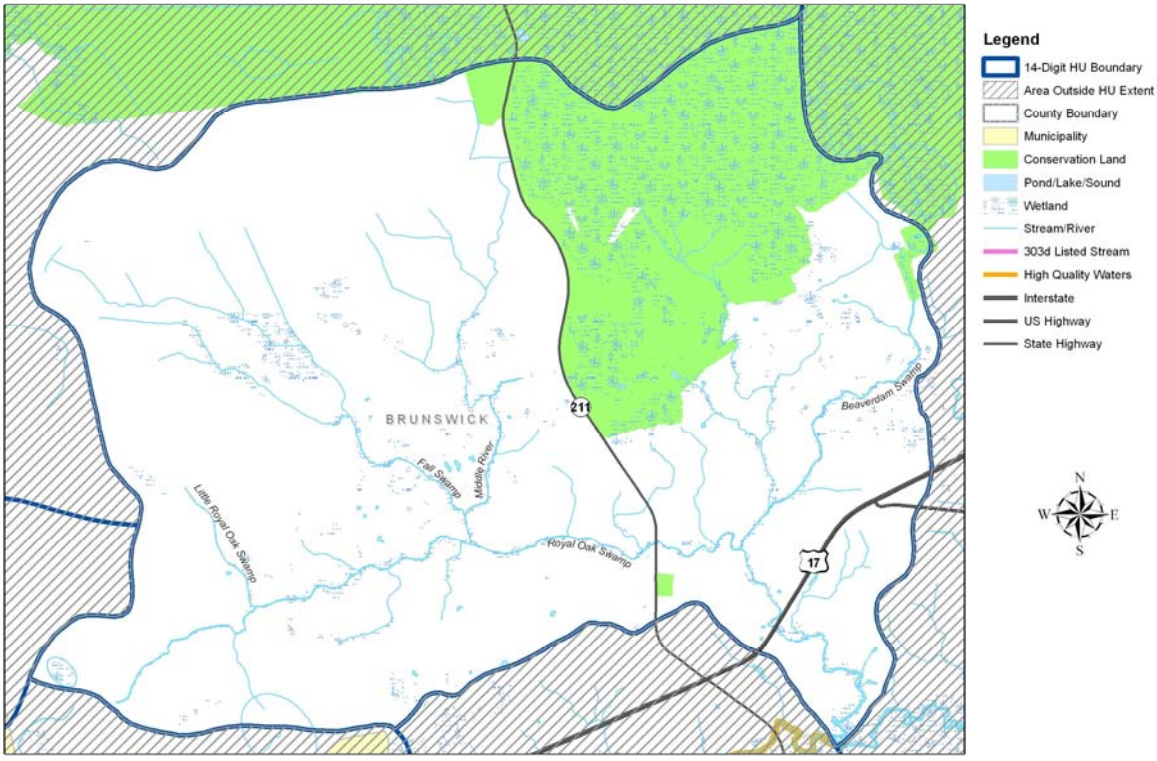
The following 5 watersheds were part of the Lockwoods Folly Local Watershed Plan conducted by EEP between 2005 and 2007. The Lockwoods Folly River watershed is located in Brunswick County. It originates near the town of Bolivia and empties to the Atlantic through the Lockwoods Folly Inlet. A large portion of the watershed is forest/wetlands but is experiencing increasing development, with Brunswick County being one of the fastest growing counties in North Carolina. The Lockwoods Folly River is listed on the 303(d) list of impaired waters for shellfish closures due to fecal coliform bacteria. The watershed plan identified fecal coliform and nutrients as the primary water quality pollutants.

03040207020010 (Upper Lockwoods Folly)



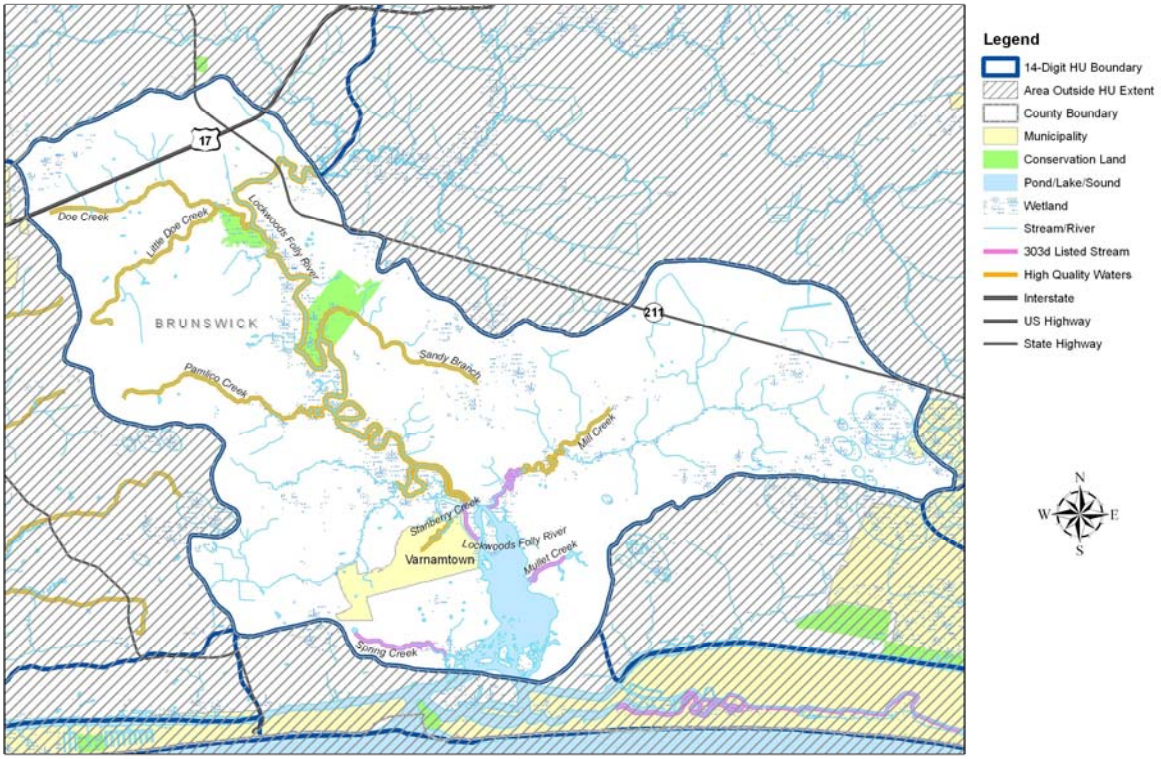
The upper reaches of the Lockwoods Folly River in this watershed is called Pinch Gut Creek, which begins in the Green Swamp Preserve. The eastern portion of this watershed contains part of Boiling Spring Lakes Wetland Complex. Both of these areas have been identified as Significant Natural Heritage Areas. This watershed is currently 75% forested but is beginning to be heavily developed. Conservation has been a primary focus in this watershed. Now, appropriate development practices will be important to reduce nutrient and stormwater inputs.

03040207020020 (Royal Oak Swamp)



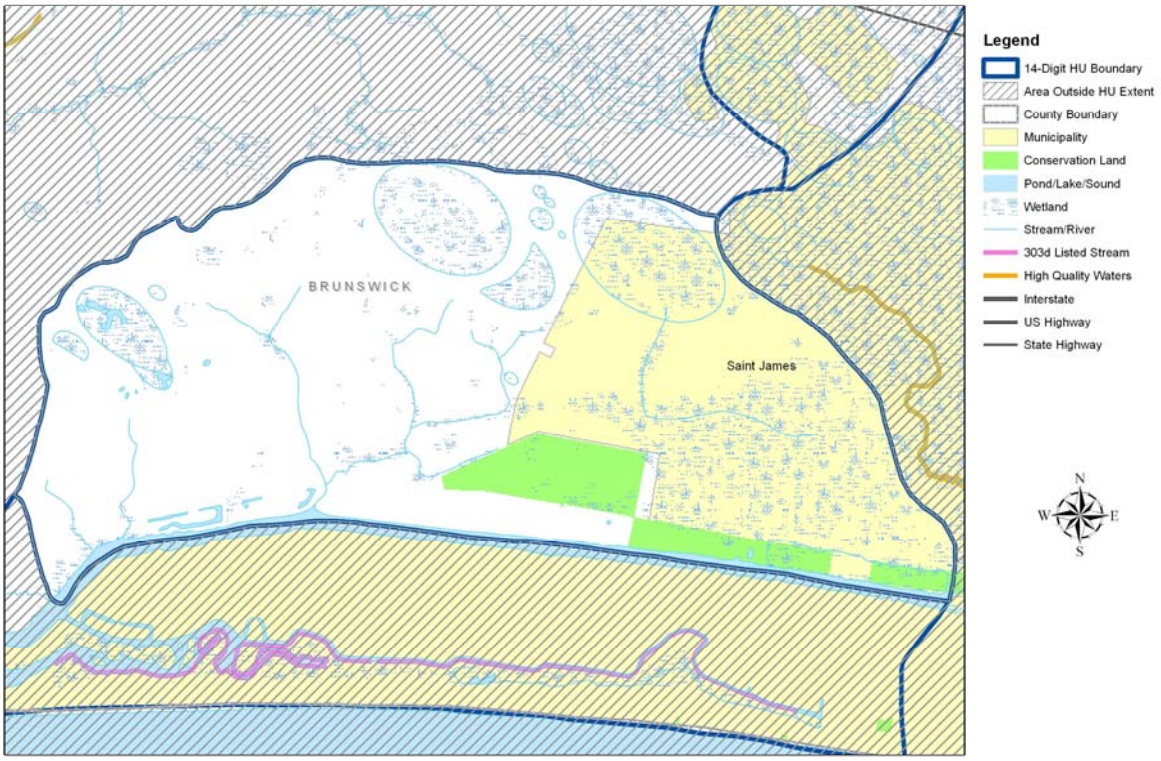
This watershed is a mix of undeveloped land with scattered residential parcels, large pine plantations and a few farm operations. It was selected because it serves as headwaters to Lockwoods Folly River. A portion of this watershed is protected as part of the Green Swamp Preserve, owned by The Nature Conservancy. There are 108 Natural Heritage Elements of Occurrences in this watershed. This is an area of many natural assets but may be impacted in the future by development pressures in Brunswick County.

03040207020030 (Lockwoods Folly River)



This watershed was selected as a TLW in 2003 because it is impaired for fecal coliform in the lower reaches and low pH and dissolved oxygen in the upper reaches. Currently, there is a TMDL being developed for fecal coliform. The lower portion of the watershed contains the concentrated development of Sunset Harbor and Varnamtown. The upper portion of this watershed is experiencing considerable growth. Currently, the streams are in good shape but high nutrient and fecal loads are high and expected to get higher.

03040207020040 (Intracoastal Waterway)

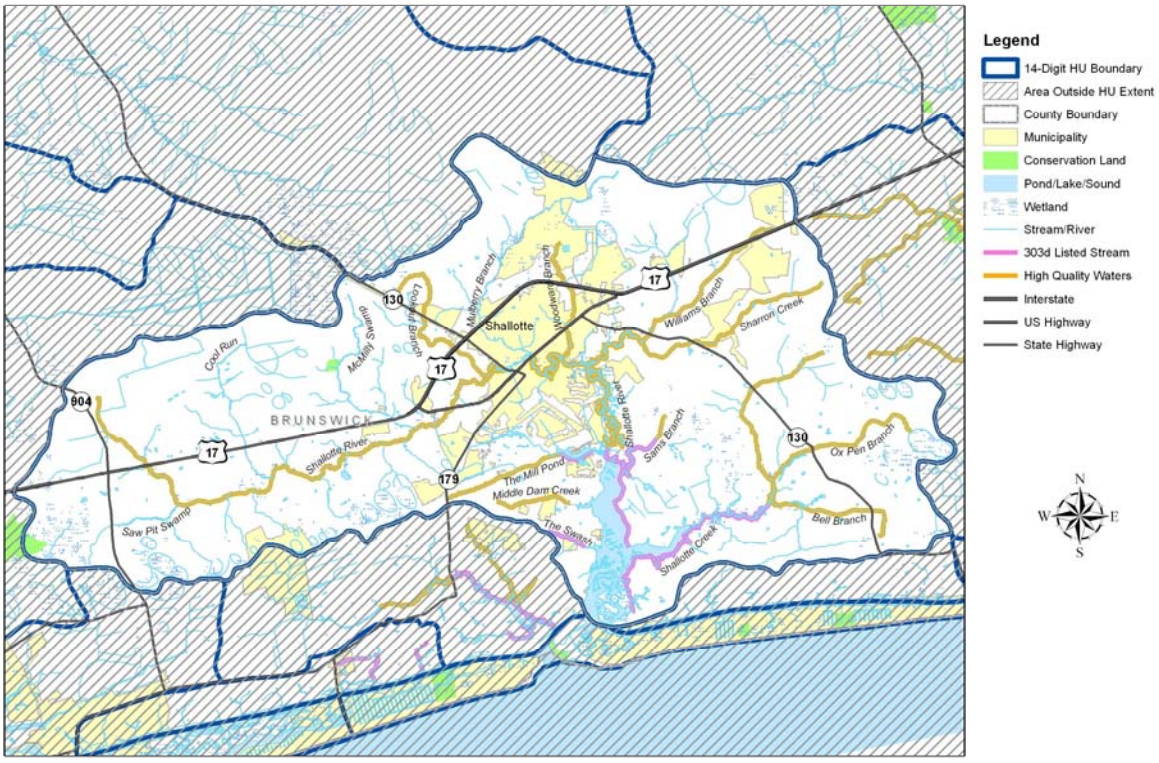


Most of this watershed is undeveloped except for a part of Sunset Harbor and St. James. These waters have been listed as impaired for shellfish closures due to fecal coliform bacteria. A TMDL is being developed for this area. Seventy-two percent of this watershed contains the Boiling Spring Lakes Wetland Complex. Conservation should continue to be a focus in this watershed.

03040207020050 (Montgomery Slough)

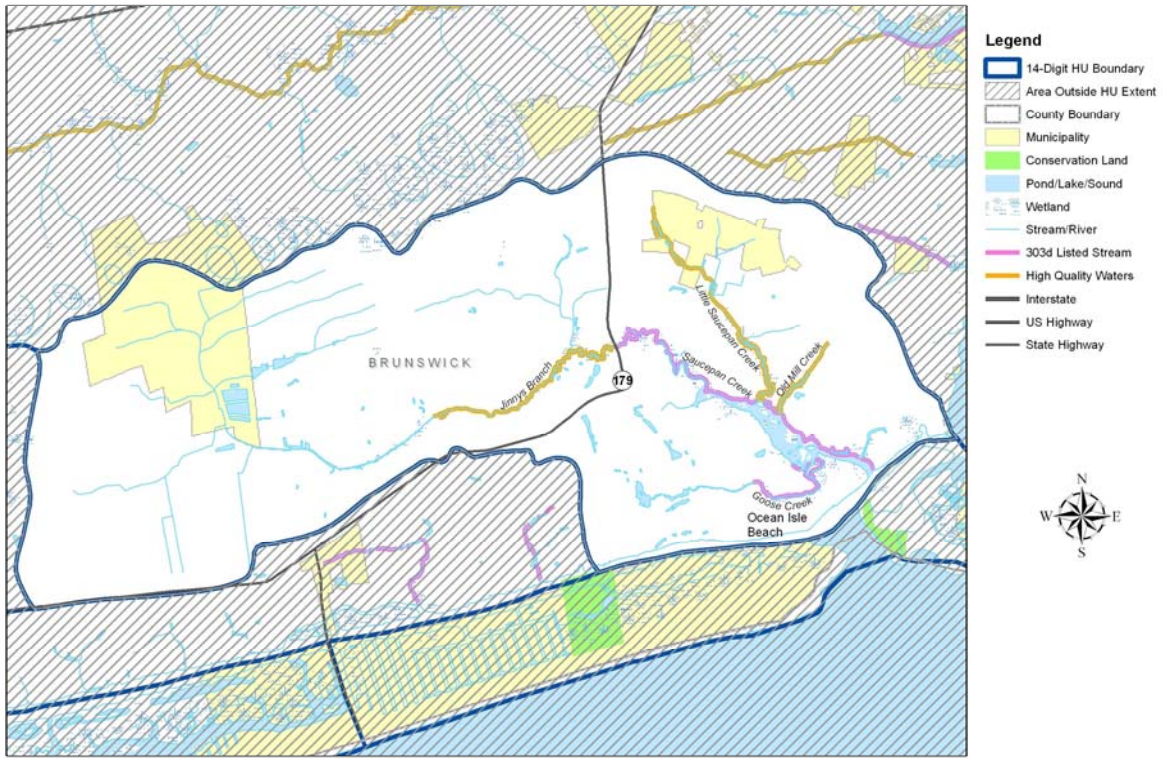
This watershed contains the barrier island with the Town of Oak Island. Water Quality data from the watershed plan identified high levels of phosphorus. Montgomery Slough is impaired for turbidity, low dissolved oxygen and fecal coliform. This area is heavily developed, with 12% impervious surface. Stormwater BMPs and retrofits should be used to address the pollutant run-off. Though there are some empty parcels, build out is expected within the next 20 years.

03040207020060 (Shalotte River)



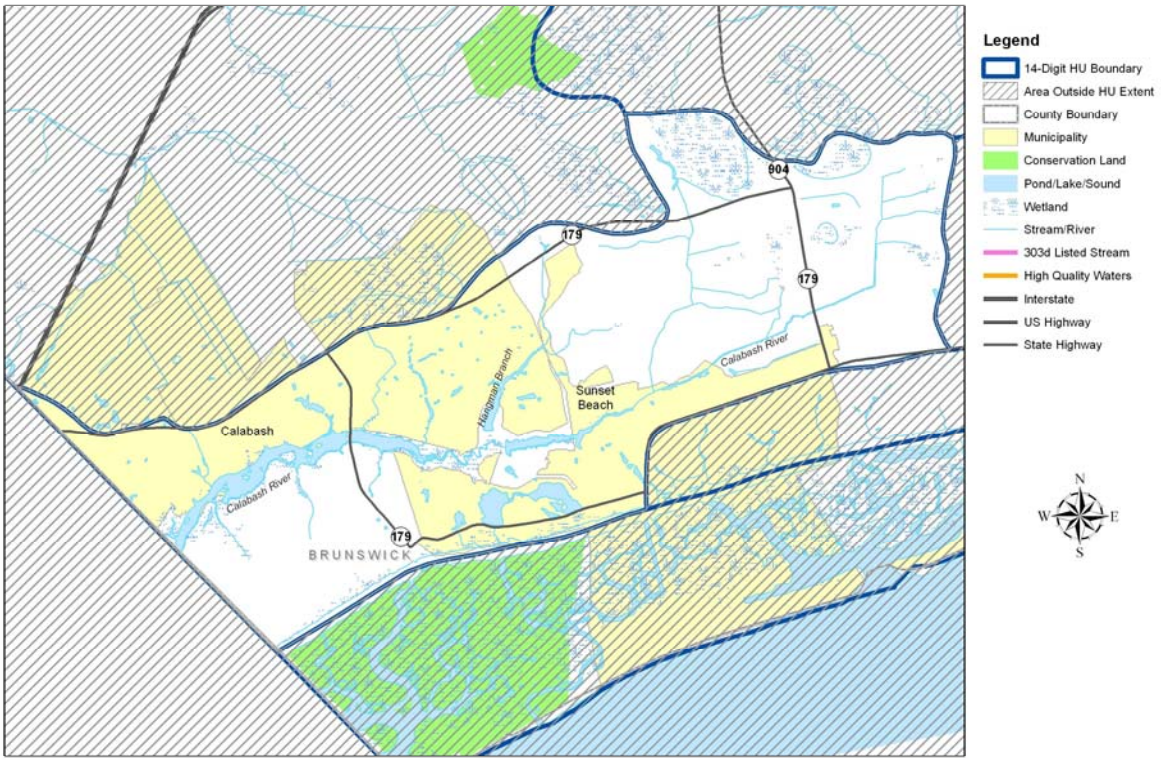
This watershed was selected as a TLW in 2003. It is impaired for low dissolved oxygen and pH in the upper portions of the river and shellfish closures due to fecal coliform in the lower portion of the river. The river is also designate as primary fish nursery area. The waters along the intracoastal waterways have been designated High Quality Waters and portions of the watershed have been designated as Significant Natural Heritage Areas. The town of Shalotte encompasses a significant portion of the headwaters of the Shalotte River. Management strategies developed through the Lockwoods Folly River Local Watershed Plan should be adopted for this watershed to reduce the impacts additional development will have on the quality of the river.

03040207020090 (Saucepan Creek)



This watershed was listed as a TLW in 2003. Saucepan Creek is designated primary fish nursery area but is also listed as impaired for fecal coliform. The estuarine waters in this watershed are High Quality Waters. The towns of Ocean Isle Beach and part of the Town of Shalotte occupy this HU. Management strategies developed through the Lockwoods Folly River Local Watershed Plan should be adopted for this watershed to reduce the impacts additional development will have on the quality of the water.

03040207020110 (Calabash River)



This watershed was listed as a TLW in 2003. Calabash River is listed as impaired for turbidity, low dissolved oxygen and fecal coliform but is also recognized for Significant Natural Heritage Areas. The Town of Calabash encompasses about half of the watershed. Impervious surface is 6.25%. Management strategies developed through the Lockwoods Folly River Local Watershed Plan should be adopted for this watershed to reduce the impacts additional development will have on the quality of the river.

References

Basinwide Assessment Report - Lumber River Basin
NCDENR, Division of Water Quality, April 2007

County Natural Heritage Inventories
NC Natural Heritage Program

Guide To Surface Water Classification in North Carolina
NC Department of Environment and Natural Resources

Lockwoods Folly Local Watershed Plan
NCDENR, NC Ecosystem Enhancement Program, 2007

Lumber River Basin Watershed Restoration Plan, December 2003
Wetland Restoration Program, 2003

Lumber River Basinwide Water Quality Plan
NCDENR, Division of Water Quality, 2003

North Carolina 303(d) List Draft
NC Division of Water Quality, January 2008

For More Information

Michele Drostin, Eastern Watershed Planner, EEP
919-715-6817
Michele.drostin@ncmail.net

http://www.nceep.net/pages/lwplanning.htm

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.

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.

Federal Wild and Scenic Rivers - A federal government river designation intended to protect certain free flowing rivers or segments with outstanding scenic, recreational, geologic, fish and wildlife, historic, archaeologic or other values. There are three river classifications: Wild, Scenic, and Recreational. The designation restricts or prohibits certain "water resources projects." It places no federal land use or development regulations on private lands. Some controls apply to federal lands and are administered by the federal land management agencies (e.g. US Forest Service, National Park Service).

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.

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

High Quality Waters (HQW) - Supplemental NC DWQ classification intended to protect waters with quality higher than state water quality standards. In general, there are two means by which a water body may be classified as HQW. They may be HQW by definition, or they may qualify for HQW by supplemental designation and then be classified as HQW through the rule-making process.

1) The following are HQW by definition:

• (Water Supply) WS-I, WS-II,
• SA (shellfishing area),
• ORW (outstanding resource water),
• Waters designated as Primary Nursery Areas (PNA) or other functional nursery areas by the Marine Fisheries Commission, or
• Native and special native (wild) trout waters as designated by the Wildlife Resources Commission.

2) The following waters can qualify for supplemental HQW designation:

• Waters for which DWQ has received a petition for reclassification to either WS-I or WS-II, or
• Waters rated as Excellent by DWQ,

II. Classifications by Other State and Federal Agencies

Natural Heritage Element of Occurrence – Identifies an area where a rare or endangered species has been seen. This data is collected by the NC Natural Heritage Program.

NCDWQ – North Carolina Division of Water Quality

NC Natural and Scenic Rivers - A state government river designation intended to protect certain free flowing rivers or segments with outstanding natural, scenic, educational, recreational, geologic, fish and wildlife, historic, scientific or other cultural values. There are three river classifications: Natural, Scenic, and Recreational river areas. The designation places no land use or development regulations on developments on private lands except on the construction of dams and other water resources projects. The program is administered by the NC Division of Parks and Recreation.

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

Outstanding Resource Waters (ORW) - Supplemental NC DWQ classification intended to protect unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance. To qualify, waters must be rated Excellent by DWQ and have one of the following outstanding resource values:

• Outstanding fish habitat or fisheries,
• Unusually high level of water-based recreation,
• Some special designation such as NC or National Wild/Scenic/Natural/Recreational River, National Wildlife Refuge, etc.,

• Important component of state or national park or forest, or
• Special ecological or scientific significance (rare or endangered species habitat, research or educational areas).
• No new discharges or expansions of existing discharges shall be permitted.

There are associated development controls enforced by DWQ. ORW areas are HQW by definition.

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.

Significant Natural Heritage Area – Areas identified by the NC Natural Heritage Program as containing ecologically significant natural communities or rare species.

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

USGS – United States Geological Survey

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

Water Supply Watershed (WSW) – A NCDWQ classification for waters used as water supply and requiring a certain level of protection.