

Chapter 1 -

White Oak River Subbasin 03-05-01

Includes White Oak River, Queens Creek and Bear Creek

1.1 Water Quality Overview

Subbasin 03-05-01 at a Glance

Land and Water Area (sq. mi.)

Total area:	351
Land Area:	322
Water Area:	29

Population

1990 Est. Pop.:	39,388 people
Pop. Density:	122 persons/mi ²

Land Cover (%)

Forest/Wetland:	76
Water:	8
Urban:	1
Cultivated Crop:	11
Pasture/ Managed Herbaceous:	3

Water Area

Stream Miles:	116
Estuarine Acres:	11,567
Coastal Miles:	8
Shellfish Harvest Acres:	11,239

This subbasin contains the White Oak River and its tributaries in Onslow, Jones, Craven and Carteret counties. Most of this area, including its two lakes (Catfish Lake and Great Lake), lies relatively undisturbed within the Croatan National Forest and Hoffman State Forest. A map of this subbasin including water quality sampling locations is presented in Figure B-1. Biological ratings as well as ambient water quality information at these sites are presented in Table B-1. Use support ratings for monitored waters are presented in Table B-2.

Most of the land area in the subbasin is forested. With the exception of Maysville, most urbanization is along NC 24 near Swansboro and Cape Carteret. There is also substantial agricultural land use on the west of the White Oak River.

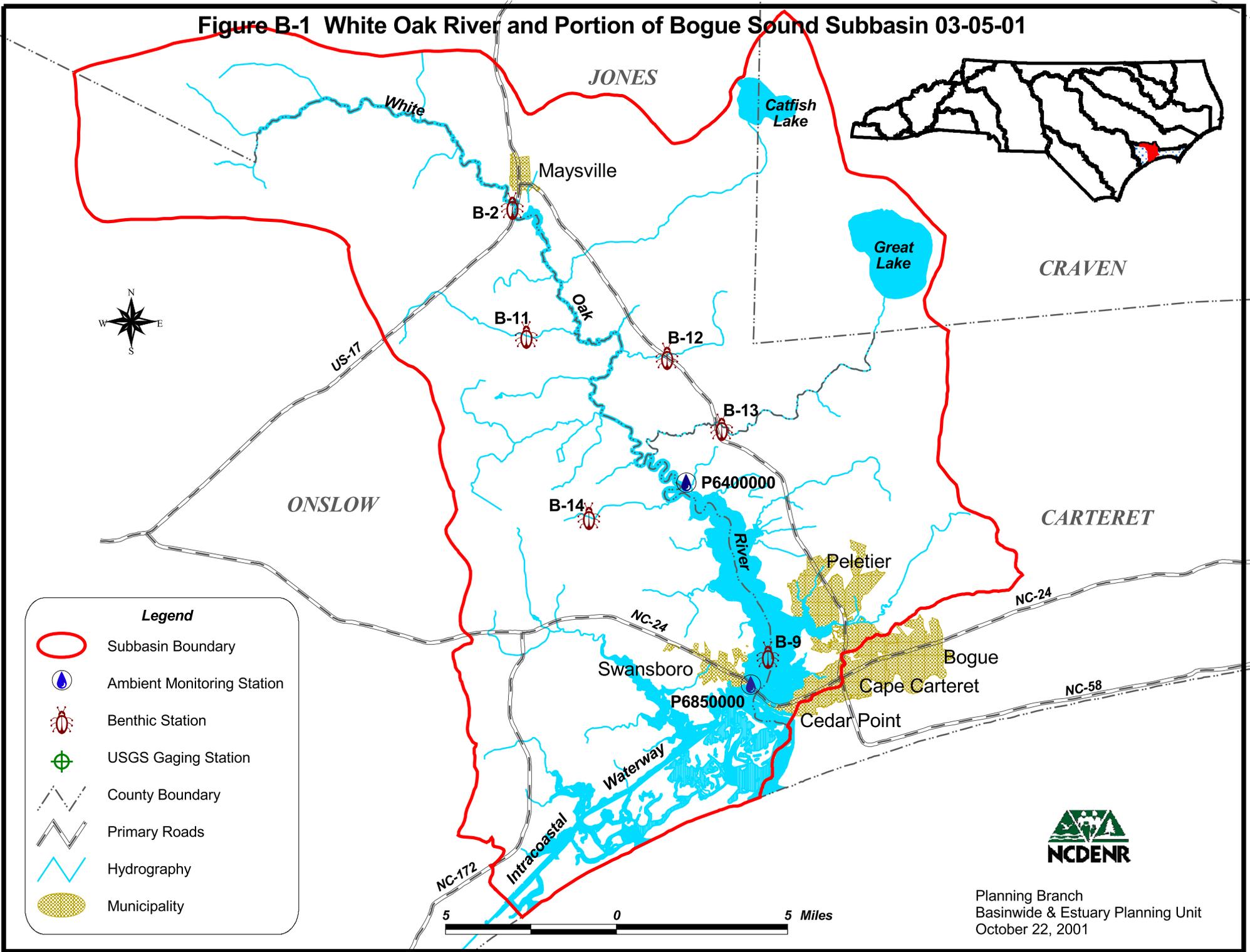
Tributaries on the west of the White Oak River appear more impacted by agriculture and development than the streams draining the Croatan National Forest and Hoffman State Forest. There are indications of excess nutrient input in the White Oak River mainstem. Many tributaries in this subbasin are characteristic of swamp

streams. The low dissolved oxygen (DO) and low pH measurements collected during this assessment period were attributed to swamp drainage into the White Oak River. Estuarine water quality was generally high in this subbasin. There was a noted increase in oysters near Swansboro possibly related to decreased variation in the salinity regime because of low rainfall in 1999.

A significant portion of waters in this subbasin are estuarine, including the waters around Hammocks Beach State Park, the Intracoastal Waterway (ICWW), Bogue Sound, much of the White Oak River, and most of Queens Creek and Bear Creek. There are 2,888 acres of ORW waters in this subbasin, mostly around Bear Island.

There are nine minor dischargers in this subbasin with a permitted flow less than 0.5 MGD. Swansboro WWTP is the largest with a discharge of 0.3 MGD. There are six registered animal operations in the subbasin as well.

Figure B-1 White Oak River and Portion of Bogue Sound Subbasin 03-05-01



Legend

- Subbasin Boundary
- Ambient Monitoring Station
- Benthic Station
- USGS Gaging Station
- County Boundary
- Primary Roads
- Hydrography
- Municipality



Planning Branch
 Basinwide & Estuary Planning Unit
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Table B-1 DWQ Monitoring Locations and Benthic Macroinvertebrate Bioclassifications (1999) for White Oak River Subbasin 03-05-01

Site	Stream	County	Road	Bioclassification
<i>Benthic Macroinvertebrates</i>				
B-2*	White Oak River	Onslow	US 17	Good-Fair
B-9*	White Oak River	Carteret	Swansboro	Not Rated
B-11	Starkeys Creek	Onslow	SR 1434	Not Rated
B-12*	Holston Creek	Jones	NC 58	Not Rated
B-13	Hunters Creek	Carteret	SR 1100	Not Rated
B-14	Webb Creek	Onslow	SR 1432	Not Rated
<i>Ambient Monitoring**</i>				Parameters In Excess of State Standards
P6400000	White Oak River	Onslow	Stella	DO and pH
P6850000	White Oak River	Carteret	Swansboro	

* Historical data are available; refer to Appendix III.

** Assessment period 9/1/94 to 8/31/99

Table B-2 Use Support Ratings for Monitored Waters in Subbasin 03-05-01

Use Support Category	Use Support Ratings				
	FS	PS	NS	NR	Total
Aquatic Life and Secondary Recreation	21.3 mi. 5,772.6 ac	0	0	19 mi. 0 ac 8 coastal mi.*	40.3 mi. 5,772.6 ac 8 coastal mi.*
Fish Consumption	0	8 coastal mi.*	0	0	8 coastal mi.*
Primary Recreation	0 mi. 7,298.7 ac 8 coastal mi.*	0	0	6.6 mi. 3,940.4 ac	6.6 mi. 11,239.1 8 coastal mi.*
Shellfish Harvesting	0 mi. 4,609 ac	1.4 mi. 3,581 ac	5.3 mi. 3,049 ac	0	6.7 mi. 11,239 ac

* Refers to miles along Atlantic coastline.

For more information, refer to the *White Oak River Basinwide Assessment Report* (June 2000) or contact Environmental Sciences Branch at (919) 733-9960 or visit the web site at <http://www.esb.enr.state.nc.us/>.

1.2 Status and Recommendations for Previously Impaired Waters

This section reviews the status of recommendations made in the 1997 White Oak River Basinwide Water Quality Management Plan, reviews current status and use support ratings, and makes recommendations for the next five years. Previously impaired Class SA waters are discussed in Section 1.4 below. There were no other waters identified as impaired in the 1997 plan.

1.3 Status and Recommendations for Newly Impaired Waters

All waters in subbasin 03-05-01 are currently partially supporting (PS) the fish consumption use support category on an evaluated basis because of a statewide fish consumption advisory for bowfin. Fish tissue samples were not collected in this subbasin. Eight miles of Atlantic coastline in this subbasin are currently partially supporting (PS) fish consumption because of a consumption advisory for king mackerel. Refer to page 61 for more information on fish consumption advisories. There are no other newly impaired waters in this subbasin. Class SA waters are discussed below in Section 1.4.

1.4 Impaired Class SA Waters

There are 11,239 acres and 6.7 stream miles of Class SA waters in subbasin 03-05-01 that were assessed in the shellfish harvesting use support category. In this subbasin, 6,631 acres (59%) are considered impaired in the shellfish harvesting use support category. Refer to Figure B-2 to identify locations of DEH SS growing areas and growing area classifications. Refer to page 49 for DEH SS growing area criteria. Data for making use support determinations were provided by DEH SS (refer to page 40). The larger water areas in this subbasin are described below with reference to DEH SS growing areas. The problem parameter for all waters listed below is fecal coliform bacteria contamination. Refer to page 49 for recommendations to address impaired Class SA waters.

The differences in acreage estimates between years are not necessarily related to changes in water quality, but to different methods of estimating acreage and changes in use support methodology. For more information on changes in use support methodology, refer to page 51. Refer to Appendix III for use support methodology and a complete listing of individual monitored waters.

Bear Creek (Area D-1)

The upper 113 acres of Bear Creek are not supporting shellfish harvesting. This portion of Bear Creek is DEH SS classified as prohibited/restricted and permanently closed to shellfish harvesting. The lower 196 acres of Bear Creek are partially supporting shellfish harvesting. This area is DEH SS classified as conditionally approved-open and was closed to shellfish harvesting 15.5 percent of the five-year assessment period. The population of the watershed has remained stable. Potential sources of pollution include forestry, agriculture and wildlife (DENR, 1999).

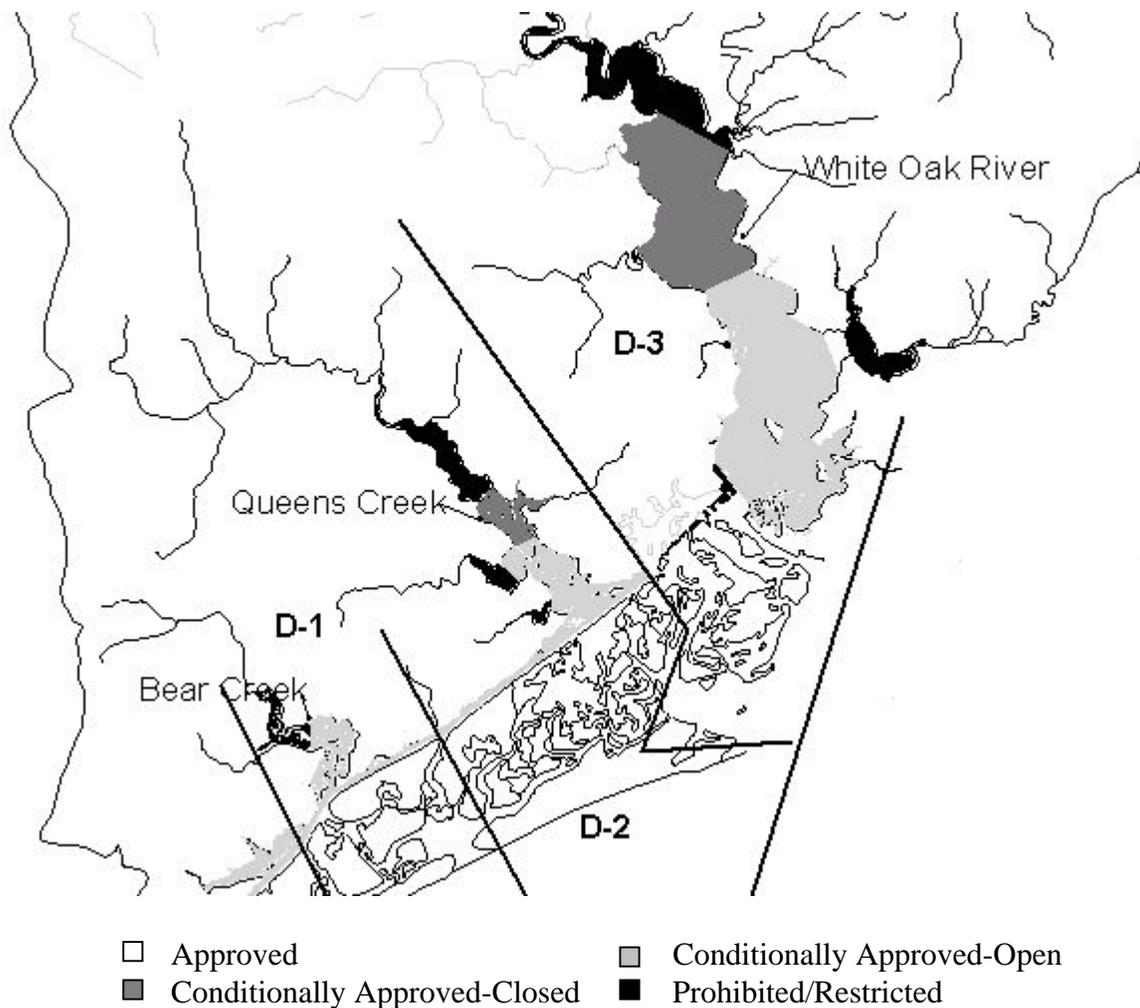


Figure B-2 DEH Shellfish Growing Area Classifications in Subbasin 03-05-01

The NC Cooperative Extension Service is using BMPs in the Bear Creek watershed to help reduce fecal coliform bacteria transport to Bear Creek in an effort to restore shellfish harvesting. Refer to page 102 for more information on this project.

Queens Creek and Tributaries (Area D-2)

The upper 234 acres of Queens Creek are not supporting shellfish harvesting. This portion of Queens Creek is DEH SS classified as prohibited/restricted and permanently closed to shellfish harvesting. The middle 161 acres of Queens Creek are also not supporting shellfish harvesting. This portion is DEH SS classified as conditionally approved-closed and was closed to shellfish harvesting most of the assessment period. The lower 270.6 acres of Queens Creek are rated partially supporting. This portion is DEH SS classified as conditionally approved-open and was closed to shellfish harvesting 15.6 percent of the five-year assessment period. The population of this watershed has grown substantially since 1994. Potential sources of pollution include runoff from subdivisions and forest clearing. There were also noted problems with a septic system in the watershed (DENR, 1998a).

North Carolina Coastal Federation (NCCF) has purchased conservation easements along Queens Creek (refer to page 104).

White Oak River and Tributaries (Area D-3)

The upper 468 acres of the White Oak River are not supporting shellfish harvesting. This portion of the White Oak River is DEH SS classified as prohibited/restricted and permanently closed to shellfish harvesting. The middle 1,422 acres of the White Oak River are also not supporting. This portion is DEH SS classified as conditionally approved-closed and was closed to shellfish harvesting most of the assessment period. The lower 2,124 acres of the White Oak River are rated partially supporting. They are DEH SS classified as conditionally approved-open, and the three different subareas were closed to shellfish harvesting from 15.6 percent to 17.1 percent of the five-year assessment period. The population of the watershed has grown substantially since 1995 and continues to experience rapid growth. Potential sources of pollution include runoff from subdivisions and agricultural land especially in the upper portions of the watershed. There have been noted septic system problems near the NC 24 causeway as well (DENR, 1999b). There are also concerns that NC 24 causeway reduces tidal flushing of the mouth of the White Oak River which could result in slower dissipation of bacteria and lower salinity.

North Carolina Coastal Federation (NCCF) has purchased land along the White Oak River for conservation and demonstration projects (refer to page 104).

Intracoastal Waterway (Areas D-1, D-2 and D-3)

The 739 acres of the ICWW (four subareas) in this subbasin west of Queens Creek are rated partially supporting. These subareas are DEH SS classified as conditionally approved-open and were closed to shellfish harvesting from 11.4 percent to 13.8 percent of the five-year assessment period. There are also 281 acres of impaired ORW waters in this subbasin including parts of the ICWW and Bear Island. Potential sources are the same as those described above in the upstream waterbodies.

1.5 303(d) Listed Waters

There are 2,392 acres in DEH growing areas C4, D1, D2 and D3 in subbasin 03-05-01 that are on the year 2000 303(d) list. These waters were classified by DEH Shellfish Sanitation as prohibited/restricted. Refer to Appendix IV for more information on the state's 303(d) list and listing requirements.

1.6 Others Issues and Recommendations

Upper White Oak River

Although the Aquatic Life /Secondary Recreation use support category in the upper White Oak River is not currently impaired there are indications of nutrient loading, channelization, habitat removal and habitat degradation. Continued development, road building, wetland ditching and draining, and poor de-snagging practices have the potential to cause degradation of aquatic

habitats and water quality in the White Oak River as well as increase the potential for eutrophication problems in the estuary. These land use practices should implement best management practices to reduce water quality impacts.

Trash in the form of litter and larger items (washing machines, chairs, old coolers and farm implements) has been identified as a problem in the White Oak River. While this problem is widespread, it has been noted as a particular problem in the White Oak River by canoeists and other recreational water users. Several local groups are participating in clean up and educational efforts to help prevent further aesthetic degradation of the river. Refer to page 107 for more information. Citizen efforts to clean up the river and educate people are needed to reduce trashing in the White Oak River.

There are also concerns regarding removal of storm debris (desnagging) from the White Oak River after recent hurricanes. While desnagging is needed to maintain navigation and water flow, care should be taken to maintain enough snag material to provide for aquatic habitat for fish and macroinvertebrates. Refer to page 65 for more information on this topic.

The Town of Maysville WWTP exceeded permit limits for BOD₅, NH₃-N and total suspended solids a few times during the assessment period. The WWTP received a CWMTF grant to make upgrades to the treatment plant. Refer to page 105 for more information on this project.

The NCCF (refer to page 107) has joined the effort to designate the White Oak River as a Wild and Scenic River. Many citizens' groups and businesses also support this effort which would lead to preservation of the river and river activities at the level they are today. The White Oak would be the first coastal blackwater river in the national system.

Bell Swamp

Hewitts Mobile Home Park discharges into a UT to Bell Swamp which is a tributary to Bear Creek. The facility exceeded permit limits for BOD and fecal coliform bacteria a few times between 1997 and 1999.

Bear Island

The North Carolina Division of Parks and Recreation, with CWMTF funding, has acquired buffers on Bear Island. Refer to page 105 for more information on this project. North Carolina Wetlands Restoration Program also has a two-acre restoration project at the state park.

White Oak River Restricted Area Swansboro

The Town of Swansboro WWTP received CWMTF funding to make upgrades to the treatment plant. Refer to page 105 for more information on this project.