

White Oak River Subbasin 03-05-04

Including: North River, Jarrett Bay, Nelson Bay and Core Sound

4.1 Subbasin Overview

Subbasin 03-05-04 at a Glance

Land and Water Area

Total area:	170 mi ²
Land area:	102 mi ²
Water area:	68 mi ²

Land Cover (percent)

Forest/Wetland:	35%
Surface Water:	40%
Urban:	1%
Cultivated Crop:	23%
Pasture/ Managed Herbaceous:	1%

County

Carteret

Municipalities

Beaufort

Monitored Waterbody Statistics

Aquatic Life

Total:	9,243.0 ac
Total Supported:	2,991.7 ac
Total Impaired:	6,251.3 ac

Recreation

Total:	11,316.7 ac
Total Supported:	11,316.7 ac

Shellfish Harvesting

Total:	39,427.9 ac
Total Supported:	26,053.9 ac
Total Impaired:	13,374.0 ac

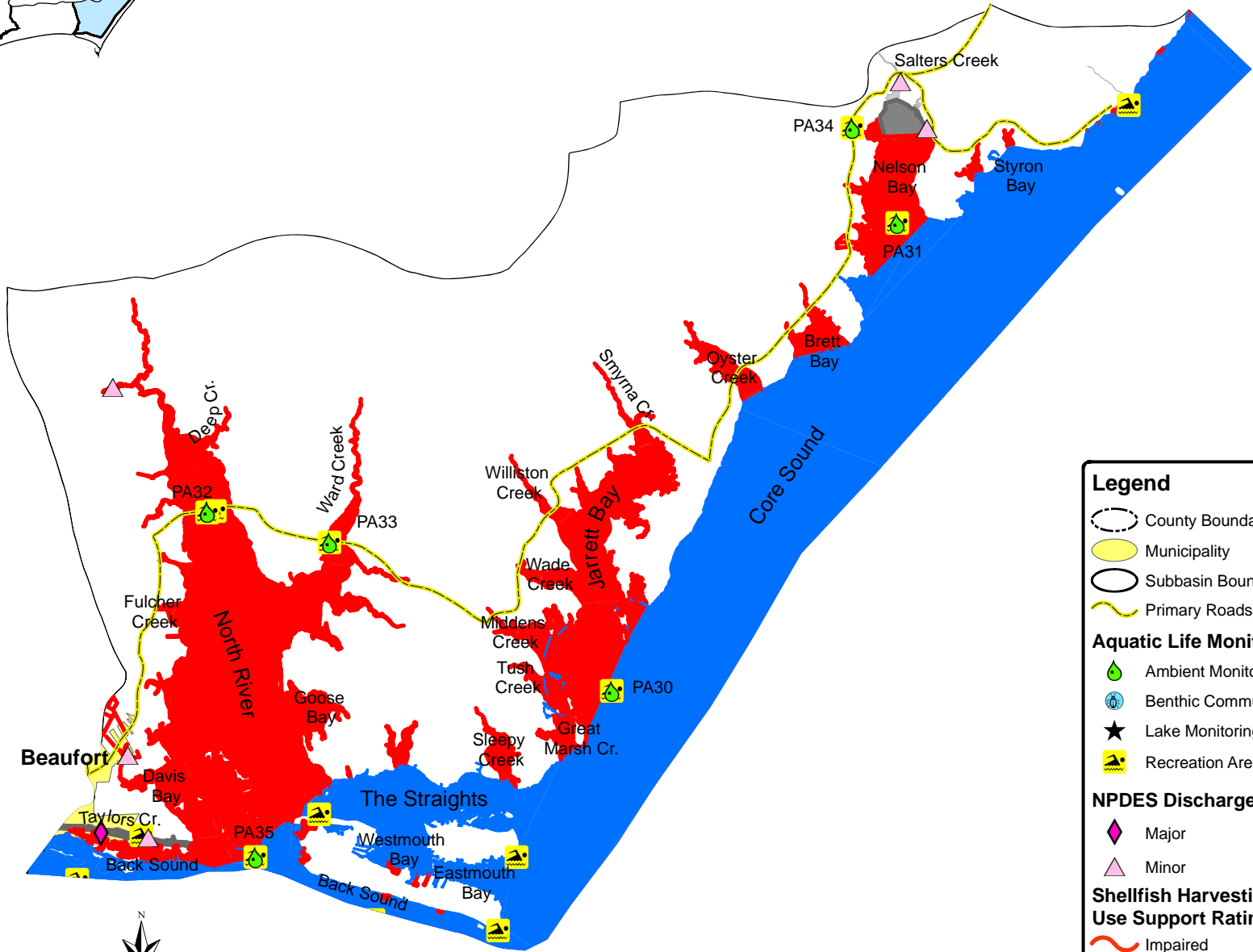
This subbasin lies to the east and north of the City of Beaufort in Carteret County. Major waterbodies in this subbasin include the North River, Jarrett Bay and Nelson Bay, plus the landward halves of Back Sound and Core Sound. Most of this subbasin is estuarine with freshwater drainage from adjacent land including Open Grounds Farm. There are 26,017 acres of shellfishing Outstanding Resource Waters (ORW) in this subbasin. The Town of Atlantic at the northern end of the subbasin and Harkers Island at the south are the two most densely developed areas within the subbasin. A map of this subbasin including water quality sampling and NPDES locations are presented in Figure 9. Use support ratings for monitored waters are presented in Table 27.

Water quality seems to be generally high in this subbasin. Large portions of this subbasin have been classified as Outstanding Resource Waters (ORW): Core Sound and most of Back Sound, Styron Bay, Brett Bay, Oyster Creek, Jarrett Bay, Willis Creek, Fulchers Creek, Maria Creek, Fork Creek, Ditch Creek, Broad Creek, Great Creek, Howland Creek, Jump Run, Tush Creek, and Great Marsh Creek.

There are five individual NPDES wastewater discharge permits with a total permitted flow of 0.034 MGD. In 2005, four of these facilities were out of compliance with permit limits for a total of 28 violations resulting in issuing 10 Notices of Violation and the remaining proceeded to enforcement. The largest capacity permit is held by Snug Harbor Management, LLC in Nelson Bay with a total permitted flow of 0.02 MGD. The second

largest discharge is associated with Taylor Hospital and Extended Care Wastewater Treatment Plant (WWTP) also located in Nelson Bay. As of 2004, there were four general stormwater permits. Refer to Appendix II for the listing of NPDES permit holders.

Figure 9 White Oak River Subbasin 03-05-04



Legend

- County Boundary
- Municipality
- Subbasin Boundary
- Primary Roads

Aquatic Life Monitoring

- Ambient Monitoring Station
- Benthic Community
- Lake Monitoring Station
- Recreation Areas

NPDES Dischargers

- Major
- Minor

Shellfish Harvesting/Aquatic Life Use Support Ratings

- Impaired
- No Data
- Not Rated
- Supporting

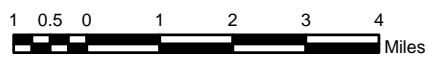
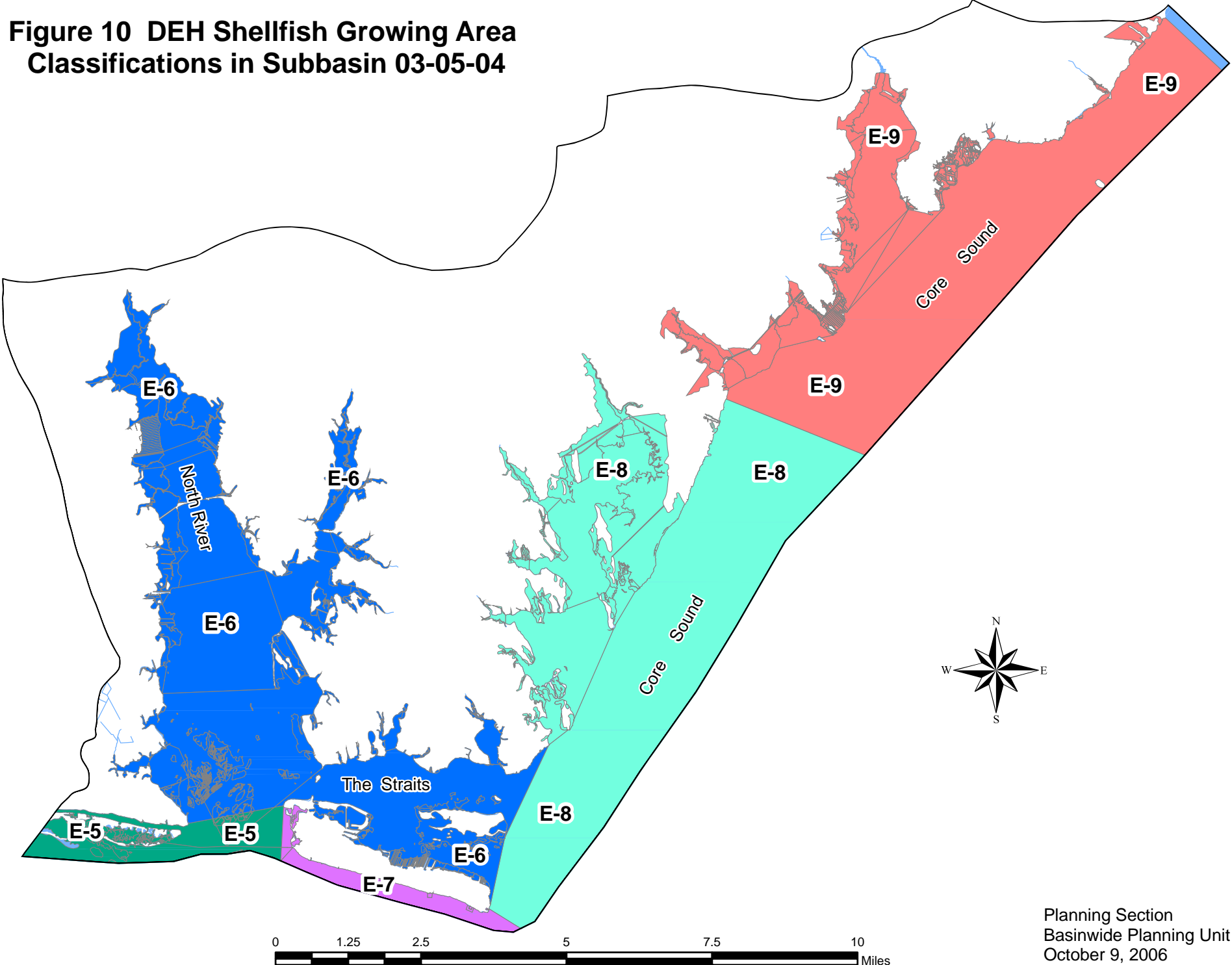


Figure 10 DEH Shellfish Growing Area Classifications in Subbasin 03-05-04



Planning Section
Basinwide Planning Unit
October 9, 2006

Table 27

WHITE OAK Subbasin 03-05-04

AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment			Shellfish Harvesting		Stressors	Sources
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA		
Description														
Annis Run														
21-35-7-3-2	SA HQW	4.1	S Acres	ND					ND			S	APP	
From source to Styron Bay														

Table 27

WHITE OAK Subbasin 03-05-04

AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment			Shellfish Harvesting		Stressors	Sources
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA		
Back Sound														
Description														
21-35-(0.5)b	SA HQW	870.1	S Acres	ND				ND			S	APP		
Portion of the following in subbasin 030504 From Newport River to a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marsh														
21-35-(0.5)e1	SA HQW	32.5	S Acres	ND				ND			I	CAO E-5	Fecal Coliform Bacteria	Stormwater Runoff
Portion of the following in subbasin 030504 From Newport River to a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marsh														
21-35-(0.5)e2	SA HQW	156.4	S Acres	ND				ND			I	PRO E-5	Fecal Coliform Bacteria	WWTP NPDES
Portion of the following in subbasin 030504 From Newport River to a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marsh														
21-35-(0.5)f	SA HQW	99.3	S Acres	ND				ND			I	PRO E-5	Fecal Coliform Bacteria	Stormwater Runoff
DEH closed areas in and around Carrot Island														
21-35-(1.5)a1	SA ORW	738.2	S Acres	S	PA29	NCE		S	PA29 C66	NCE NCE	S	APP E-8		
Portion of the following in subbasin 030504 From a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marshes and along the														
21-35-(1.5)a2	SA ORW	7.2	S Acres	ND				ND			I	PRO E-7	Fecal Coliform Bacteria	Marina
Portion of the following in subbasin 030504 From a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marshes and along the. Harkers Island Fishing Center														
21-35-(1.5)a3	SA ORW	2.4	S Acres	ND				ND			I	PRO E-7	Fecal Coliform Bacteria	Marina
Portion of the following in subbasin 030504 From a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marshes and along the. Barbours Harbor Marina														
21-35-(1.5)c	SA ORW	6.4	S Acres	ND				S	C60A	NCE	S	APP E-7		
Four DEH closed areas on the south shore of Harkers Island.														

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AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment			Shellfish Harvesting		Stressors	Sources		
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA				
Description																
Brett Bay																
21-35-7-13a	SA ORW	161.4	S Acres	ND						ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
Entire Bay																
21-35-7-13b	SA ORW	24.6	S Acres	ND						ND			S	APP		
Entire Bay																
Broad Creek (Jarrett Bay)																
21-35-7-22-3	SA ORW	36.6	S Acres	ND						ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Jarrett Bay																
Broad Creek (Nelson Bay)																
21-35-7-10-4	SC	40.6	S Acres	I	PA34	CE	Low DO	26.8		S	PA34	NCE			Low pH	
From source to Nelson Bay																
Brooks Creek																
21-35-1-13a	SA HQW	14.6	S Acres	ND						ND			I	PRO	Fecal Coliform Bacteria	Marina
From source to North River. Hnuckles Landing Harbor																
21-35-1-13b	SA HQW	2.2	S Acres	ND						ND			S	APP		
From source to North River																
Cedar Creek																
21-35-7-3-3-1	SA HQW	18.8	S Acres	ND						ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Styron Creek																

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AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment			Shellfish Harvesting		Stressors	Sources	
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA			
Description															
Core Sound															
21-35-7a1	SA ORW	21,202.1	S Acres	ND					ND			S	APP		
Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved															
21-35-7a2	SA ORW	20.3	S Acres	ND					ND			I	CAO E-9	Fecal Coliform Bacteria	Stormwater Runoff
Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved															
21-35-7a3	SA ORW	3.8	S Acres	ND					ND			I	PRO E-9	Fecal Coliform Bacteria	Marina
Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved. Morris Marina															
21-35-7a4	SA ORW	10.9	S Acres	ND					S	C76	NCE	I	PRO E-9	Fecal Coliform Bacteria	Marina
Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved. Clayton Fulchers Fish House															
21-35-7a5	SA ORW	1.8	S Acres	ND					ND			I	PRO E-9	Fecal Coliform Bacteria	Stormwater Runoff
Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved. Luther Smith and Sons Fish House															
21-35-7a6	SA ORW	0.0	S Acres	ND					ND			I	PRO E-9	Fecal Coliform Bacteria	Stormwater Runoff
Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved. Willis Texaco Marina															
21-35-7b	SA ORW	1,251.7	S Acres	S	PA30	NCE			S	PA30	NCE	I	CAO F-4	Fecal Coliform Bacteria	Stormwater Runoff
Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved															
21-35-7c	SA ORW	196.6	S Acres	ND					ND			I	CAO E-9	Fecal Coliform Bacteria	Stormwater Runoff
Conditionally approved open area at the mouth of Nelson Bay															

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				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA			
Description															
21-35-7d	SA ORW	87.5	S Acres	ND					ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
Conditionally approved open area at the mouth Oyster Creek															
Crabbing Creek															
21-35-1-3	SA HQW	3.2	S Acres	ND					ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River															
Davis Bay (Cheney Bay)															
21-35-1-11a	SA HQW	18.9	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
DEH closed area in southern part of bay															
21-35-1-11b1	SA HQW	164.9	S Acres	ND					ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
DEH Conditionally Approved Closed area northern part of bay															
21-35-1-11b2	SA HQW	23.0	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
DEH Conditionally Approved Closed area northern part of bay															
Deep Creek															
21-35-1-2	SA HQW	23.2	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River															
Ditch Cove															
21-35-7-22-2	SA ORW	32.1	S Acres	ND					ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Jarrett Bay															
Eastmouth Bay															
21-35-1-12-3.5	SA HQW	336.2	S Acres	ND					S	C65A	NCE	S	APP		
Entire Bay															
Feltons Creek															
21-35-1-1	SA HQW	4.2	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River															
Fork Creek															
21-35-7-13-2	SA ORW	18.3	S Acres	ND					ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Brett Bay															

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AU Number	Classification	Length/Area		Aquatic Life Assessment			Recreation Assessment			Shellfish Harvesting		Stressors	Sources	
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating			GA
Description														
Fulcher Creek														
21-35-1-6a1	SA HQW	2.3	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to DEH closure line From DEH closure line to North River												E-6		
21-35-1-6a2	SA HQW	7.2	S Acres	ND				ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
From source to DEH closure line From DEH closure line to North River												E-6		
21-35-1-6a3	SA HQW	3.9	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From DEH closure line to North River												E-6		
21-35-1-6b1	SA HQW	0.3	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From DEH closure line to North River												E-6		
21-35-1-6b2	SA HQW	0.7	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From DEH closure line to North River												E-6		
Fulchers Creek														
21-35-7-12	SA ORW	39.5	S Acres	ND				ND			S	APP		
From source to Core Sound												E-9		
Gibbs Creek														
21-35-1-10	SA HQW	65.4	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River												E-6		
Gilliklin Creek														
21-35-1-7-1	SA HQW	5.7	S Acres	ND				ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
From source to Ward Creek												E-6		
Glover Creek														
21-35-7-3-1	SA HQW	10.9	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Styron Bay												E-9		
Goose Bay														
21-35-1-9	SA HQW	260.1	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
Entire Bay												E-6		
Great Creek														
21-35-7-22-4	SA ORW	71.9	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Jarrett Bay												E-8		

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AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment			Shellfish Harvesting		Stressors	Sources
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA		
Description														
Great Marsh Creek														
21-35-7-26a	SA ORW	124.0	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Core Sound														
21-35-7-26b	SA ORW	6.3	S Acres	ND				ND			S	APP		
From source to Core Sound														
Henry Jones Creek														
21-35-1-12-3-1a	SA HQW	0.6	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Marina
From source to Westmouth Bay. Erwins Marina														
21-35-1-12-3-1b	SA HQW	43.1	S Acres	ND				ND			S	APP		
From source to Westmouth Bay														
21-35-1-12-3-1c	SA HQW	1.1	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Marina
From source to Westmouth Bay. Calvin Rose Boat Dockage														
Howland Creek														
21-35-7-22-5	SA ORW	26.3	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Jarrett Bay														
Janes Creek														
21-35-1-12-4	SA HQW	23.0	S Acres	ND				ND			S	APP		
From source to The Straits														
Jarrett Bay														
21-35-7-22a	SA ORW	38.7	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From head of bay to DEH conditionally approved open line														
21-35-7-22b	SA ORW	1,110.8	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From DEH conditionally approved open line to Core Sound														
21-35-7-22c1	SA ORW	31.4	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
DEH closed area at embayment at mouth Williston Creek														
21-35-7-22c2	SA ORW	27.7	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
DEH closed area at embayment at mouth Williston Creek														
Jump Run														
21-35-7-23	SA ORW	42.0	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Core Sound														

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AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment			Shellfish Harvesting		Stressors	Sources
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA		
Description														
Lewis Creek														
21-35-7-10-6a	SA HQW	7.8	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Nelson Bay														
21-35-7-10-6b	SA HQW	12.6	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Nelson Bay														
Little Port Branch														
21-35-7-2	SC	2.9	S Miles	ND				ND						
From source to Core Sound (including Atlantic Harbor)														
Lynch Creek														
21-35-1-4	SA HQW	6.8	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River														
Maria Creek														
21-35-7-13-1	SA ORW	39.8	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Brett Bay														
Middens Creek														
21-35-7-24a	SA HQW	21.3	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to DEH closure line														
21-35-7-24b	SA HQW	112.5	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From DEH closure line to Core Sound														
Mingo Creek														
21-35-7-10-3	SC	7.0	S Acres	ND				ND						
From source to Nelson Bay														
Nelson Bay														
21-35-7-10-(1)	SC	234.5	S Acres	NR				ND					Fecal Coliform Bacteria	WWTP NPDES
From mouth of Salters Creek to a line extending from mouth of Broad Creek due east across Nelson Bay														
21-35-7-10-(5)a	SA HQW	17.3	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From a line extending from mouth of Broad Creek due east across Nelson Bay to Core Sound														
21-35-7-10-(5)b	SA HQW	786.8	S Acres	S	PA31	NCE		S	PA31	NCE	I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From a line extending from mouth of Broad Creek due east across Nelson Bay to Core Sound														

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AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment			Shellfish Harvesting		Stressors	Sources
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA		
Description														
Newby Creek														
21-35-1-8a	SA HQW	9.8	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to DEH closure line														
21-35-1-8b	SA HQW	0.6	S Acres	ND				ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
From source to DEH closure line														
North Leopard Creek														
21-35-1-7-2a	SA HQW	10.8	S Acres	ND				ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
From source to Ward Creek														
21-35-1-7-2b	SA HQW	86.6	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Ward Creek														

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				AL Rating	Station	Result	Year/ Parameter	% Exc	REC Rating	Station	Result	SH Rating	GA			
Description																
North River																
21-35-1a1	SA HQW	198.1	S Acres	I	PA32	CE	Turbidity	19.3	S	PA32	NCE	I	PRO	Turbidity	Unknown	
From source to DEH closure line south of Crabbing Creek													E-6	Fecal Coliform Bacteria	Stormwater Runoff	
21-35-1a2	SA HQW	114.4	S Acres	I	PA32	CE	Turbidity	19.3	S	PA32	NCE	I	CAC	Turbidity		
From source to DEH closure line south of Crabbing Creek													E-6	Fecal Coliform Bacteria	Stormwater Runoff	
21-35-1b2	SA HQW	7.6	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Marina	
From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh. Fishermans Island Marina and Coats Landing Harbor on west side of Harkers Island													E-7			
21-35-1b3	SA HQW	12.4	S Acres	ND					ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff	
From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh. CAC area at mouth of Thomas Creek													E-6			
21-35-1b4	SA HQW	5,898.1	S Acres	I	PA32	CE	Turbidity	19.3	S	PA32	NCE	I	CAO	Turbidity	Unknown	
From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and													E-6	Fecal Coliform Bacteria	Stormwater Runoff	
21-35-1b5	SA HQW	192.9	S Acres	ND					ND			S	APP			
From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh													E-5			
21-35-1b6	SA HQW	1.2	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff	
From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh. Canal on west of river													E-6			
21-35-1c1	SA HQW	49.4	S Acres	ND					ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff	
DEH conditionally approved closed area between Davis Bay and North River Marsh													E-6			
21-35-1c2	SA HQW	17.8	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff	
DEH conditionally approved closed area between Davis Bay and North River Marsh													E-6			

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				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA			
Description															
21-35-1d1	SA HQW	50.7	S Acres	ND					ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
DEH closed area between Davis Bay and North River Marsh															
21-35-1d2	SA HQW	138.5	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
DEH closed area between Davis Bay and North River Marsh															
21-35-1e	SA HQW	27.4	S Acres	ND					ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
DEH conditionally approved closed area ato mouth of Newby Creek															
Oyster Creek															
21-35-7-18	SA ORW	128.2	S Acres	ND					ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Core Sound															
Pasture Creek															
21-35-7-10-7	SA HQW	6.0	S Acres	ND					ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Nelson Bay															
Point of Grass Creek															
21-35-7-1	SA ORW	0.4	S Acres	ND					ND			S	APP		
From source to Core Sound															
Salters Creek															
21-35-7-10-2	SC	39.2	S Acres	ND					ND						
From source to Nelson Bay															
Sleepy Creek															
21-35-1-12-1a	SA HQW	144.1	S Acres	ND					ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to The Straits															
21-35-1-12-1b	SA HQW	7.4	S Acres	ND					ND			S	APP		
From source to The Straits															
21-35-1-12-1c	SA HQW	4.0	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Marina
From source to The Straits. Marshallberg Boat Harbor															
Smyrna Creek															
21-35-7-22-1	SA HQW	28.3	S Acres	ND					ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Jarrett Bay															

Table 27

WHITE OAK Subbasin 03-05-04

AU Number	Classification	Length/Area		Aquatic Life Assessment			Recreation Assessment			Shellfish Harvesting		Stressors	Sources	
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating			GA
Description														
South Leopard Creek														
21-35-1-7-3	SA HQW	79.7	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Ward Creek												E-6		
Spit Bay														
21-35-7-21	SA HQW	37.6	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
Entire Bay												E-8		
Styron Bay														
21-35-7-3a	SA ORW	419.7	S Acres	ND				ND			S	APP		
Entire Bay with exception of DEH closed area												E-9		
21-35-7-3b	SA ORW	10.8	S Acres	ND				ND			S	APP		
DEH closed area												E-9		
Styron Creek														
21-35-7-3-3a	SA HQW	10.1	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to DEH closure line at mouth of Cedar Creek												E-9		
21-35-7-3-3b	SA HQW	6.6	S Acres	ND				ND			S	APP		
From DEH closure line at mouth of Cedar Creek to Core to Styron Bay												E-9		
The Straits														
21-35-1-12a1	SA HQW	1,720.2	S Acres	ND				S	C64	NCE	S	APP		
From Core Sound to North River excluding conditionally approved open section in north west portion adjacent to North River												E-6		
21-35-1-12a2	SA HQW	2.2	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From Core Sound to North River excluding conditionally approved open section in north west portion adjacent to North River												E-6		
21-35-1-12b	SA HQW	94.1	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
Conditionally approved open section in north west portion adjacent to North River												E-6		

Table 27

WHITE OAK Subbasin 03-05-04

AU Number	Classification	Length/Area		Aquatic Life Assessment			Recreation Assessment			Shellfish Harvesting		Stressors	Sources	
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating			GA
Description														
Thomas Creek														
21-35-1-5a	SA HQW	4.1	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River														
21-35-1-5b	SA HQW	0.4	S Acres	ND				ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River														
Turner Creek														
21-35-1-11-1	SA HQW	51.8	S Acres	ND				ND			I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
From source to Davis Bay														
Tush Creek														
21-35-7-25	SA ORW	42.8	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Core Sound														
Wade Creek														
21-35-7-22-7a	SA HQW	25.9	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to DEH closure line														
21-35-7-22-7b	SA HQW	117.8	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From DEH closure line to Jarrett Bay														
Ward Creek														
21-35-1-7a	SA HQW	214.9	S Acres	S	PA33	NCE		S	PA33	NCE	I	CAC	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River														
21-35-1-7b	SA HQW	366.4	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to North River														
Westmouth Bay														
21-35-1-12-3a	SA HQW	385.1	S Acres	ND				ND			S	APP		
Entire Bay with the exception of DEH closed area on south side of Bay														
21-35-1-12-3b1	SA HQW	2.1	S Acres	ND				ND			S	APP		
DEH closed area on south side of Bay. Taylors Boat Dock and Railway														
21-35-1-12-3b2	SA HQW	4.0	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Marina
Entire Bay with the exception of DEH closed area on south side of Bay. NC Shellfish Enterprises														

Table 27

WHITE OAK Subbasin 03-05-04

AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment			Shellfish Harvesting		Stressors	Sources
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	SH Rating	GA		
Description														
Whitehurst Creek														
21-35-1-12-2a	SA HQW	80.7	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to The Straits														
21-35-1-12-2b	SA HQW	12.7	S Acres	ND				ND			S	APP		
From source to The Straits														
Willis Creek														
21-35-7-11	SA ORW	54.8	S Acres	ND				ND			I	CAO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Core Sound														
Williston Creek														
21-35-7-22-6	SA HQW	27.1	S Acres	ND				ND			I	PRO	Fecal Coliform Bacteria	Stormwater Runoff
From source to Jarrett Bay														

Use Categories:	Monitoring data type:	Results:	Use Support Ratings 2006:
AL - Aquatic Life	PF - Fish Community Survey	E - Excellent	S - Supporting, I - Impaired
REC - Recreation	PB - Benthic Community Survey	G - Good	NR - Not Rated
SH - Shellfish Harvesting	PA - Ambient Monitoring Site	GF - Good-Fair	NR*- Not Rated for Recreation (screening criteria exceeded)
	PL- Lake Monitoring	F - Fair	ND-No Data Collected to make assessment
	S, C- DEH RECMON	P - Poor	Results
GA - DEH SS Classification and Growing Area		NI - Not Impaired	CE-Criteria Exceeded > 10% and more than 10 samples
APP- Approved		S- Severe Stress	NCE-No Criteria Exceeded
CAO- Conditionally Approved-Open		M-Moderate Stress	Miles/Acres
CAC- Conditionally Approved-Closed		N- Natural	FW- Fresh Water
PRO- Prohibited			S- Salt Water

Aquatic Life Rating Summary			Recreation Rating Summary			Fish Consumption Rating Summary			Shellfish Harvesting Rating Summary		
S	m	2,991.7 S Acres	S	m	11,316.7 S Acres	I	e	2.9 S Miles	S	m	26,053.9 S Acres
I	m	6,251.3 S Acres	ND		2.9 S Miles	I	e	39,749.3 S Acres	I	m	13,374.0 S Acres
NR	e	234.5 S Acres	ND		28,432.6 S Acres						
ND		2.9 S Miles									
ND		30,271.8 S Acres									

4.2 Use Support Assessment Summary

All surface waters in the state are assigned a classification appropriate to the best-intended use of that water. Waters are regularly assessed by DWQ to determine how well they are meeting their best-intended use. In subbasin 03-05-04, use support was assigned for (1) fish consumption, (2) aquatic life, (3) recreation, and (4) shellfish harvesting, as noted below. For more information about use support methodology, refer to Appendix IV.

(1) All waters are Impaired on an evaluated basis in the fish consumption category because of a fish consumption advise that applies to the entire state. More information on fish consumption use support can be found in Chapter 7.

(2) Waters were assessed for supporting aquatic life using five ambient monitoring stations. There were no benthic macroinvertebrate community samples collected during this assessment period. Refer to the *2005 White Oak River Basinwide Assessment Report* at <http://www.esb.enr.state.nc.us/Basinwide/WOA2005.pdf> and Appendix I for more information on monitoring.

(3) Waters were assessed for supporting recreation activities based on the DEH recreation monitoring program detailed in Chapter 7.

(4) Criteria for making use support determinations for the shellfish harvesting category were based on Division of Environmental Health Sanitary Survey (DEH SS) growing area classifications. The problem parameter for all shellfish waters is the potential for exceeding the fecal coliform standards. Differences in acreage estimates between basin cycles are not just related to changes in water quality. Changes in acreage are related to more refined methods of estimating acreages, changes in growing area classifications, extension of closure areas as a result of additional boat slips associated with marinas, and to changes in use support methodology. Refer to Figure 10 to identify growing area locations within this subbasin.

Waters in the following sections are identified by an assessment unit number (AU#). This number is used to track defined segments in the water quality assessment database, list 303(d) Impaired waters, and is used to identify waters throughout the basin plan. The AU# is a subset of the DWQ index number (classification identification number). A letter attached to the end of the AU# indicates that the assessment is smaller than the DWQ index segment. No letter indicates that the AU# and the DWQ index segment are the same. Table 28 contains a summary of use support ratings by category in subbasin 03-05-04, detailed use support information about specific AU#s and shellfish growing areas follows.

Table 28 Summary of Use Support Ratings by Category in Subbasin 03-05-04

Use Support Rating	Aquatic Life		Recreation		Shellfish Harvesting	
	Freshwater	Saltwater	Freshwater	Saltwater	Freshwater	Saltwater
Monitored Waters						
Supporting	0	2,991.7 ac	0	11,316.7 ac	0	26,053.9 ac
Impaired*	0	6,251.3 ac (68%)	0	0	0	13,374 ac (33.9%)
Total	0	9243 ac	0	11,316.7 ac	0	39,427.9 ac
Unmonitored Waters						
Not Rated	0	234.5 ac	0	0	0	0
No Data	0	2.9 mi 30,271.8 ac	0	2.9 mi 28,432.6 ac	0	0
Total	0	2.9 mi 30,506.3 ac	0	2.9 mi 28,432.6 ac	0	0
Totals						
All Waters*	0	2.9 mi 39,749.3 ac	0	2.9 mi 39,749.3 ac	0	39,427.9 ac

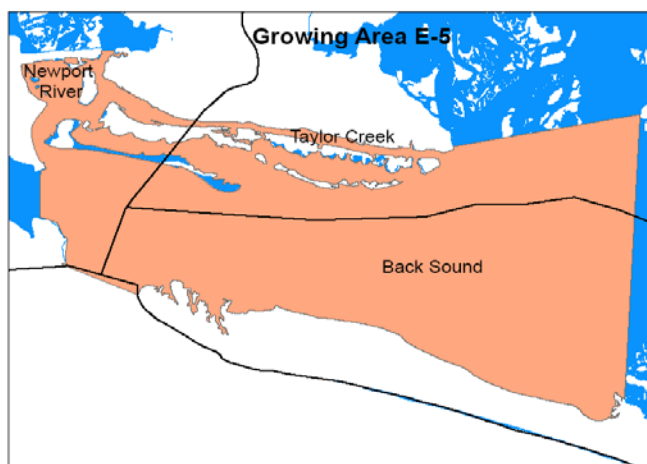
* The noted percent Impaired is the percent of monitored miles/acres only.

4.3 Status and Recommendations for Previously and Newly Impaired Waters

The following waters were either identified as Impaired in the previous basin plan (2001) or are newly Impaired based on recent data. If previously identified as Impaired, the water will either remain on the state’s 303(d) list or will be delisted based on recent data showing water quality improvements. If the water is newly Impaired, it will likely be placed on the 2008 303(d) list. The current status and recommendations for addressing these waters are presented below, and each is identified by an assessment unit number (AU#).

For the Impaired Class SA waters presented below, refer to Chapter 7 for more information and recommendations on shellfish harvesting use support and DEH SS growing area classifications. Refer to Figure 9 for a map of subbasin 03-05-04 and Figure 10 to identify growing area locations in this subbasin. If the entire Class SA water is located within more than one growing area it is noted in the corresponding growing area Table.

4.3.1 Division of Environmental Health Growing Area E-5



The following DWQ Class SA waters and the Impaired assessment units associated with these waters are located within Growing Area E-5 as shown here and in Figure 10 & Table 29.

According to the *Sanitary Survey of Taylor Creek Area, Area E-5*, (DEH, Shellfish Sanitation & Recreational Water Quality Section, October 2002), the most significant threat to the water quality in Taylor Creek Area is nonpoint pollution associated with stormwater and runoff.

The area adjacent to the Beaufort Docks is heavily crowded with boats. The large number of

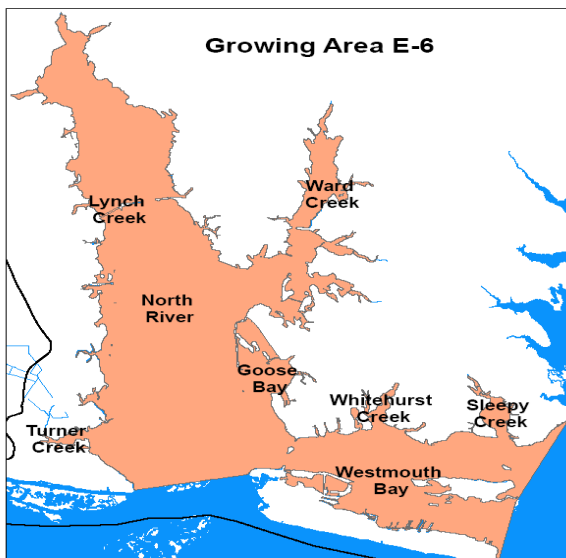
private sailboats and live-aboards in the creek increase the potential for fecal coliform contamination from illegal marine head pumping. Refer to Chapter 3, Sections 3.6 and 4.1 for more information on Taylor Creek.

Table 29 Summary of DEH Growing Area E-5 Classifications in Subbasin 03-05-04

Class SA Water	Assessment Unit #	Growing Area Classification	DEH Growing Area
Back Sound	21-35-(0.5)b	APP	E-5, E-7, E-8
	21-35-(1.5)a1	APP	
	21-35-(1.5)c	APP	
	21-35-(0.5)e2	PRO	
	21-35-(0.5)f	PRO	
	21-35-(1.5)a2	PRO	
	21-35-(1.5)a3	PRO	
	21-35-(0.5)e1	CAO	
North River	21-35-1b5	APP	E-5, E-6, E-7
	21-35-1a1	PRO	
	21-35-1b2	PRO	
	21-35-1b6	PRO	
	21-35-1c2	PRO	
	21-35-1d2	PRO	
	21-35-1a2	CAC	
	21-35-1b3	CAC	
	21-35-1c1	CAC	
	21-35-1e	CAC	
	21-35-1b4	CAO	
	21-35-1d1	CAO	

APP=Approved, PRO=Prohibited, CAC=Conditionally Approved Closed, CAO=Conditionally Approved Open

4.3.2 Division of Environmental Health Growing Area E-6



The following DWQ Class SA waters and the Impaired assessment units associated with these waters are located within Growing Area E-6 as shown here and in Figure 10 & Table 30.

According to the *Sanitary Survey of North River Area, Area E-6, (DEH, Shellfish Sanitation & Recreational Water Quality Section, November 2005)* there are some improvements in water quality in portions of this growing area. Several areas will be reclassified from conditionally approved closed to conditionally approved open as a result of this survey: 124 acres in upper North River, 65 acres in Ward Creek and 20 acres in Thomas Creek. Due to an increase in boat slips at Marshallberg Harbor, additional closures will be recommended in this portion of the area.

The area has a 70 square mile watershed in Carteret County. Land cover is primarily mixed forest, wetlands, grasslands and cultivated lands. Both oyster and clam production is considered

good. The town of Beaufort WWTP discharges to Taylor Creek in Area E-5, but dye studies have shown that a failure at the WWTP could impact water quality in Area E-6. This WWTP is under a SOC with DWQ while the town upgrades the facility. Three sewage overflows due to heavy rain occurred in April 2003; some of this overflow reached Turner Creek. The highest volume incident was 94,000 gallons.

Several waterfront areas and subdivisions are being developed in the area; increasing the risk to shellfish harvesting resources due to stormwater runoff and the potential for septic system failures. Ten septic system failures, graywater discharges or potential problems were noted during the recent survey; these were turned over to the county health department for action. The county health department reports improvements to the North River community septic system situation. Since the last survey in 2001, at least 60 septic systems have been repaired. However, the situation still has potential problems because not all systems were repaired. Concentrations of ducks and dog pens on the waterfront were noted in several areas.

A few large farms drain into this area, including Open Grounds, North River and Taylor Farms. The North River Farms Restoration Project, funded by the CWMTF in conjunction with the NC Coastal Federation, is using \$3 million to purchase 6,000 acres of farmland on the north east side of North River. Parts of the property will be converted to wetlands and monitored to determine the effectiveness of wetlands to buffer agricultural activities in the watershed.

DEH has recommended that portions of Area E-6 will be reclassified surrounding Marshallberg Boat Harbor. DEH will recommend closing additional areas to adjust the closure at the Harbor to 325 feet from the last docking space. L.R. Rose marina was determined to be in violation of its permit limit for boat slips and will be required to remove the excess boat slips; no reclassifications are required. Additionally, three canals in the area will be reclassified as prohibited; resulting in eight additional acres of closed waters.

Table 30 Summary of DEH Growing Area E-6 Classifications in Subbasin 03-05-04

Class SA Water	Assessment Unit #	Growing Area Classification	DEH Growing Area
Crabbing Creek	21-35-1-3	CAC	E-6
Davis Bay (Cheney Bay)	21-35-1-11a 21-35-1-11b2 21-35-1-11b1	PRO CAC CAC	E-6
Deep Creek	21-35-1-2	PRO	E-6
Feltons Creek	21-35-1-1	PRO	E-6
Fulcher Creek	21-35-1-6a1 21-35-1-6b1 21-35-1-6a2 21-35-1-6a3 21-35-1-6b2	PRO PRO CAC CAO CAO	E-6
Gibbs Creek	21-35-1-10	CAO	E-6
Gilliklin Creek	21-35-1-7-1	CAC	E-6
Goose Bay	21-35-1-9	CAO	E-6
Henry Jones Creek	21-35-1-12-3-1b 21-35-1-12-3-1a 21-35-1-12-3-1c	APP PRO PRO	E-6
Lynch Creek	21-35-1-4	CAO	E-6
Newby Creek	21-35-1-8a 21-35-1-8b	PRO CAC	E-6
North Leopard Creek	21-35-1-7-2b	CAO	E-6

	21-35-1-7-2a	CAC	
North River	21-35-1b5	APP	E-5, E-6, E-7
	21-35-1a1	PRO	
	21-35-1b2	PRO	
	21-35-1b6	PRO	
	21-35-1c2	PRO	
	21-35-1d2	PRO	
	21-35-1a2	CAC	
	21-35-1b3	CAC	
	21-35-1c1	CAC	
	21-35-1e	CAC	
	21-35-1b4	CAO	
	21-35-1d1	CAO	
Sleepy Creek	21-35-1-12-1b	APP	E-6
	21-35-1-12-1c	PRO	
	21-35-1-12-1a	CAO	
South Leopard Creek	21-35-1-7-3	CAO	E-6
The Straits	21-35-1-12a1	APP	E-6
	21-35-1-12a2	PRO	
	21-35-1-12b	CAO	
Thomas Creek	21-35-1-5a	PRO	E-6
	21-35-1-5b	CAC	
Turner Creek	21-35-1-11-1	CAC	E-6
Ward Creek	21-35-1-7a	CAC	E-6
	21-35-1-7b	CAO	
Westmouth Bay	21-35-1-12-3a	APP	E-6
	21-35-1-12-3b1	APP	
	21-35-1-12-3b2	PRO	
Whitehurst Creek	21-35-1-12-2b	APP	E-6
	21-35-1-12-2a	CAO	

APP=Approved, PRO=Prohibited, CAC=Conditionally Approved Closed, CAO=Conditionally Approved Open

Crabbing Creek, Davis Bay (Cheney Bay), Deep Creek, Feltons Creek, Fulcher Creek, Gibbs Creek, Gilliklin Creek, Goose Bay, Henry Jones Creek, Lynch Creek, Newby Creek, North Leopard Creek, Sleepy Creek, South Leopard Creek, Thomas Creek and Ward Creek

These water bodies are Impaired for shellfish harvesting. Each is classified by DEH SS in the table above for growing area E-6 due to potential fecal coliform bacteria levels, and will remain on the state's 303(d) list of Impaired waters. Henry Jones Creek will be added to the state's 2008 303(d) list of Impaired waters. An additional 43.1 acres (AU#21-35-1-12-3-1b) and 7.4 acres (AU# 21-35-1-12-1b) are classified as approved and considered Supporting shellfish harvesting.

North River [AU# 21-35-1a1, a2, b2, b3, b4, b6, c1, c2, d1, d2 and e]

2001 Impaired Class SA Waters Status for North River and Tributaries

North River and adjacent bays and tributaries were not supporting shellfish harvesting. These areas were classified as prohibited/restricted and permanently closed to shellfish harvesting. The population of the area around Beaufort was growing. Potential sources of pollution included runoff from subdivisions, agricultural land and wildlife. Septic system problems were noted around the community of North River (DENR, 2001).

Current Status

All segments of the North River (6,515.6 acres), are Impaired for shellfish harvesting with the exception of 21-35-1b4 (5,898.1 acres). North River is classified by DEH SS as conditionally approved closed, conditionally approved open and prohibited in growing areas E-5, E-6 and E-7 due to potential fecal coliform bacteria levels. Additionally, segments [21-35-1a1, 1a2 and 1b4] are Impaired in the aquatic life category due to exceeding turbidity standards in 19 percent of samples at site PA32. North River will remain on the state's 303(d) list of Impaired waters. An additional 192.9 acres are classified as approved and are considered to Support shellfish harvesting.

Open Grounds Farm, North River Farms and Taylor Farm are three large farms that drain into the North River and adjacent estuaries. Open Grounds Farm is the largest crop farm east of the Mississippi River. During the early 1970's more than 45,000 acres were converted for agricultural uses and were ditched to drain and irrigate the land. The conversion of the land effected water quality conditions with increased sedimentation and fecal coliform levels in shellfish growing areas E-6, E-8, E-9. Improved farming techniques and restoration activities are currently being used to reduce and treat runoff from these farms. Today Open Grounds Farm has adopted several BMPs to improve their land use practices and reduce pollution. Sedimentation and nutrient inputs are reduced by practicing no-till cropping, the use of flashboard risers in the ditches and riparian buffers. Restoration activities have involved land acquisition of adjacent areas by nonprofit organizations, private owners and partnerships for a total of 6,000 acquired between the groups since 1999. Reconverting the property back to wetlands may be able to treat 8,000 acres of farmland, including portions of Open Grounds Farms.

Water quality monitoring at sites in North River Farms and in restored wetlands occurred between 2003-2006, through collaborative efforts of North Carolina Coastal Federation, Duke University and Carteret Community College. This project documented water quality data from waters entering and leaving agricultural and restored areas of the farm. Samples with the highest concentration of fecal coliform were from sites associated with wildlife areas and residences that contribute to fecal coliform by possibly pet waste or ailing septic systems. The site with the highest nutrient concentration drains several hundred acres of farmland, but is also downstream of the farm office, maintenance shed, and fertilizer storage and loading area. Flow recording allowed for continuous measurements of fluxes of water and materials during both rain events and low flow periods. Runoff volumes were recorded at an increase in 10 to 100 times after rain events. Turbidity and suspended solids increased by a factor of two to five times during runoff events and nutrient concentrations increased by a factor of two. A 1.5 inch rainfall caused loading to occur at a rate of 20 to 500 times compared to between runoff events. This notable increase in bacteria, sediment, and nutrient loading supports efforts needed to capture and treat runoff from a 1.5 inch rainfall event. Significant reductions in nutrients and freshwater loading resulted in waters flowing through the wetlands restoration area. Wetland restoration may significantly reduce the impacts of farm runoff on estuary water quality. If current farm runoff continues untreated valuable estuarine habitats and fisheries may be permanently lost.

The Straits [AU# 21-35-1-12a2 and b]

The Straits from Core Sound to conditionally approved open section in northwest portion adjacent to North River (96.3 acres), is Impaired for shellfish harvesting. The Straits are classified by DEH SS as conditionally approved open and prohibited in growing area E-6 due to potential fecal coliform bacteria levels. The Straits will remain on the state's 303(d) list of Impaired waters. Assessment unit 21-35-1-12a2 (2.2 acres) will be added to the 2008 Impaired

waters list. An additional 1,720.2 acres (AU#21-35-1-12a1) are classified approved and considered Supporting shellfish harvesting.

Turner Creek [AU# 21-35-1-11-1]

Turner Creek from source to Davis Bay (51.8 acres), is Impaired for shellfish harvesting. Turner Creek is classified by DEH SS as conditionally approved closed in growing area E-6 due to potential fecal coliform bacteria levels. The town of Beaufort had at least one lift station malfunction lead to 500 gallons of sewage being discharged into a ditch leading to Turner Creek in 2003. Turner Creek will remain on the state's 303(d) list of Impaired waters.

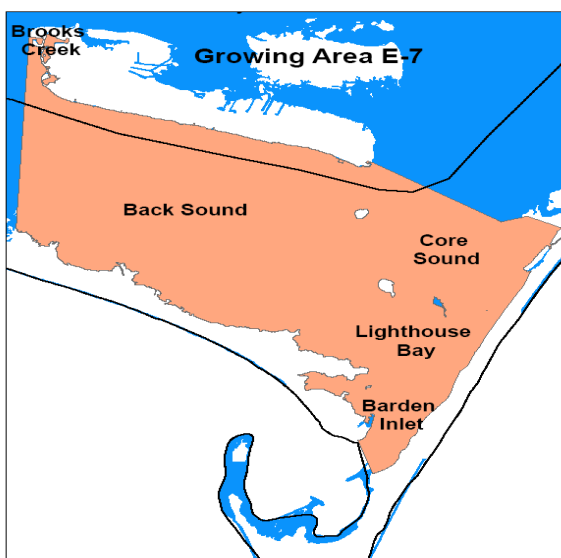
Westmouth Bay [AU# 21-35-1-12-3b2]

Westmouth Bay is classified by DEH SS as prohibited in growing area E-6 due to potential fecal coliform bacteria levels resulting in 4.0 acres (AU# 21-35-1-12-3b2) being Impaired for shellfish harvesting. Westmouth Bay will remain on the state's 303(d) list of Impaired waters. An additional 387.2 acres (AU# 21-35-1-12-3a and 3b1) are classified as approved and considered Supporting shellfish harvesting and AU# 21-35-1-12-3b1 will be recommended for removal from the 303(d) list (2.1 acres).

Whitehurst Creek [AU# 21-35-1-12-2a]

Whitehurst Creek from source to The Straits (80.7 acres), is Impaired for shellfish harvesting. Whitehurst Creek is classified by DEH SS as conditionally approved open in growing area E-6 due to potential fecal coliform bacteria levels. Whitehurst Creek will remain on the state's 303(d) list of Impaired waters. An additional 12.7 acres (AU# 21-35-1-12-2b) is approved and considered Supporting shellfish harvesting and will be recommended for removal from the 303(d) list.

4.3.3 Division of Environmental Health Growing Area E-7



The following DWQ Class SA waters and the Impaired assessment units associated with these waters are located within Growing Area E-7 as shown here and in Figure 10 & Table 31.

According to the *Sanitary Survey of Back Sound Area, Area E-7, (DEH, Shellfish Sanitation & Recreational Water Quality Section, June 2005)* water quality is considered to be excellent in this area with little change in water quality over time and only moderate development. The watershed for this area is only approximately 20 square miles. Both oyster and clam production is good. The only developed area is on the southern side of Harkers Island. The new marina at Harkers

Village has a fixed pump out station. At the National Park Service Marina 11 slips were counted during the 2005 survey. A 100 foot shellfish harvesting closure was recommended in accordance

with DEH rules. A currently closed area around the Ellis Yeoman Fish House is being recommended by DEH for open status due to the removal of all docking facilities and noted improvements in water quality in this vicinity.

Table 31 Summary of DEH Growing Area E-7 Classifications in Subbasin 03-05-04

Class SA Water	Assessment Unit #	Growing Area Classification	DEH Growing Area
Back Sound	21-35-(0.5)b	APP	E-5, E-7, E-8
	21-35-(1.5)a1	APP	
	21-35-(1.5)c	APP	
	21-35-(0.5)e2	PRO	
	21-35-(0.5)f	PRO	
	21-35-(1.5)a2	PRO	
	21-35-(1.5)a3	PRO	
	21-35-(0.5)e1	CAO	
North River	21-35-1b5	APP	E-5, E-6, E-7
	21-35-1a1	PRO	
	21-35-1b2	PRO	
	21-35-1b6	PRO	
	21-35-1c2	PRO	
	21-35-1d2	PRO	
	21-35-1a2	CAC	
	21-35-1b3	CAC	
	21-35-1c1	CAC	
	21-35-1e	CAC	
	21-35-1b4	CAO	
	21-35-1d1	CAO	
	Brooks Creek	21-35-1-13b	
21-35-1-13a		PRO	

APP=Approved, PRO=Prohibited, CAC=Conditionally Approved Closed, CAO=Conditionally Approved Open

Back Sound [AU# 21-35-(0.5)e1, e2, f, 21-35-(1.5)a2, a3, c]

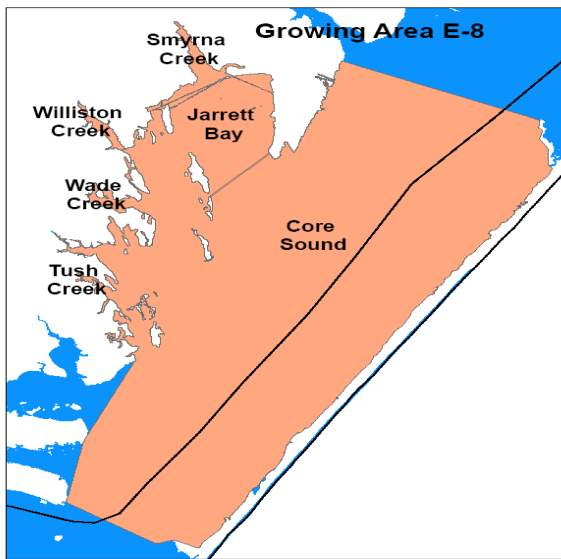
Back Sound (297.8 acres), is Impaired for shellfish harvesting. Back Sound is classified by DEH SS as conditionally approved open and prohibited in growing area E-5 and E-7 due to potential fecal coliform bacteria levels. Additional areas of Back Sound are discussed in Chapter 3.

Back Sound will remain on the state’s 303(d) list of Impaired waters. An additional 9.6 acres in AU# 1.5a2 and a3 will be added to the 2008 303(d) list. Due to a DEH reclassification of 6.4 acres to approved, assessment unit 21-35-(1.5)c will be removed from the state 303(d) list. An additional 1,608.3 acres are classified approved and considered Supporting shellfish harvesting.

Brooks Creek [AU# 21-35-1-13a and b]

Brooks Creek from source to North River (14.6 acres), is Impaired for shellfish harvesting. Brooks Creek is classified by DEH SS as prohibited in growing area E-7 due to potential fecal coliform bacteria associated with two marinas and many private boat docks. Brooks Creek will remain on the state’s 303(d) list of Impaired waters. An additional 2.2 acres (AU# 21-35-1-13b) is classified approved and considered Supporting shellfish harvesting and will be recommended for removal from the 303(d) list.

4.3.4 Division of Environmental Health Growing Area E-8



The following DWQ Class SA waters and the Impaired assessment units associated with these waters are located within Growing Area E-8 as shown here and in Figure 10 & Table 32.

According to the *Sanitary Survey of Core Sound Area, Area E-8 and E-9*, (DEH. Shellfish Sanitation Unit, February 2002 and March 2006) there has been a decline in water quality since the last survey in 2002. The area is a productive shellfish harvest area for both clams and oysters. This area is sparsely populated (~1,500), with little population change since 2001, but development interests have increased in this area. The communities of Marshallberg, Smyrna, Williston and Davis are

adjacent to the shoreline and drainage is facilitated by a system of ditches. North River and Open Grounds Farms are two large crop-farming operations that also contribute to deteriorating water quality conditions. Stormwater runoff is considered to be the largest contributor to water quality degradation in E-8.

Portions of this area are low-lying with high water tables that do not provide adequate conditions for septic systems. Many of the septic systems in these low-lying areas are considered to be failing at some point during the year. Four septic systems were found in violation during the 2006 survey, three of them near conditionally approved open waters, including two on waterfront property. In addition, one graywater discharge was discovered draining into a forested area. The county health department was notified for remedial actions. The 2006 sanitary survey resulted in a recommendation to close an additional 25 acres in area E-8, with closure lines extended on Williston Creek and Middens Creek.

A fuel spill of approximately 100 to 200 gallons of diesel fuel occurred in Williston Creek in December 2000 following a tractor-trailer accident. A significant portion of the spill reached Williston Creek and a partial closure resulted until the fuel dissipated.

Table 32 Summary of DEH Growing Area E-8 Classifications in Subbasin 03-05-04

Class SA Water	Assessment Unit #	Growing Area Classification	DEH Growing Area
Back Sound	21-35-(0.5)b	APP	E-5, E-7, E-8
	21-35-(1.5)a1	APP	
	21-35-(1.5)c	APP	
	21-35-(0.5)e2	PRO	
	21-35-(0.5)f	PRO	
	21-35-(1.5)a2	PRO	
	21-35-(1.5)a3	PRO	
	21-35-(0.5)e1	CAO	
Broad Creek	21-35-7-22-3	CAO	E-8
Ditch Cove	21-35-7-22-2	CAO	E-8
Great Creek	21-35-7-22-4	CAO	E-8

Great Marsh Creek	21-35-7-26b 21-35-7-26a	APP CAO	E-8
Howland Creek	21-35-7-22-5	CAO	E-8
Jarrett Bay	21-35-7-22a 21-35-7-22c1 21-35-7-22b 21-35-7-22c2	PRO PRO CAO CAO	E-8
Jump Run	21-35-7-23	CAO	E-8
Middens Creek	21-35-7-24a 21-35-7-24b	PRO CAO	E-8
Smyrna Creek	21-35-7-22-1	PRO	E-8
Spit Bay	21-35-7-21	CAO	E-8
Tush Creek	21-35-7-25	CAO	E-8
Wade Creek	21-35-7-22-7a 21-35-7-22-7b	PRO CAO	E-8
Williston Creek	21-35-7-22-6	PRO	E-8

APP=Approved, PRO=Prohibited, CAC=Conditionally Approved Closed, CAO=Conditionally Approved Open

Broad Creek (Jarrett Bay), Ditch Cove, Great Creek, Howland Creek, Jarrett Bay, Jump Run, Smyrna Creek, Spit Bay, Tush Creek, Wade Creek and Williston Creek

These water bodies are Impaired for shellfish harvesting. Each is classified by DEH SS in the table above for growing area E-8 due to potential fecal coliform bacteria levels, and will remain on the state’s 303(d) list of Impaired waters. (Jump Run, Spit Bay and Tush Creek will be added to the state’s 2008 303(d) list of Impaired waters.)

Great Marsh Creek [AU# 21-35-7-26a]

Great Marsh Creek from source to Core Sound (124.0 acres), is Impaired for shellfish harvesting. Great Marsh Creek is classified by DEH SS as conditionally approved open in growing area E-8 due to potential fecal coliform bacteria levels. Great Marsh Creek will be added to the state’s 2008 303(d) list of Impaired waters. An additional 6.3 acres (AU# 21-35-7-26b) are classified as approved and considered Supporting shellfish harvesting.

Jarrett Bay [AU# 21-35-7-22a, b, c1 and c2]

Jarrett Bay from head of Bay to DEH closed area at embayment at mouth of Williston Creek (1,208.6 acres), is Impaired for shellfish harvesting. Jarrett Bay is classified by DEH SS as conditionally approved open and prohibited in growing area E-8 due to potential fecal coliform bacteria levels. Jarrett Bay will remain on the state’s 303(d) list of Impaired waters.

Draft Total Maximum Daily Load (TMDL) for Fecal Coliform for Jarrett Bay and Its Embayment, North Carolina

Jarrett Bay is located in Carteret County, north of Morehead City along the North Carolina coast. The Bay is located within the shellfish area designated E-8 by the Division of Environmental Health (DEH). The main portion of Jarrett Bay is Conditionally Approved Open, while the tributaries Williston Creek, Wade Creek and Smyrna Creek are prohibited due to excessive levels of fecal coliform bacteria. A Draft TMDL for fecal Coliform was completed in April 2007. For more information on TMDL modeling calculations please visit DWQ’s website <http://h2o.enr.state.nc.us/tmdl/>. It is estimated that the major fecal coliform load contributions are nonpoint sources, including livestock, wildlife, pets, and failing septic systems. The goal of load allocation is to determine the estimated loads for each drainage area while ensuring that the

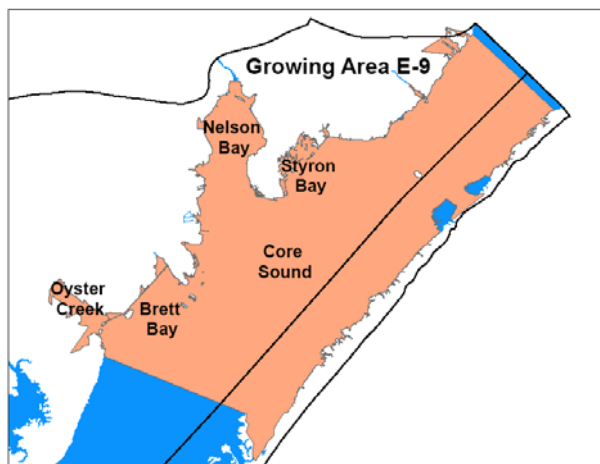
water quality standard can be attained. The load reductions needed in the watershed of each restricted shellfish harvesting area to meet the shellfish criteria and the load allocations required to meet the TMDL are 74% in Williston Creek, 88% in Wade Creek and 91% in Smyrna Creek.

Draft analysis of existing data provided by the NC DEH Shellfish Sanitation section for Howland Creek, Ditch Cove, Broad Creek, Great Creek, and Jarrett Bay does not indicate that there is an exceedance of the North Carolina Division of Water Quality (DWQ) Surface Water Standard for shellfish harvesting areas in Class SA waters. The purpose of the monitoring performed by the DEH Shellfish Sanitation program is to protect public health and therefore, to determine when waters are safe for shellfishing. For this reason, evaluation of the DEH Shellfish Sanitation water quality data will not always indicate an exceedance of the standard, and in these cases, development of TMDLs will not be appropriate. For DWQ's purposes, these waterbodies or assessment units (AUs) will be considered impaired based on DEH's closure policy, and they will be moved from Category 5 to Category 4CS in DWQ's Integrated Report to the US EPA. It should be noted that the Jarrett Bay area has a conditional management plan where the bay is temporarily closed to shellfish harvest after 2.0 inches of rain or more in a 24-hour period. The area is not re-opened to shellfish harvest again until satisfactory water samples are obtained. In the future, data needed for TMDL development should include samples collected immediately after a rainfall event causing closure of waterbodies. Jarrett Bay will remain on the state's 303(d) list of Impaired waters.

Middens Creek [AU# 21-35-7-24a and b]

Middens Creek from source to Core Sound (133.8 acres), is Impaired for shellfish harvesting. Middens Creek is classified by DEH SS as conditionally approved open and prohibited in growing area E-8 due to potential fecal coliform bacteria levels. Middens Creek will remain on the state's 303(d) list of Impaired waters. Assessment unit 21-35-7-24b (112.5 acres) will be added to the 2008 Impaired waters list.

4.3.5 Division of Environmental Health Growing Area E-9



The following DWQ Class SA waters and the Impaired assessment units associated with these waters are located within Growing Area E-9 as shown here and in Figure 10 & Table 33.

According to the *Sanitary Survey of Core Sound Area, Area E-8 and E-9*, (DEH, Shellfish Sanitation & Recreational Water Quality Section, February 2002 and March 2006) there is decline in water quality since the 2002 sanitary survey. The area is a productive shellfish harvest area for both

clams and oysters. Population surrounding area E-9 is sparse (~1,500) with little population change since 2001. Elevations in the Stacy, Atlantic and Sea Level communities are low in some areas and many septic systems do not function well, especially in the winter months when water

table levels are higher. Two septic failures were reported to the health department and both were near conditionally approved open areas. Ditches facilitate stormwater drainage for these communities. Stormwater runoff from Smyrna Farms and Open Grounds Farm is the primary source of nonpoint pollution to the area. Logging projects and open drainage ditch canals may increase fecal coliform loading during heavy rain events.

Development activities are expanding north of Stacy with the addition of a subdivision, stores, and a new marina. Wastewater from these homes will be pumped across Nelson Bay to the package treatment plant at Snug Harbor. Waters are currently closed in this area, but there is concern that development activity will impact shellfish activities downstream.

The 2002 report noted some improvement in Lewis Creek, which will result in the opening of approximately 14 acres of shellfish waters as conditionally approved open. However, results of the 2006 survey resulted in the recommendation to close 14 acres, with the addition of new monitoring sites in area E-9.

Table 33 Summary of DEH Growing Area E-9 Classifications in Subbasin 03-05-04

Class SA Water	Assessment Unit #	Growing Area Classification	DEH Growing Area
Brett Bay	21-35-7-13b 21-35-7-13a	APP CAO	E-9
Cedar Creek	21-35-7-3-3-1	PRO	E-9
Core Sound	21-35-7a1 21-35-7a3 21-35-7a4 21-35-7a5 21-35-7a6 21-35-7a2 21-35-7b 21-35-7c 21-35-7d	APP PRO PRO PRO PRO CAO CAO CAO CAO	E-9, F-4
Fork Creek	21-35-7-13-2	CAO	E-9
Glover Creek	21-35-7-3-1	PRO	E-9
Lewis Creek	21-35-7-10-6a 21-35-7-10-6b	PRO CAO	E-9
Maria Creek	21-35-7-13-1	CAO	E-9
Nelson Bay	21-35-7-10-(5)a 21-35-7-10-(5)b	PRO CAO	E-9
Oyster Creek	21-35-7-18	CAO	E-9
Pasture Creek	21-35-7-10-7	CAO	E-9
Styron Creek	21-35-7-3b 21-35-7-3a	PRO APP	E-9
Willis Creek	21-35-7-11	CAO	E-9

APP=Approved, PRO=Prohibited, CAC=Conditionally Approved Closed, CAO=Conditionally Approved Open

Annis Run [AU# 21-35-7-3-2]

Annis Run from source to Styron Bay is on the 2004 303(d) list of Impaired waters for shellfish harvesting. This segment is now considered Supporting shellfish harvesting (4.1 acres) due to a DEH SS approved classification for this area. This segment will be recommended for removal from the (303)d list.

Brett Bay [AU# 21-35-7-13a]

Brett Bay (161.4 acres) is Impaired for shellfish harvesting. Brett Bay is classified by DEH SS as conditionally approved open in growing area E-9 due to potential fecal coliform bacteria levels. Brett Bay will be added to the state's 2008 303(d) list of Impaired waters. An additional 24.6 acres (AU# 21-35-7-13b) are classified as approved and considered Supporting shellfish harvesting.

Cedar Creek, Fork Creek, Glover Creek, Lewis Creek, Maria Creek, Pasture Creek and Willis Creek

These water bodies are Impaired for shellfish harvesting. Each is classified by DEH SS in the table above for growing area E-9 due to potential fecal coliform bacteria levels, and will remain on the state's 303(d) list of Impaired waters. (Fork Creek (18.3ac) and Maria Creek (39.8ac) will be added to the state's 2008 303(d) list of Impaired waters.)

Core Sound [AU# 21-35-7a2, a3, a4, a5, a6, 7b, 7c and 7d]

2001 Impaired Class SA Waters Status for Core Sound and Western Bays and Tributaries (Areas E-8 and E-9)

There were 261 acres of tributaries to Jarrett Bay and Nelson Bay that were not supporting shellfish harvesting. These areas were classified as prohibited/restricted and permanently closed to shellfish harvesting. Potential sources of pollution included runoff from residential and agricultural land, domesticated animals, forestry practices and wildlife. Septic systems were a noted problem in low-lying areas (DENR, 2001).

Current Status

Core Sound from the northern boundary of White Oak River Basin to Back Sound to the mouth of Nelson Bay and the at mouth of Oyster Creek (1,572.6 acres) is Impaired for shellfish harvesting. Core Sound is classified by DEH SS as conditionally approved open and prohibited in growing area E-9 due to potential fecal coliform bacteria levels. Core Sound will remain on the state's 303(d) list of Impaired waters. An additional 21,202.1 acres (AU# 21-35-7a1) are classified as approved and are considered Supporting shellfish harvesting.

Nelson Bay [AU# 21-35-7-10-(5)a and b]

Nelson Bay from a line extending from mouth of Broad Creek due east across Nelson Bay to Core Sound (804.1 acres) is Impaired for shellfish harvesting. Nelson Bay is classified by DEH SS as conditionally approved open and prohibited in growing area E-9 due to potential fecal coliform bacteria levels. Additionally, AU# 21-35-7-10-(5)b is Supporting in the aquatic life category because criteria were not exceeded at site PA31.

Taylor Hospital and Extended Care WWTP (NC0047759) had significant violations of fecal coliform permit limits during the last two years of the assessment period. The NPDES compliance process will be used to address the significant permit violations noted above. Nelson Bay will remain on the state's 303(d) list of Impaired waters.

Oyster Creek [AU# 21-35-7-18]

Oyster Creek from source to Core Sound (128.2 acres) is Impaired for shellfish harvesting. Oyster Creek is classified by DEH SS as conditionally approved open in growing area E-9 due to potential fecal coliform bacteria levels. Oyster Creek will remain on the state's 303(d) list of Impaired waters.

According to the 2002 DEH SS report there was a large concentration of geese found near the mouth of the creek. There was also an impoundment near Oyster Creek that attracts waterfowl during the winter months.

Styron Creek [AU# 21-35-7-3-a]

Styron Creek from source to DEH closure line at mouth of Cedar Creek (10.1 acres) is Impaired for shellfish harvesting. Styron Creek is classified by DEH SS as prohibited in growing area E-9 due to potential fecal coliform bacteria levels. Styron Creek will remain on the state's 303(d) list of Impaired waters. An additional 6.6 acres (AU# 21-35-7-3-b) are classified as approved and considered Supporting shellfish harvesting.

Styron Bay [AU# 21-35-7-3-b]

Styron Bay is currently on the 303(d) list of Impaired waters for shellfish harvesting. The entire Styron Bay is now DEH SS classified as approved and is considered to Support shellfish harvesting. Styron Bay will be recommended for removal from the 303(d) list.

4.3.6 Impaired Freshwater and Non-Shellfish Harvesting Waters

The following waters were either identified as Impaired in the previous basin plan (2001) or are newly Impaired based on recent data (Table 34). If previously identified as Impaired, the water will either remain on the state's 303(d) list or will be delisted based on recent data showing water quality improvements. If the water is newly Impaired, it will likely be placed on the 2008 303(d) list. The current status and recommendations for addressing these waters are presented below, and each is identified by an assessment unit number (AU#).

Table 34 Summary of Currently Impaired Freshwater and Non-Shellfish Harvesting Waters in Subbasin 03-05-04

Class SB/SC Water	Assessment Unit #	Aquatic Life	Recreation	Fish Consumption
Broad Creek (Nelson Bay)	21-35-7-10-4	I	S	I

I= Impaired, S= Supporting

Broad Creek (Nelson Bay) [AU# 21-35-7-10-4]

Broad Creek from source to Nelson Bay (40.6 acres), is Impaired for aquatic life because criteria exceeded low DO in 29 percent of samples and low pH in 27 percent of the samples at site PA34.

4.4 Local Initiatives for Subbasin 03-05-04

As part of The North River Farms Restoration Project, 6,000 acres of farmland stretching from the North River to Jarrett Bay was purchased by North Carolina Coastal Federation (NCCF) and partner organizations, funded in part by the CWMTF. This area is under conservation easement and will be restored over a ten-year time period. As of 2006, restoration was complete on 550

acres of North River Farms, with 230 additional acres scheduled to be completed in 2007. Eventually approximately 5,000 acres of prior converted cropland will be restored to wetlands.

This is a high priority area for the NC Oyster Plan. Oyster habitat area has been restored through North Carolina Coastal Federation at Williston Creek. Two acres of oyster habitat area were restored in 2004. This project also included educational opportunities for local students. Four living shorelines projects in this subbasin are located in Marshallberg and Harkers' Island providing shoreline stabilization while also restoring wetland habitat area and providing a stormwater buffer. For more information see Chapter 15.

Onslow Bight Conservation Forum targets this area for conservation.