5.2.2 State Authorities for NC's Water Quality Program

- **G.S. 143-214.1** - Directs and empowers the NC Environmental Management Commission (EMC) to develop a water quality standards and classifications program.
  G.S. 143-214.2 - Prohibits the discharge of wastes to surface waters of the state without a permit.
- **G.S. 143-214.5** - Provides for establishment of the state Water Supply Watershed Protection Program.
- **G.S. 143-214.7** - Directs the EMC to establish a Stormwater Runoff Program.
- **G.S. 143-215** - Authorizes and directs the EMC to establish effluent standards and limitations.
- **G.S. 143-215.1** - Outlines methods for control of sources of water pollution (NPDES and nondischarge permits, statutory notice requirements, public hearing requirements, appeals, etc.).
- **G.S. 143-215.1** - Empowers the EMC to issue *special orders* to any person whom it finds responsible for causing or contributing to any pollution of the waters of the state within the area for which standards have been established.
- **G.S. 143-215.3(a)** - Outlines additional powers of the EMC including provisions for adopting rules, charging permit fees, delegating authority, investigating fish kills and investigating violations of rules, standards or limitations adopted by the EMC.
- **G.S. 143-215.6A, 143-215.6B and 143-215.6C** - Includes enforcement provisions for violations of various rules, classifications, standards, limitations, provisions or management practices established pursuant to G.S. 143-214.1, 143-214.2, 143-214.5, 143-215, 143-215.1, 143-215.2. 6A describes enforcement procedures for civil penalties. 6B outlines enforcement procedures for criminal penalties. 6C outlines provisions for injunctive relief.
- **G.S. 143-215.75** - Outlines the state's Oil Pollution and Hazardous Substances Control Program.

5.3 Surface Water Classifications and Standards

North Carolina has established a water quality classification and standards program pursuant to G.S. 143-214.1. Classifications and standards are developed pursuant to 15A NCAC 2B.0100 - Procedures for Assignment of Water Quality Standards. Waters were classified for their "best usage" in North Carolina beginning in the early 1950's, with classification and water quality standards for all the state's river basins adopted by 1963. The effort to accomplish this included identification of water bodies (which included all named water bodies on USGS 7.5 minute topographic maps), studies of river basins to document sources of pollution and appropriate best uses, and formal adoption of standards/classifications following public hearings.

The Water Quality Standards program in North Carolina has evolved over time and has been modified to be consistent with the Federal Clean Water Act and its amendments. Water quality classifications and standards have also been modified to promote protection of surface water supply watersheds, high quality waters and the protection of unique and special pristine waters with outstanding resource values. Classifications and standards have been broadly interpreted to provide protection of uses from both point and nonpoint source pollution.

Some of the classifications, particularly for HQW, ORW and WS waters, outline protective management strategies aimed at controlling point and nonpoint source pollution. Special HQW protection management strategies are presented in 15A NCAC 2B.0201(d), which is included in its entirety in Appendix I under Antidegradation Policy. These measures are intended to prevent degradation of water quality below present levels from both point and nonpoint sources. HQW requirements for new wastewater facilities and for existing facilities which expand beyond their currently permitted loadings address oxygen-consuming wastes, total suspended solids, disinfection, emergency requirements, volume, nutrients (in nutrient sensitive waters) and toxic

substances. For oxygen-consuming wastes, for example, effluent limitations for new or expanding facilities are as follows: BOD_5 = 5 mg/l; NH_3-N = 2 mg/l; DO = 6 mg/l (except for those expanding discharges which expand with no increase in permitted pollutant loading).

For nonpoint source pollution, development activities which require an Erosion and Sedimentation Control Plan in accordance with rules established by the NC Sedimentation Control Commission or local erosion and sedimentation control program approved in accordance with 15A NCAC 4B .0218, and which drain to and are within one mile of High Quality Waters will be required to control runoff from the one-inch design storm using either a low density or high density option described in the rules.

The requirements for ORW waters are more stringent than those for HQWs. Special protection measures that apply to North Carolina ORWs are set forth in 15A NCAC 2B .0216 (most of which is included in Appendix I). At a minimum, no new discharges or expansions of existing discharges are permitted, and stormwater controls for most development needing an Erosion and Sedimentation Control Plan are required.

The requirements for WS waters vary significantly from WS-I to WS-V. The WS-I classification carries the most stringent requirements for dischargers and surrounding land use activities while WS-V carries the least.

5.4 NORTH CAROLINA'S POINT SOURCE CONTROL PROGRAM

North Carolina does not allow point source discharges without a permit. Discharge permits are issued under the authority of North Carolina General Statute (NCGS) 143.215.1 and the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program was delegated to North Carolina from the US Environmental Protection Agency. These permits serve as both state and federal permits. North Carolina has a comprehensive NPDES program which includes the permitting of both wastewater and stormwater discharges. Information on permitted NPDES dischargers within the Chowan River basin can be found in Section 3.3.

NPDES permits are issued in two categories; individual or general. Individual permits are issued to a specific facility, contain site specific requirements, and incorporate recommendations from the basinwide water quality management plan. Individual NPDES permits are typically issued for a five year cycle with all permits in a river basin expiring at the same time. This permitting strategy allows for comprehensive review of individual dischargers within the basin and implementation of recommendations contained in the basinwide water quality management plan. New discharge permits issued during an interim period are given a shorter permit cycle so that expiration coincides with the basin cycle. Individual permits in the Pasquotank River basin are scheduled for expiration and renewal in February and March of 1998.

General permits are developed for specific types of industries. Each general permit contains requirements that are appropriate for a typical facility within a specific industrial classification. Facilities that are considered atypical or have a history of water quality problems are required to obtain an individual permit. Because general permits are specific to a type of industrial activity and are issued statewide they do not contain basin specific measures. A general permit is typically issued for a five year cycle, which expires statewide on the same date. All general permits have a permit number that begins with "NCG".

5.4.1 NPDES Permits for Wastewater Discharges

Under the NPDES wastewater permitting program, each NPDES discharger is assigned either *major* or *minor* status. For municipalities, all dischargers with a flow of greater than 1 million gallons per day (MGD) are classified as major.

All new wastewater discharge permit applications must include an engineering proposal which includes a description of the origin, type, and flow of wastewater, a summary of waste treatment and disposal options, and a narrative description of the proposed treatment works and why the proposed system and point of discharge were selected. The summary must contain sufficient detail to assure that the most environmentally sound alternative was selected from the reasonably cost effective options. An assessment report describing the impact on waters in the area must be submitted for all applications of new discharges in excess of 500,000 gallons per day or 10 million gallons per day of cooling water or any other proposed discharge of 1 million gallons per day or more.

Under the NPDES program, wastewater treatment systems must be operated by a certified operator. Training and certification of operators is conducted by the DWQ. It is the goal of the program to provide competent and conscientious professionals that will protect both the environment and public health.

The amount or loading of specific pollutants that are allowed to be discharged into surface waters are defined in the NPDES permit and are called *effluent limits*. Point source discharges generally have the most impact on a stream during low flow conditions when the percentage of treated effluent within the stream is greatest. Effluent limits are generally set to protect the stream during these low flow conditions. The standard low flow used for determining point source impacts is called the *7Q10*. This is the lowest flow which occurs over seven consecutive days and which has an average recurrence of once in ten years. Computer modeling may be used to determine the fate and transport of pollutants, reduction goals for contaminants, and to derive effluent limits for NPDES permits. A wasteload allocation is performed to ensure the effluent limits are set at levels that can be safely assimilated by the receiving stream.

Most dischargers are required to periodically sample their treated effluent. This process is called self-monitoring. Larger and more complex dischargers are also required to sample both upstream and downstream of the discharge point. NPDES facilities are required to monitor for all pollutants for which they have permit limits as well as other pollutants which may be present in their wastewater. Sampling results are submitted to DWQ each month for compliance evaluations. If limits are not being met, various legal actions may be taken against the discharger to ensure future compliance.

All domestic wastewater dischargers are required to monitor flow, dissolved oxygen, temperature, fecal coliform, BOD, ammonia, and chlorine (if they use it as a disinfectant). In addition, wastewater treatment facilities with industrial sources may have to monitor for chemical specific toxicants and/or whole effluent toxicity, and all dischargers with design flows greater than 50,000 gallons per day (GPD) monitor for total phosphorus and total nitrogen. Minimum NPDES wastewater monitoring requirements are provided in 15A NCAC 2B .0500.

Other methods of collecting point source information include effluent sampling by DWQ during inspections and special studies. The regional offices may collect data at a given facility if they believe there may be an operational problem or as a routine compliance check. DWQ may collect effluent data during intensive surveys of segments of streams. Extensive discharger data have been collected during on-site toxicity tests.

A pretreatment program is aimed at protecting municipal wastewater treatment plants and the environment from the adverse impacts that may occur when hazardous or toxic wastes are discharged into a public system. This program requires that businesses and other entities that use or produce toxic wastes pretreat their wastes prior to discharging into a public wastewater system.

environment from the adverse impacts that may occur when hazardous or toxic wastes are discharged into a public system. This program requires that businesses and other entities that use or produce toxic wastes pretreat their wastes prior to discharging into a public wastewater system.

5.4.2 NPDES Permits for Stormwater Discharges

As currently defined by the NPDES program, stormwater point source discharges originate from two distinct sources; municipalities and selected industrial facilities. Subject municipalities are defined as those incorporated areas that encompass a population of 100,000 or more. Subject industrial activities are those where stormwater discharges directly related to manufacturing, processing or raw materials storage areas occur. A complete definition of "stormwater discharge associated with industrial activity" including a comprehensive listing of subject industries can be found in 40 CFR 122.26. The types of industrial activities that are subject to stormwater permitting are typically defined by Standard Industrial Classification (SIC) codes. SIC codes have been developed by the federal Office of Management and Budget to define industries in accordance with the composition and structure of the economy.

There are currently 19 general stormwater permits available for specific types of industrial activities across the state. As previously explained, the general permits define stormwater controls and monitoring for a typical facility within a specific industrial classification. General stormwater permits incorporate requirements determined to be appropriate based upon an analysis of available analytical monitoring data, input from industry and associations, site visits, and review of federal and other documents providing guidance on specific types of industries, pollutants, and stormwater discharges.

The North Carolina Department of Transportation (DOT) is subject to the NPDES stormwater permitting program. The permit, when issued, will cover stormwater runoff from DOT's non-administrative activities throughout the state including the state roadway network, construction, vehicle maintenance, and materials storage facilities. The draft permit is currently scheduled to be sent to public notice in 1998.

Stormwater permits may specify monitoring and reporting requirements for both quantitative and qualitative assessment of the stormwater discharge as well as operational inspections of the entire facility. The specific pollutant parameters for which sampling must be performed are based upon the types of materials used and produced in the manufacturing processes and the potential for contamination of the stormwater runoff at a typical facility.

All NPDES stormwater permits require the development and implementation of a Stormwater Pollution Prevention Plan (SPPP). The SPPP requires the permitted facility to develop a comprehensive stormwater management plan. This plan is the basis for evaluating the pollution potential of the site and implementing best management practices (BMPs) to reduce pollutants in runoff from the site.

All stormwater permits specify qualitative monitoring of each stormwater outfall for the purposes of evaluating the effectiveness of the Stormwater Pollution Prevention Plan and assessing new sources of stormwater pollution. Qualitative monitoring parameters include color, odor, clarity, floating and suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution.

Stormwater permits may provide for the use of cut-off concentrations in order to minimize the required analytical monitoring for facilities which are not significant contributors to stormwater pollution. These cut-off concentrations are not intended to be effluent limits (as used in wastewater permitting), but provide guidelines for determining which facilities are major contributors to stormwater pollution and need further monitoring. The arithmetic mean of all monitoring data

collected during the term of the permit must be calculated for each parameter and compared to the permitted cut-off concentration. If the mean is below the cut-off concentration, then the facility may discontinue analytical monitoring for that parameter until the final year of the permit unless changes occur at the facility. This approach prevents facilities from using the cut-off concentrations as target concentrations for evaluating the effectiveness of the Stormwater Pollution Prevention Plan while also ensuring that problem facilities continue to collect analytical data on their discharges.

5.5 NONPOINT SOURCE CONTROL PROGRAMS

Nonpoint source pollution occurs when rainfall or snowmelt runs off the ground or impervious surfaces like buildings and roads and drains into waterways. Some of the most common nonpoint source pollutants and their causes are presented in Chapter 3.

The two approaches that are used to address nonpoint source pollution are prevention and engineered controls. Some of the methods of pollution prevention include optimum site planning, use of natural drainage systems rather than curb and gutter, nutrient management plans, public/farmer education, storm drain stenciling, and hazardous waste collection sites. It is generally more cost-effective to prevent and minimize pollution than to build engineered controls. For example, developers who are subject to stormwater requirements often choose to build low density developments rather than bearing the expense of building engineered BMPs. Engineered BMPs also have on-going expenses associated with long-term operation and maintenance.

Engineered BMPs generally work by capturing, retaining, and treating runoff before it leaves an area. Some commonly used types of BMPs include stormwater wetlands, wet detention ponds, water control structures, bioretention areas, and infiltration basins. Often higher levels of pollutant removal can be achieved by using a combination of different control systems. The main advantage of engineered controls is that they can treat runoff from high density developments.

The current trend is toward a more comprehensive "systems approach" to managing nonpoint source pollution. This involves using an integrated system of preventive and control practices to accomplish nonpoint pollution reduction goals. This approach emphasizes site planning, protecting important natural areas such as wetlands, and finding the most cost-effective engineered controls for high density areas. Programs which are currently using the systems approach include the animal waste regulations and the regulations for coastal stormwater management and water supply watersheds. In general, the goals of the nonpoint source management program include the following:

- Continue to build and improve existing programs,
- Develop new programs to control nonpoint pollution sources that are not addressed by existing programs,
- Continue to target geographic areas and waterbodies for protection,
- Integrate the NPS Program with other state programs and management studies (e.g., Albemarle-Pamlico Estuarine Study), and
- Monitor the effectiveness of BMPs and management strategies, both for surface and groundwater quality.

Table 5.1 lists a number of federal and state programs that address nonpoint source pollution. These programs are listed by category based on the type of activity. A complete program description can be found in Appendix VI for nonpoint source control programs. Refer to Table 5.2 for a brief description of each program and the contact persons within the basin for each program.

Table 5.1 List of Nonpoint Source Programs

PROGRAM	LOCAL	STATE	FEDERAL
AGRICULTURE:			
Agriculture Cost Share Program	SWCD	SWCC, DSWC	
N.C. Pesticide Law of 1971		NCDA	
Pesticide Disposal Program		NCDA	
Animal Waste Management	SWCD	DWQ,DSWC, CES	NRCS
Laboratory Testing Services		NCDA	
Watershed Protection (PL-566)			NRCS
1985 ,1990 and 1995 Farm Bills			USDA
- Conservation Reserve Program			
- Conservation Compliance			
- Sodbuster			
- Swampbuster			
- Conservation Easement			
- Wetland Reserve			
- Water Quality Incentive Program			
URBAN			
Coastal Stormwater Program		DWQ	
ORW, HQW, NSW Management Strategies		DWQ	
Water Supply Watershed Protection Program	city, county	DWQ	
Stormwater Control Program	city, county	DWQ	EPA
CONSTRUCTION			
Sedimentation and Erosion Control	ordinance	DLR, DOT	
Coastal Area Management Act	ordinance	DCM	
Coastal Stormwater Program		DWQ	
ON-SITE WASTEWATER DISPOSAL			
Sanitary Sewage Systems Program	county	DEH	
SOLID WASTE DISPOSAL			
Resource Conservation and Recovery Act			EPA
Solid Waste Management Act of 1989	city, county	DSWM	
FORESTRY			
Forest Practice Guidelines		DFR	
National Forest Management Act			USDA-FS
Forest Stewardship Program		DFR	
MINING			
Mining Act of 1971			DLR
HYDROLOGIC MODIFICATION			
Clean Water Act (Section 404)		DCM, DWQ	COE
Rivers and Harbors Act of 1899			COE
Dam Safety Permit		DLR	
WETLANDS:			
Clean Water Act (Sections 401 and 404)		DWQ	COE
Wetland Reserve Program			USDA

COE: US Army Corps of Engineers **DCM**: Division of Coastal Management **NCDA**: NC Department of Agriculture
DWQ: Division of Water Quality **DLR**: Division of Land Resources **NRCS**: Natural Resources Conservation Service
DFR: Division of Forest Resource **DOT**: Department of Transportation **SWCC**: Soil and Water Cons. Commission
DSW: Division of Soil and Water **DSWM**: Division of Solid Waste Mgt. **SWCD**: Soil and Water Conservation District
USDA: US Department of Agriculture **USDA-FA**: US Department of Agriculture-Forestry Service

Table 5.2 Chowan River Basin Nonpoint Source Contacts

Agriculture

USDA Natural Resources Conservation Service:

Formerly the Soil Conservation Service; provides technical specialist for certifying waste management plans; certified trainers for swine applicators training sessions works with landowners on private lands to conserve natural resources helping farmers and ranchers develop conservation systems uniquely suited to their land and individual ways of doing business; provides assistance to rural and urban communities to reduce erosion, conserve and protect water, and solve other resource problems; conducts site evaluations and soil surveys; administers the Wetlands Reserve Program; offers planning assistance for local landowners for installing best management practices; offers technical assistance for the determination of wetlands on agricultural lands.

Bertie County	Junius B. Russell	(919)794-5305	P.O. Box 566, Windsor, NC27986-0566
Chowan County	R. Dwane Hinson	(919)482-4127	414 West Queen St., Edenton, NC27932
Gates County	W. Paul Boone	(919)358-7846	P.O. Box 265, Winton, NC27986-0265
Hertford County	W. Paul Boone	(919)358-7846	P.O. Box 265, Winton, NC27986-0265
Northhampton County	Tony R. Short	(919)534-2591	P.O. Box 218, Jackson, NC27845-0218

Soil & Water Conservation Districts:

The local Soil and Water Conservation District Boards function under the administration of the North Carolina Soil and Water Conservation Commission (SWCC). The districts are responsible for administer the Agricultural Cost Share Program, identifying treatment areas, allocating resources, signing contractual agreements with landowners, providing technical assistance for the planning and implementation of BMPs and generally encouraging the use of appropriate BMPs to protect water quality

Bertie County	John Stallings	(919)794-2183	1001 Stoke Ave., Windsor, NC 27983
Chowan County	W. Earl White	(919)482-2659	RR 2 Box 379, Edenton, NC 27932
Gates County	R. E. Miller, Jr.	(919)357-1013	P.O. Box 42, Gatesville, NC 27938
Hertford County	Greg Hughes	(919)358-7846	P.O. Box 265, Winton, NC 27984
Northhampton County	Edward M. Lanier	(919)585-0031	Rt 1 Box 261, Conway, NC 27820

Division of Soil and Water Conservation:

Provides administrative and technical assistance to the Soil & Water Conservation Districts in areas pertaining to soil science and engineering; distributes Wetlands Inventory maps for a small fee. Administers the Agriculture Cost Share Program (ACSP).

Central Office	Donna Moffitt (ACSP)	(919)715-6108	512 N. Salisbury St. Raleigh NC 27626

NCDA Regional Agronomists:

Provides technical specialists for certifying waste management plans. Provides certified trainers for animal waste applicators training sessions. Tracks, monitors, and accounts for use of nutrients on agricultural lands. Identifies and evaluates the use of nutrient management plans.

Central Office	Tom Ellis	(919)733-7125	Box 27647 Raleigh, NC 27611
Regional Office	Charlie Tyson	(919)443-4404	Rt. 3, Box 254B, Nashville, NC 27856

Table 5.2 Chowan River Basin Nonpoint Source Contacts, continued

Education

NC Cooperative Extension Service:

Provides practical, research-based information and programs to help individuals, families, farms, businesses and communities.

Bertie County	William J. Griffin Jr.	(919)794-5317	P.O. Box 280, Windsor, NC 27983
Chowan County	J. Michael Williams	(919)482-8431	P.O. Box 1030, Edention, NC 27932
Gates County	Wayne Nixon	(919)357-1400	Co. Agri. Bldg., Gateville, NC 27938
Hertford County	Deborah Howard	(919)358-7822	Tyson St., Winton, NC 27986
Northhampton County	Mark D. Keating	(919)534-2711	P.O. Box 636, Jackson, NC 27845

Forestry

Division of Forest Resources:

Develop, protect, and manage the multiple resources of North Carolina's forests through professional stewardship, enhancing the quality of our citizens while ensuring the continuity of these vital resources.

Central Office	Moreland Gueth	(919)733-2162 ext. 225	P.O. Box 29581 Raleigh, NC 27626-0581

Fish and Wildlife Resources

Division of Marine Fisheries

The North Carolina Division of Marine Fisheries (DMF) is responsible for stewardship of the state's marine and estuarine resources. The DMF's jurisdiction encompasses all coastal waters and extends to 3 miles offshore. Agency policies are established by the 17-member Marine Fisheries Commission and the Secretary of the Department of Environment, Health and Natural Resources.

Central Office	Pasquale Wojciechowski	(919)726-7021	P.O. Box 769, Morehead City, NC 28557
Elizabeth City Office	Sara Winslow	(919)264-3911	1367 US HWY 17, Elizabeth City, NC 27909

Wildlife Resources Commission:

To manage, restore, develop, cultivate, conserve, protect, and regulate the wildlife resources of the State, and to administer the laws relating to game, game and freshwater fishes, and other wildlife resources enacted by the General Assembly to the end that there may be provided a sound, constructive, comprehensive, continuing, and economical game, game fish, and wildlife program.

Central Office	Frank McBride	(919)528-9886	P.O. Box 118 Northside, NC 27564

Section 319
Clean Water Act Section 319(h) grant moneys are made available to the states on an annual basis by EPA. Agencies in the state that deal with NPS problems submit proposals to DWQ each year for use of these funds in various projects. Projects that have been funded in the past include BMP demonstrations, watershed water quality monitoring and improvement projects, data management, educational activities, modeling, stream restoration efforts, riparian buffer establishment, and others.

Use Restoration Waters
The North Carolina Division of Water Quality is currently developing the Use Restoration Waters (URW) program to restore surface waters to their designated uses. If adopted, this program would allow the state to work with local governments, businesses, and residents to develop management strategies appropriate for the area. In order to be effective, the URW program would include a mix of mandatory and voluntary programs. The voluntary and mandatory programs would be coordinated on a watershed-specific basis by DWQ and a group of stakeholders who have an interest in the impaired waterbody and associated watershed. In addition, the URW program would attempt to develop cooperative relationships among these agencies so that overlapping efforts can be consolidated and targeted to restore designated water body uses.

5.6 PROGRAM INITIATIVES IN THE CHOWAN RIVER BASIN

Through the development of this plan, efforts were made to identify efforts that have been undertaken within the basin to protect water quality. The following discussion focuses on program initiatives that have been implemented or are underway within the Chowan River basin. These initiatives demonstrate a tremendous effort to protect surface waters in the basin. There may be other initiatives underway in the basin of which we are not yet aware. Table 5.3 presents a summary of the agency or organizations that have program initiatives in the basin.

Table 5.3 Program Initiatives in the Chowan River Basin

Level of Agency	Name of Agency	Type of Initiative
Federal and State	National Estuary Program - APES Study; DWQ	See Page 5-14
Federal	US Department of Agriculture - National Resource Conservation Service	See Page 5-15
State	NC Division of Soil and Water Conservation	Various Projects
State	NC Division of Environmental Health	See Page 5-16
State	NC Department of Agriculture	See Page 5-16
State	NC Division of Forest Resource	Forest Practices Guidelines
State	Cooperative Extension Service	See Page 5-15
State	NC Division of Land Resources	Sedimentation Pollution Control Act
Local Govt. and Citizen Groups	Albemarle Resource, Conservation and Development Council	Wetland Demonstration Project
Local Govt. and Citizen Groups	Bertie County	Various Projects
Local Govt. and Citizen Groups	Hertford County	Land Use Plan
Academic	North Carolina State University	Impacts of Road Maintenance BMPs on Water Quality

5.6.1 National Estuary Program - Albemarle-Pamlico Estuarine Study (APES)

Inclusion of North Carolina in the US EPA's National Estuary Program (NEP) carried with it the responsibility of protecting the local, state and national interest in maintaining the ecological integrity of this country's second largest estuarine system, the Albemarle-Pamlico.

Important components of NEP membership are the consideration of water quality, fisheries resources, land and water habitats, and the interaction of humans with the natural resources of the estuarine system. This focus shaped the research and public involvement phases of the Albemarle Pamlico Estuarine Study. This holistic approach to ecological management was employed when writing the Comprehensive Conservation and Management Plan (CCMP) and was further reflected in the basinwide strategy of water quality management, initiated by the Division of Water Quality. This strategy permeates the various component plans that make up the CCMP.

The CCMP is the product of collaborative, consensus-building effort involving numerous federal, state, and local agencies, interest groups, organizations, and individuals. The Management Conference which guided the Study, was composed of approximately 95 members who were divided into four committees: The Policy Committee, Technical Committee and two Citizens' Advisory Committees (one for the Albemarle area and one for the Pamlico). The members comprising these committees represented a variety of interests: government agencies, university researchers and the public. The committees were responsible for identifying problems in the estuarine system, generating research where gaps in knowledge existed, increasing public awareness of environmental issues, and identifying solutions to address those issues. As a result of their efforts, more is known about the Albemarle-Pamlico estuary than ever before.

The CCMP contains five general management plans to address regional concerns: The Water Quality Plan, Vital Habitats Plan, Fisheries Plan, Stewardship Plan and the Implementation Plan. Each plan contains a goal statement, objectives, strategies, management actions and critical steps necessary in attaining the recommended outcome. Potential economic costs and other considerations are also described. Appendix IV presents the implementation status of the components of the Water Quality Plan.

5.6.2 Federal Initiatives

US Department of Agriculture, Natural Resource Conservation Service (NRCS):

- Assist farmers in obtaining Agriculture Cost Share funds for no-till farming practices.
- Organizes Environmental Field Days at local schools.

5.6.3 State Agency Initiatives

Cooperative Extension Service:

- Conducts ongoing IPM programs for farmers in Northeastern NC to reduce pesticide and fertilizer use, promotes good stewardship of agricultural chemicals.
- Conducts Master Gardener training in IPM for Master Gardeners to use when they work with their home-owner and home garden clientele.
- Organizes annual Consultant's Roundtable to present up-to-date research information on IPM to area crop consultants to use when they work with their clientele.
- Trains area crop scouts in scouting procedures consistent with IPM principles.
- Educates the non-farm general public about IPM and pesticide safety through newspaper articles, radio programs, educational programs for civic groups, etc.
- Designed a display board (what is IPM?) for use at meetings, workshops, and other public display opportunities.

- Assists in conducting Commercial Pesticide Rectification training classes for holders of commercial pesticide licenses-focusing on IPM principles and applications.
- Assists in training of Certified Waste Management System operators.
- Participates in Environmental Field Days organized by NRCS at local schools.

North Carolina State University:

- Conducting Impacts of Road Maintenance BMPs on Water Quality in a Coastal Watershed Project. This project, funded by Section 319 grant, focuses on the installation and evaluation of both agricultural and silvicultural road maintenance BMPs. BMPs will be implemented on thirty thousand feet of roads in the Kendricks Creek watershed. The water quality in road side canals will be studied and educational meetings will be held to demonstrate the effectiveness of the BMPs.

NC Department of Agriculture:

- Provides soil testing service to farmers, homeowners and turf managers. This ensures that agronomic productivity is maximized while at the same time reducing indiscriminate nutrient applications. Recommendation are both site and crop specific. Total 22,856 soil samples submitted by farmers and homeowners from the Chowan River Basin in 1996 for fertility evaluation and nutrient recommendations. The number of soil samples submitted from each county is 4767, 3089, 3130, 4586 and 7284 for Bertie, Chowan, Gates, Hertford and Northampton county respectively.
- Provides nematode management strategies to farmers, homeowners and turf managers. The strategies include crop rotation, resistant crop varieties and the use of nematicides. Plant parasitic nematodes have to be managed in order to maintain the productivity of crops in eastern North Carolina.
- Provides plant analysis service to farmers. This service provides the opportunity for farmers to monitor the nutritional status of growing crops. This provides farmers with the necessary information to select and apply only those nutrients that are needed.
- Various types of waste materials including industrial waste and livestock waste are analyzed and evaluated for their agronomic value. With this information, the waste is seen and utilized as a source instead of a liability.
- Eight regional agronomists provide on-site assistance to help growers implement management recommendations in a cost-effective and environmentally sound manner.

NC Division of Environmental Health:

- Conducts annual onsite sewage conference to update engineers and state agents (environmental health specialists in health departments) on latest technology to abate pollution from septic tank systems.
- Reviews two health department septic tank programs per year for quality assurance.
- Provides an annual 3 day Advanced Soils or Advanced Septic Tank Systems Course to health department agents.

NC Division of Land Quality:

The NC Division of Land Resources (DLR) is responsible for administering the Sedimentation Pollution Control Act of 1973 (SPCA). Since the inception of the SPCA, the Sedimentation control Commission has funded extensive workshops and educational programs aimed at children throughout the state. During fiscal year 1996, the DLR conducted workshops and symposiums, funded research and intern programs, reprinted manuals and developed video modules and produced newsletters on a budget of over $270,000 for the entire state. The DLR has the following materials available.

- ◊ Erosion and Sediment Control Field Manual
- ◊ Erosion and Sediment Control Practices: Video Modules
- ◊ Erosion and Sediment Control "Inspector's Guide"
- ◊ Erosion and Sediment Control Planning and Design Manual
- ◊ "Erosion Patrol" Package for Grade 3

The DLR is also implementing various measures for protecting water quality statewide. These measures include

- Coordinates the targeting and tracking of BMPs implementation in the basin.
- Conducts two workshops for public, regulated community and local governments on sediment reductions achievable through the requirements of the Sedimentation and Erosion Control Act.
- Enforces existing sediment related rules and evaluate need for additional mandatory measures.

NC Division of Soil and Water Conservation (SWCD):

- The NC Division of Soil and Water Conservation administers the *NC Agriculture Cost Share Program for Nonpoint Source Pollution Control (NCACSP)*. This program provides incentives to farmers to install best management practices (BMPs) by offering to pay up to 75% of the average cost of approved BMPs. The NC Agriculture Cost Share Program funding totals for the Chowan River basin from 1985 through 1995 is $391,254. Farmers in the basin have spent up to $130,418 in matching funds for cost share money. The cost share figures include a wide array of BMPs including conservation tillage, sod based rotation, diversions, critical area planting, crop conversion to grass, trees, spring development, stock trails, land application of waste, livestock exclusion, waste management.

NC Division of Forest Resources:

The DFR is implementing various measures for protecting water quality statewide. These measures began with the creation of voluntary *Forest Practice Guidelines (FPGs) Related to Water Quality*. The measures were voluntary applied best management practices, which had no enforcement power by any agency. In 1989, the SPCA was amended to require compliance with nine performance standards in order to remain exempt from the SPCA's permitting requirements. These nine standards are the *Forest Practice Guidelines Related to Water Quality (FPGs)* whose compliance is accomplished through the use of BMPs. The *Forestry Best Management Practices Manual* was published in September, 1989, to guide forestry operations in protecting water quality. The manual and the FPGs are available for any DFR office at no charge.

5.6.4 Local Government and Citizen Initiatives

Albemarle Resource, Conservation and Development Council:

- Conducting Constructed Wetlands Demonstration for Nonpoint Source Pollution on Urban/Agricultural Land Project. This project is funded by Section 319 grant. This project, in the nutrient-sensitive Chowan Basin, focuses on the design, installation, and evaluation of riparian-type wetlands systems constructed in and parallel to channelized streams/drainageways.

Bertie County:

- Administers local irrigation scheduling and pesticide education programs.
- Provides soil testing and analysis service and information on precision farming.
- Trains and certifies animal waste application operators in the county.

Hertford County:
Hertford County has taken an active role in developing land use plan to protect and improve water quality.

5.7 Integrating Point And Nonpoint Source Pollution Control Strategies

Integrating point and nonpoint source pollution controls and determining the amount and location of the remaining assimilative capacity in a basin are key long-term objectives of basinwide management. The information is used for a number of purposes including: determining if and where new or expanded municipal or industrial wastewater treatment facilities can be allowed; setting the recommended treatment level at these facilities; and identifying where point and nonpoint source pollution controls must be implemented to restore capacity and maintain water quality standards.

Total Maximum Daily Loads

The U.S. Environmental Protection Agency (USEPA) has developed the means to help accomplish these objectives. The approach, called *total maximum daily loads (TMDL)*, uses the concept of determining the total waste (pollutant) loading from point and nonpoint sources that a waterbody (such as a stream, lake or estuary) can assimilate while still maintaining its designated uses. USEPA requires the TMDL approach pursuant to Section 303(d) of the Clean Water Act.

Under the TMDL approach, waterbodies that do not meet water quality standards are identified. States establish priorities for action, and then determine reductions in pollutant loads or other actions needed to meet water quality goals. The approach is flexible and promotes a watershed approach driven by local needs and States priorities. The overall goal in establishing the TMDL is to establish the management actions on point and nonpoint sources of pollution necessary for a waterbody to meet water quality standards.

As DWQ improves its abilities to quantify and predict the impacts of point and nonpoint source pollution, the basinwide approach will make more innovative management strategies possible.

Other Possible Strategies

- *Agency banking* refers to the concept of holding assimilative capacity in reserve by DEM for future growth and development in the basin.
- *Pollution trading* involves trading of waste loading and stream assimilative capacity among permitted dischargers, or between point and nonpoint sources, adding flexibility to the permitting system and using the free market system as an aid to identifying the most cost effective solution to water quality protection.
- *Industrial recruitment mapping* involves providing specific recommendations on the types of industry and land development best suited to the basin's long-term water quality goals and an individual basin's ability to assimilate a particular type or quantity of discharge or nonpoint source pollutants.
- *Consolidation of wastewater discharges*, also referred to as regionalization, entails combining several dischargers into one facility. Local authorities, regulated industries, landowners, and other interested parties are encouraged to provide ideas to develop these strategies. By accommodating, to the degree possible, local needs and preferences, the probability of the plan's long-term success will be increased.

5.8 POTENTIAL SOURCES OF FUNDING FOR WATER QUALITY PROJECTS

There are numerous sources of funding for all types of water quality projects. The sources of funding include federal and state agencies, nonprofits, and private funding. Funds may be loans, cost-shares, or grants. Section 319(h) grants are discussed in some detail in Section 5.8.1. Other funding sources are listed in Section 5.8.2.
If a local government, environmental group, university researcher, or other individual or agency wants to find funding to address a local water quality problem, it is well worth the time to prepare a thorough but concise proposal and submit it to applicable funding agencies. The list of goals for Section 319(h) proposals can be used as a guideline for other funding agencies. Even if a project is not funded, persistence may be beneficial when funding agencies observe several consecutive proposals from the same group.

5.8.1 Section 319(h) Grants

EPA offers the state Clean Water Act Section 319(h) grant moneys on an annual basis. These grants must be used to fund projects that address nonpoint source pollution issues. Some projects which DWQ has funded with this money in the past include BMP demonstrations, watershed water quality improvements, data management, educational programs, modeling, stream restoration, and riparian buffer establishment. Agencies, environmental groups, university researchers, and others in the state that have expertise in nonpoint source pollution problems are invited to submit Section 319(h) proposals to DWQ.

DWQ established a Workgroup process in 1995 for prioritizing and selecting projects from the pool of cost-share proposals and includes this list in its annual application to EPA. The Workgroup consists of representatives from the state and federal agencies that deal with NPS issues, including agricultural, silvicultural, on-site wastewater, mining, solid waste and resource protection.

DWQ staff first reviews proposals for minimum 319 eligibility criteria such as:
- Does it support the state NPS Management Program milestones?
- Does the project address targeted, high priority watersheds (See Table 5.4)?
- Is there sufficient nonfederal cost-share match available (40% of project costs)?
- Is the project period adequate?
- Are measurable outputs identified?
- Is monitoring required? Is there a QA/QC plan for monitoring?
- If GIS is used, is it compatible with those of the state?
- Is there a commitment for educational activities and a final report?

Workgroup members separately review and rank each proposal which meets the minimum 319 eligibility criteria. In their review, members consider such factors as: technical soundness; likelihood of achieving water quality results; degree of balance lent to the statewide NPS Program in terms of project type; and competence/reliability of contracting agency. They then convene to discuss individual projects' merits, to pool all rankings and to arrive at final rankings for the projects. The Workgroup seeks a balance between geographic regions of the state and types of projects. All proposals that rank above the funding target are included in the annual grant application to EPA, with DWQ reserving the right to make final changes to the list. Actual funding depends on approval from EPA and yearly Congressional appropriations.

Table 5.4 Nonpoint Source (NPS) 319 Priority Ratings for Coastal Waters

<u>High priority waters</u>:

- monitored waters that have an overall use support rating of non-supporting,
- monitored waters that have a use support rating of partially supporting but have a high predicted loading for one or more pollutants,
- highly valued resource waters as documented by special studies
  - High Quality Waters
  - Outstanding Resource Waters
  - Water Supply I, Water Supply II, Critical areas of WS-II, WS-III or WS-IV
  - Shellfish Waters (Class SA) having a significant shellfish resource and moderate bacteriological problems, as identified by the Division of Environmental Health, in which harvesting is prohibited or restricted
  - Shellfish Waters (Class SA) that drains to ORW and in which shellfish harvesting is prohibited or restricted
  - Shellfish Waters (Class SA) in which harvesting is conditionally approved by DEH and a significant shellfish resource exists

<u>Medium priority waters</u>:

- monitored waters that have an overall use support rating of partially supporting,

<u>Low priority waters</u>:

- Shellfish Waters (Class SA) in which harvesting is prohibited or restricted but which are not considered to have a significant shellfish resource
- All other waters not considered high or medium priority

To obtain more information about applying for a Section 319(h) grant, contact:

Linda Hargrove, DWQ - Planning Branch
P.O. Box 29535, Raleigh, NC 27626-0535
(919) 733-5083 ext. 352

5.8.2 Other Sources of Funding

Besides Section 319(h) funding, there are numerous sources of funding for all types of water quality projects. The sources of funding include federal and state agencies, nonprofit, and private funding. Funds may be loans, cost-shares, or grants.

If a local government, environmental group, university researcher, or other individual or agency wants to find funding to address a local water quality problem, it is well worth the time to prepare a thorough but concise proposal and submit it to applicable funding agencies. The list of goals for Section 319(h) proposals can be used as a guideline for other funding agencies. Even if a project is not funded, persistence may be beneficial when funding agencies observe several consecutive proposals from the same group.

Tables 5.5 and Appendix VI provide summaries of the agencies that are potential sources of funds for point sources of pollution. Table 5.6 and Appendix VI provide summaries of the agencies that are potential funding sources for nonpoint sources of pollution.

In addition to these sources, the Clean Water Trust Fund will be another source of funding for both point and nonpoint sources of pollution. The 1996 General Assembly earmarked 6.5% annually of the year end General Fund credit balance to help finance projects that address water pollution problems and focus on upgrading surface waters, eliminating pollution and protecting and

preserving unpolluted surface waters. Contact Norma Ware at (919) 733-6854 and refer to Appendix VI for more details on this program.

Table 5.5 Funding Agencies for Assistance With Point Sources

Source	Agency and Name of Funding Source
Federal	U.S. Rural Utilities Service: Water and Wastewater Loan and Grant Program Rural Business and Cooperative Service: Rural Business Enterprise Grants Appalachian Regional Commission: Supplements to Other Federal Grants in Aid U.S. Economic Development Administration: Public Works and Development Facilities Grant Program
State	NC Division of Water Quality: Construction Grants and Loans Program NC Division of Community Assistance: Small Cities Community Development Block Grant NC Commerce Finance Center: Industrial Development Fund
Private	Rural Economic Development Center, Inc.: Supplemental and Capacity Grants Program

Table 5.6 Funding Agencies for Assistance with Nonpoint Sources

Type of Assistance	Agency and Name of Funding Source
Agriculture	NC Agriculture Cost Share Program for NPS Pollution Control (NCACSP) Environmental Quality Incentives Program (EQIP) Conservation Reserve Program (CRP) Wetland Reserve Program (WRP) Small Watershed Program, PL-566 Conservation Easement Soil and Water Conservation Loan Program
Education	GTE Foundation Toyota TAPESTRY Grants National Environmental Education and Training Foundation (NEETF)
Water Quality Planning	Section 205(j) Water Quality Planning Grants
Stream Restoration	NC Division of Water Resources Stream Repair Funding
Forestry	Forestry Stewardship Incentive Program Forestry Incentives Program
Land Conservation	National Wetland Priority Conservation Plan NC Conservation Tax Credit Program Federal Wild and Scenic Rivers Program Emergency Wetlands Resources Act of 1986

REFERENCES - CHAPTER 5

NCDEHNR, 1990. Chowan River Water Quality Management Plan - 1990 Update. Report No.90-06.