

CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

The purpose of this Basinwide Water Quality Management Plan is to report to citizens, policy makers and the regulated community on:

- the current status of surface water quality in the basin,
- major water quality concerns and issues,
- projected trends in development and water quality,
- the long-range water quality goals for the basin, and
- recommended point and nonpoint source management options.

This Plan presents strategies for management of both point and nonpoint sources of pollution. The Division of Water Quality (previously Division of Environmental Management) is preparing a basinwide water quality management plan for each of the state's 17 major river basins, as shown in Figure 1.1.

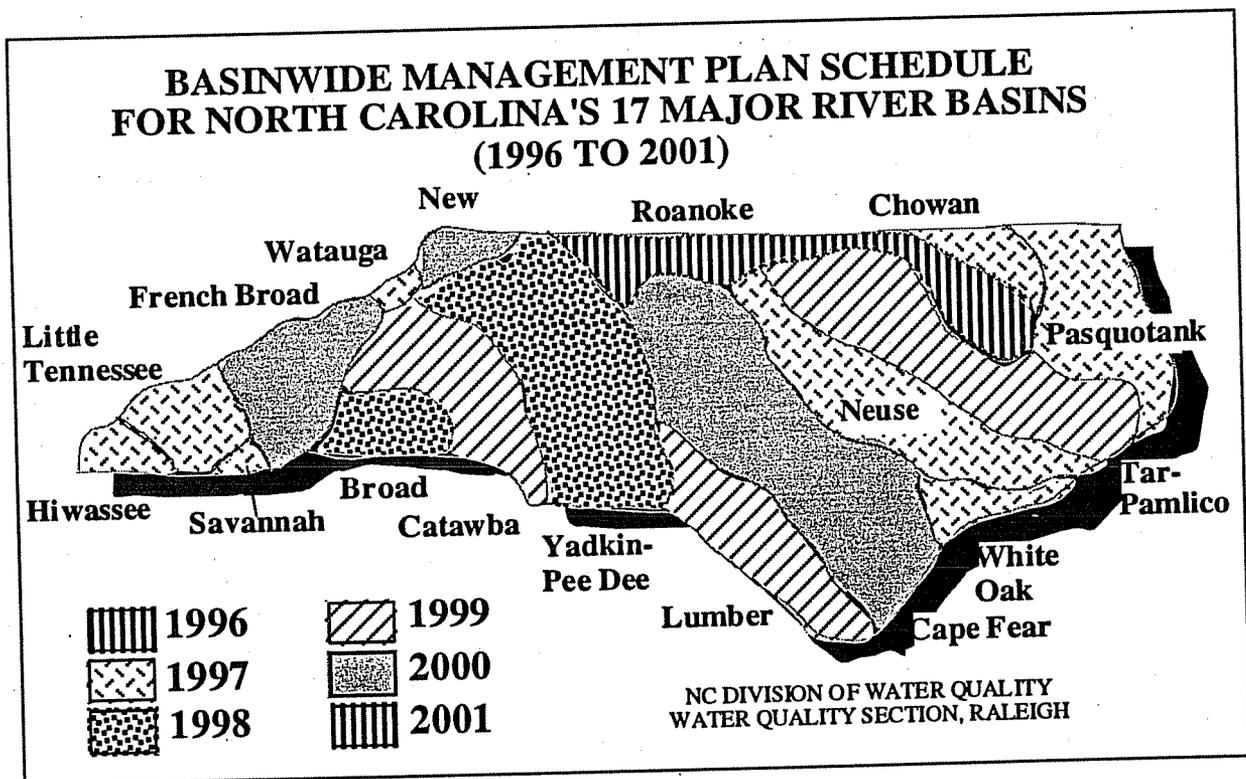


Figure 1.1 Basinwide Management Plan Schedule (1996 to 2001)

1.2 GUIDE TO USE OF THIS DOCUMENT

CHAPTER 1: Introduction - This chapter provides a non-technical description of the purpose of this plan, the basinwide water quality management approach and how this approach will be administered. The description of the basinwide management approach is based primarily on a 54-page framework document entitled *North Carolina's Basinwide Approach to Water Quality Management: Program Description - Final Report/August 1991* (Creager and Baker, 1991).

CHAPTER 2: General Basin Description- Some of the specific topics covered in this chapter include:

- an overview of the major features such as location, rainfall, population, physiography, etc.
- hydrology of the basin and its subbasins
- a summary of land cover within the basin based on results of a 1982 and 1992 Nationwide Resources Inventory (NRI) conducted by the US Department of Agriculture Natural Resources Conservation Service.
- population growth trends and densities by subbasin using 1970, '80 and '90 census data.
- major water uses in the basin and DWQ's program of water quality classifications and standards.

CHAPTER 3: Causes and Sources of Water Pollution - This chapter describes both point and nonpoint sources of pollution. It also describes a number of important causes of water quality impacts including sediment, biochemical oxygen demand (BOD), toxic substances, nutrients, color, fecal coliform bacteria and others. Pollutant loading in the basin and general water quality problem areas are discussed.

CHAPTER 4: Water Quality and Use Support Ratings - This chapter describes the various types of water quality monitoring conducted by DWQ, summarizes water quality in each of the subbasins in the basin and presents a summary of use support ratings for those surface waters that have been monitored or evaluated.

CHAPTER 5: Existing Water Quality Programs and Program Initiatives in the Basin - Chapter 5 summarizes the existing point and nonpoint source control programs available to address water quality problems. These programs are management tools available for addressing the priority water quality concerns and issues that are identified in Chapter 6. Chapter 5 also describes the concept of Total Maximum Daily Loads (TMDLs). TMDLs represent management strategies aimed at controlling point and nonpoint source pollutants. This chapter also describes various program initiatives being implemented in the basin to address water quality problems.

CHAPTER 6: Major Water Quality Concerns and Recommended Management Strategies - Water quality issues identified in Chapters 2, 3 and 4 are evaluated and prioritized based on use-support ratings, degree of impairment, and the sensitivity of the aquatic resources being affected. Recommended management strategies, or TMDLs, are presented that describe how the available water quality management tools and strategies described in Chapter 5 will be applied in the basin. This includes generalized wasteload allocations for dischargers and recommended programs and best management practices for controlling nonpoint sources.

CHAPTER 7: Future Initiatives - This chapter presents future initiatives for protecting or improving water quality in the basin. These may include both programmatic initiatives such as improving permit compliance, or basin-specific initiatives such as developing strategies for restoring impaired waters.

1.3 NORTH CAROLINA'S BASINWIDE MANAGEMENT APPROACH

Introduction - Basinwide water quality management is a watershed-based management approach being implemented by DWQ which features basinwide permitting, integrating existing point and nonpoint source control programs, and preparing basinwide management plans. DWQ is applying this approach to each of the seventeen major river basins in the state as a means of better identifying water quality problems, developing appropriate management strategies, maintaining and protecting water quality and aquatic habitat, and assuring equitable distribution of waste assimilative capacity for dischargers.

After conducting public workshops to identify areas of concern and major issues, a basinwide management plan is prepared for each basin. The plans are circulated for public review and are presented at public meetings in each river basin. The management plan for a given basin is completed and approved preceding the scheduled date for basinwide discharge permit renewals in that basin. The plans are then evaluated, based on followup water quality monitoring, and updated at five year intervals.

DWQ began formulating the idea of basinwide management in the late 1980s, established a basin permitting schedule in 1990, began basinwide monitoring activities in 1990, and published a basinwide program description in August 1991. Basinwide management entails coordinating and integrating, by major river basin, DWQ's water quality program activities. These activities, which are discussed further in Section 1.4, include permitting, monitoring, modeling, nonpoint source assessments, and planning.

Water Quality Program Benefits - Several benefits of basinwide planning and management to North Carolina's Water quality program include:

- **Improved program efficiency.** By reducing the area of the state covered each year, monitoring, modeling, and permitting efforts can be focused. As a result, *efficiency increases* can be achieved for a given level of funding and resource allocation.
- **Increased effectiveness.** The basinwide approach is in consonance with basic ecological watershed management principles, leading to *more effective* water quality assessment and management. Linkages between aquatic and terrestrial systems are addressed (e.g., contributions from nonpoint sources). All inputs to aquatic systems and potential interactive, synergistic and cumulative effects are considered.
- **Better consistency and equitability.** By clearly defining the program's long-term goals and approaches, basinwide plans will encourage *consistent* decision-making on permits and water quality improvement strategies. Consistency and greater attention to long-range planning will promote a *more equitable* distribution of assimilative capacity, explicitly addressing the trade-offs among pollutant sources and allowances for economic growth.
- **Increased public awareness of the state's water quality protection programs.** The basinwide plans are an educational tool for increasing public awareness of water quality issues within the basin.
- **Basinwide management promotes integration of point and nonpoint source pollution assessment and controls.** Once waste loadings from both point and nonpoint sources are established, management strategies can be developed to prevent overloading of the receiving waters and to allow for a reasonable margin of safety to ensure compliance with water quality standards.

Basinwide Planning Schedule - The following table presents the overall basin schedule for all 17 major river basins in the state. Included are the dates for permit reissuance and the dates by which management plans are to be completed for each basin.

Table 1.1. Basinwide Permitting and Planning Schedule for North Carolina's 17 Major River Basins.

Basin	Begin NPDES Permit Issuance	*Final Plan Receives EMC Approval	Plan Public Mtgs. and Draft out For Review	EMC/WQC Approval For Public Meetings	Inhouse Draft due for Staff Review	DEM Biological Data Collection
Neuse	4/1993	2/1993	11/1992	9/1992	7/1992	Summer 91
Lumber	11/1994	6/1994	2/1994	11/1993	7/1993	Summer 91
Tar-Pamlico	1/1995	12/1994	9/1994	7/1994	5/1994	Summer 92
Catawba	4/1995	2/1995	11/1994	9/1994	7/1994	Summer 92
Fr. Broad	8/1995	5/1995	2/1995	12/1994	10/1994	Summer 92
New	11/1995	7/1995	6/1995	4/1995	3/1994	Summer 93
Cape Fear	1/1996	9/1995	6/1995	5/1995	4/1995	Summer 93
Roanoke	1/1997	9/1996	4/1996	2/1996	9/1995	Summer 94
White Oak	6/1997	2/1997	9/1996	7/1996	4/1996	Summer 94
Savannah	8/1997	5/1997	2/1997	12/1996	6/1996	Summer 94
Watauga	9/1997	4/1997	12/1997	10/1996	6/1996	Summer 94
Little Tenn.	10/1997	5/1997	2/1997	12/1996	7/1996	Summer 94
Hiwassee	12/1997	5/1997	2/1997	12/1996	7/1996	Summer 94
Chowan	1/1998	9/1997	6/1997	3/1997	11/1996	Summer 95
Pasquotank	2/1998	9/1997	6/1997	3/1997	11/1996	Summer 95
Neuse	4/1998	12/1997	7/1997	5/1997	2/1997	Summer 95
Yadkin	7/1998	2/1998	10/1997	5/1997	2/1997	Summer 96
Broad	11/1998	5/1998	2/1998	12/1997	7/1997	Summer 95
Lumber	11/1999	5/1999	2/1999	12/1998	8/1998	Summer 96
Tar-Pamlico	1/2000	5/1999	2/1999	12/1998	5/1998	Summer 97
Catawba	4/2000	10/1999	6/1999	4/1999	12/1998	Summer 97
Fr. Broad	8/2000	2/2000	10/1999	7/1999	3/1999	Summer 97
New	11/2000	5/2000	2/2000	12/1999	8/1999	Summer 98
Cape Fear	1/2001	7/2000	2/2000	12/1999	8/1999	Summer 98
Roanoke	1/2002	7/2001	2/2001	12/2000	8/2000	Summer 99

* Dates in bold print denote plan approval by the EMC

The number of plans to be developed each year varies from one to six and is based on the total number of permits to be issued each year. For example, the Cape Fear basin, the state's largest, has about as many dischargers as all six of the small basins in 1997. This has been done in order to balance the permit processing workload from year to year. In years where more than one basin is scheduled to be evaluated, an effort has been made to group at least some of the basins geographically in order to minimize travel time and cost for field studies and public meetings.

Plans to be updated every five years - The earliest basin plans will likely not achieve all of the long-term objectives for basinwide management outlined above. However, plans are updated every 5 years. Updated plans will incorporate additional data and new assessment tools (e.g., basinwide water quality modeling) and management strategies (e.g., for reducing nonpoint source contributions) as they become available.

Basinwide Plan Preparation, Review and Public Involvement - Preparation of an individual basinwide management plan is a five year process which is broken down into four phases as described below.

Year Activity

- Year 1 to 3 **Water Quality Data Collection/Identification of Goals and Issues:** Year 1 entails identifying sampling needs and canvassing for information. It also entails coordinating with other agencies, the academic community and local interest groups to begin establishing goals and objectives and identifying and prioritizing problems and issues. Biomonitoring, fish community and tissue analyses, special studies and other water quality sampling activities are conducted in Years 2 and 3 by DWQ's Environmental Sciences Branch (ESB). These studies provide information for assessing water quality status and trends throughout the basin and provide data for computer modeling.
- Year 3 to 4 **Data Assessment and Model Preparation:** Modeling priorities are identified early in this phase and are refined through assessment of water quality data from the ESB. Data from special studies are then used by DWQ's Technical Support Branch (TSB) to prepare models for estimating potential impacts of waste loading from point and nonpoint sources using the TMDL approach. Preliminary water quality control strategies are developed based on modeling, with input from local governments, the regulated community and citizen groups during this period.
- Year 4 **Preparation of Draft Basinwide Plan:** The draft plan, which is prepared by DWQ's Planning Branch, is due for completion by the end of year 4. It is based on support documents prepared by DWQ's Environmental Sciences Branch (water quality data) and the Technical Support Branch (modeling data and recommended pollution control strategies). Preliminary findings are presented at informal meetings through the year with local governments and interested groups, and comments are incorporated into the draft.
- Year 5 **Public Review and Approval of Plan:** At the beginning of year 5, the draft plan, after approval of the Environmental Management Commission (EMC), is circulated for review and public meetings are held. Revisions are made to the document, based on public comments, and the final document is submitted to the EMC for approval midway through year 5. Basinwide permitting begins at the end of year 5.

Implementation - The implementation of basinwide planning and management will occur in phases. Permitting activities and associated routine support activities (field sampling, modeling, wasteload allocation calculations, etc.) have already been rescheduled by major river basin. All National Pollutant Discharge Elimination System (NPDES) permit renewals within a basin occur within a prescribed time period after completion of the final basin plan, and will be repeated at five year intervals.

Nonpoint source management proposals will be implemented by several different avenues. The Water Quality Section is setting up nonpoint source (NPS) teams for each basin. These teams are made up of representatives of nonpoint source agencies, resource agencies, and special interest groups. The NPS teams are responsible for prioritizing specific watersheds for follow-up investigations, educational efforts, and best management practice (BMP) implementation. Funding for BMP implementation will be sought from sources such as existing cost-share monies or from federal Section 319 grants. In addition to projects in specific watersheds, the NPS team will develop programmatic action plans for each category of nonpoint source pollution. The action plans detail voluntary actions that agencies and groups have committed to complete to protect and improve water quality in the basin. Many of the action plan items involve increased educational efforts or enforcement of existing programs.

1.4 BASINWIDE RESPONSIBILITIES WITHIN THE DWQ WATER QUALITY SECTION

The Division of Water Quality is the lead state agency for the regulation and protection of the state's surface waters. The Division is comprised of four sections: Water Quality, Groundwater, Construction Grants and Loans, and the Water Quality Laboratory.

The primary responsibilities of the Division of Water Quality are to maintain or restore an aquatic environment to sufficient quality to protect the existing and best intended uses of North Carolina's surface waters and to ensure compliance with state and federal water quality standards. The Division receives both state and federal allocations as well as funding through permit fee collections. Policy guidance is provided by the Environmental Management Commission. The major areas of responsibility are water quality monitoring, permitting, planning, modeling (wasteload allocations) and compliance oversight.

The Central office is divided into five branches, each branch is subdivided into units (Figure 1.2). The Planning Branch is responsible for developing surface water quality standards and classifications, nonpoint source program planning, administering the basinwide management program, modeling nonpoint pollution sources, developing use support ratings and supporting related GIS capabilities. It also coordinates the development of TMDLs and wasteload allocations for dischargers, provides primary computer modeling support, and coordinates EPA water quality planning grants and the implementation of the Comprehensive Conservation and Management Plan (CCMP) that resulted from the Albemarle-Pamlico Estuarine Study (APES).

The Regional Program Management Coordination Branch is responsible for providing increased communication and coordination of the water quality program. The responsibilities include the water supply watershed protection program, State Environmental Policy Act coordination for the Section, the operator training and certification program, emergency response, the development and administration of the enterprise wide database management system, and coordination and program management activities between the central and seven regional offices. The Environmental Technologies Unit is responsible for providing better access to data managed by the Water Quality Section so as to facilitate information exchange and analysis with the public as well as internal users. The Technical Assistance and Certification Unit rates the complexity of operation of wastewater treatment plants, provides training and operator certification commensurate with the plant operating needs, and provides technical assistance as requested by wastewater treatment systems. The Local Government Assistance Unit assists local governments in meeting the requirements of the water supply watershed protection program, managing the collection system permitting program, coordinating water quality state environmental policy act responsibilities and managing the EPA 205(j) grants program. The Branch also has the responsibility of ensuring program coordination through the seven Regional Offices.

The Environmental Sciences Branch is responsible for all biological and chemical water quality monitoring, discharger coalition water quality monitoring, and evaluations including benthic macroinvertebrate monitoring (biomonitoring), fish tissue, and fish community studies. The Branch is also responsible for effluent toxicity testing and evaluations, biological laboratory certification, algal and aquatic macrophyte analyses, long term biochemical and sediment oxygen demand, and lakes assessments. The Branch interacts heavily in 305(b) use-support assessments and in water quality standards review and development. The Neuse River Rapid Response Team is coordinated through the Environmental Sciences Branch. The Branch is in the process of developing simplified public access to water quality information via the World Wide Web.

The Point Source Branch is responsible for permitting, compliance and enforcement of wastewater discharges into our state's surface waters. Permitting and enforcement programs include the municipal industrial pretreatment program, state and federal stormwater programs, and the National

Pollutant Discharge Elimination System (NPDES) program. Modeling is conducted to determine the receiving stream's ability to assimilate the discharge and protect the streams uses and surface water standards.

The Non-discharge Branch is responsible for permitting, compliance and enforcement of wastewater discharges that are **not** directly into our state's surface waters. Examples of these include spray irrigation systems, sludge applications, reuse systems and groundwater remediation projects. This branch also handles the section's activities related to wetlands including 401 certifications, wetland policy and mitigation, and DOT and dredging project reviews.

The seven Regional Offices carry out activities such as wetland reviews, compliance evaluations, permit reviews and facility inspections for both discharging and nondischarging systems, ambient water quality monitoring, state environmental policy act reviews, stream reclassification reviews, pretreatment program support and operator training and certification assistance. In addition, they respond to water quality emergencies such as oil spills and fish kills, investigate complaints and provide information to the public. Figure 1.3 shows the location of the regional offices and the counties that they serve.

REFERENCES CITED: CHAPTER 1

Creager, C.S., and J. P. Baker, 1991, North Carolina's Basinwide Approach to Water Quality Management: Program Description, DWQ Water Quality Section, Raleigh, NC.

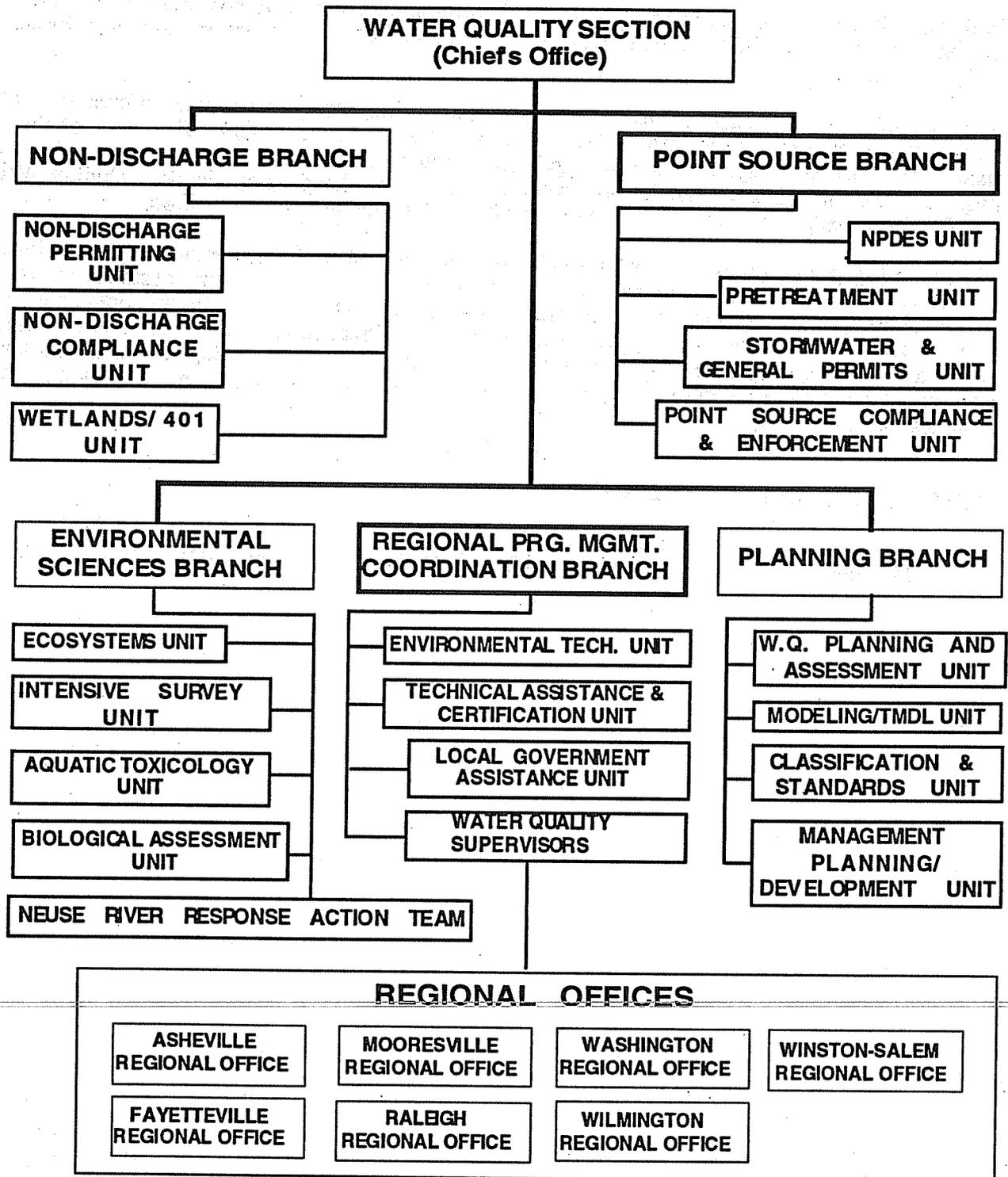


Figure 1.2 Organizational Structure of the DWQ Water Quality Section

**REGIONAL OFFICES.
N. C. Department of Environment, Health, and Natural Resources**

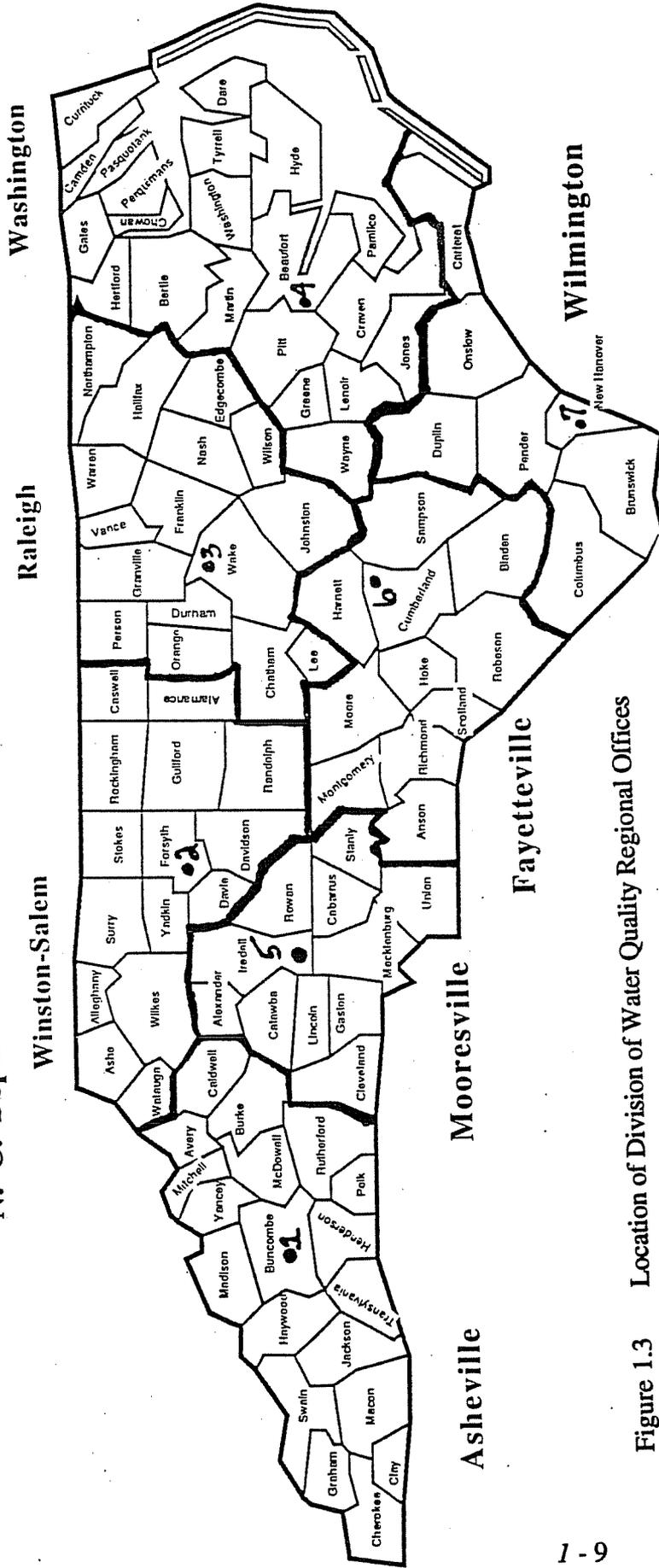


Figure 1.3 Location of Division of Water Quality Regional Offices

(1) ARO
Mr. Roy Davis
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(3) RRO
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