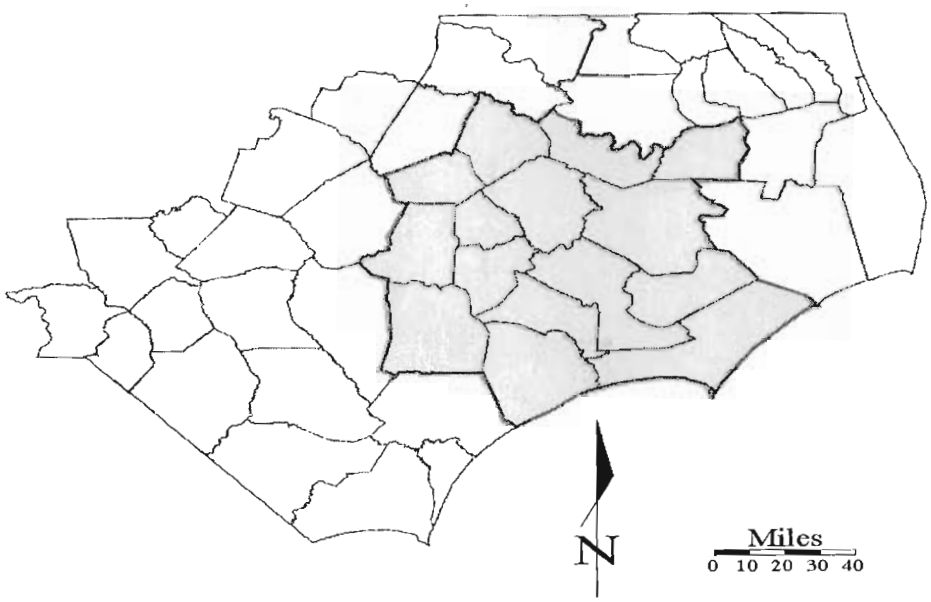
Fiscal Analysis:

Central Coastal Plain Capacity Use Area
(Revised Document)



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North Carolina Division of Water Resources

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Organization of Each Chapter:

Executive Summary

The Central Coastal Plain Capacity Use Area Rules will establish permitting requirements for major ground water withdrawals in a 15-county region of the coastal plain. This area includes Beaufort, Carteret, Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pamlico, Pitt, Washington, Wayne, and Wilson counties. In addition the rules require registration of other withdrawals not affected by this set of rules.

The NC Division of Water Resources has prepared this fiscal note to inform the public and elected officials of the potential economic impacts of the proposed rules and to meet the requirements of NCGS 150B-214. This executive summary reviews the main findings of the fiscal note and provides a brief history of the rule development. The following topics are covered:

- A Summary of Costs and Savings
- Need for the Proposed Capacity Use Area
- Overview of the Proposed Rule
- The Fiscal Note Format

Summary of Costs and Savings

Notice:
Local governments and others using the Cretaceous aquifer system (Black Creek, Upper Cape Fear, and Peedee aquifers) are facing significant costs to develop new water sources. These stressed aquifers cannot sustain present and projected withdrawals because the combined withdrawal rate is greater than the natural recharge rate of the aquifers. Therefore, new water sources must be developed to meet future needs.

The costs associated with this transition in water sources result from demand exceeding the sustainable yield of the aquifers, not from the proposed administrative rule. The purpose of the rule is to protect the aquifers from damage and assure that ground water can continue to be withdrawn at a rate that does not exceed the recharge rate. The rule will protect the ability of all water users to continue to use ground water.

Tables 1,2, and 3 summarize the estimated costs and savings associated with the Central Coastal Plain Capacity Use Rules. Table 4 summarizes the public benefits of the proposed rules. The Division used the best available scientific, economic, population, and water use data that were available. However, because the proposed rule provides flexibility in how permit holders comply with specified withdrawal limits, the Division had to make a number of assumptions about how these costs would be distributed. These assumptions are described in the appropriate chapters which follow. In a few cases where the relationship between the proposed rule and potential costs or benefits were too complex and/or site-specific to calculate, the Division indicated these costs were not quantifiable.

Please note that three of the seven rules do not have any costs associated with them because they do not regulate behavior. These rules are Declaration and Delineation of Central Coastal Plain Capacity Use Area (Chapter 1), Requirements for Entry and Inspection (Chapter 4), and Definitions (Chapter 7). They lay the necessary framework for the main rule: Withdrawal Permits (Chapter 2). A fourth rule, Prescribed Water Use Reductions in Cretaceous Aquifer Zones (Chapter 3), does not have any costs because its fiscal impact is fully captured in the main rule, Withdrawal Permits (Chapter 2). This rule provides additional specifications for permitted withdrawals.

Table 1. Summary of Costs and Savings to Local Governments

Withdrawal Permits (Chapter 2):

Local Government		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	1,157,946	1,736,920	2,315,893	2,894,866	3,473,839	11,579,464
		High	2,838,381	4,257,571	5,676,762	7,095,952	8,515,142	28,383,808
RP.2	Operating	Low	88,267	220,667	397,201	617,869	882,669	2,206,673
		High	316,988	792,470	1,426,445	2,218,915	3,169,878	7,924,696
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		504,000	504,000	504,000	504,000	504,000	2,520,000
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
	Yearly Totals	Low	$1,750,213	$2,461,587	$3,217,094	$4,016,735	$4,860,508	$16,306,137
		High	$3,659,369	$5,554,041	$7,607,207	$9,818,867	$12,189,020	$38,828,504
		Avg.	$2,704,791	$4,007,814	$5,412,151	$6,917,801	$8,524,764	$27,567,321

Acceptable Withdrawal Methods That Do Not Require A Permit (Chapter 5)

Local Government		Cost Range	2002	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital		N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating		N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		80,640	80,640	80,640	80,640	80,640	403,200
RP.5	Opportunity		N/A	N/A	N/A	N/A	N/A	0
RP.6	Other		N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals		$80,640	$80,640	$80,640	$80,640	$80,640	$403,200

Table 1. Summary of Costs and Savings to Local Governments (continued)

Central Coastal Plain Capacity Use Area Status Report (Chapter 6)

Local Government		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital		N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating		N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		N/A	N/A	N/A	N/A	N/A	0
RP.5	Opportunity		N/A	N/A	N/A	N/A	N/A	0
RP.6	Other		N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals		$0	$0	$0	$0	$0	$0

Total Costs and Savings to Local Government

Local Government		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	1,157,946	1,736,920	2,315,893	2,894,866	3,473,839	11,579,464
		High	2,838,381	4,257,571	5,676,762	7,095,952	8,515,142	28,383,808
RP.2	Operating	Low	88,267	220,667	397,201	617,869	882,669	2,206,673
		High	316,988	792,470	1,426,445	2,218,915	3,169,878	7,924,696
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		584,640	584,640	584,640	584,640	584,640	2,923,200
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
	Yearly Totals	Low	$1,830,853	$2,542,227	$3,297,734	$4,097,375	$4,941,148	$16,709,337
		High	$3,740,009	$5,634,681	$7,687,847	$9,899,507	$12,269,660	$39,231,704
		Avg.	$2,785,431	$4,088,454	$5,492,791	$6,998,441	$8,605,404	$27,970,521

Table 2. Summary of Costs and Savings to State Government

Withdrawal Permits (Chapter 2):

State Government		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	32,687	49,031	65,375	81,718	98,062	326,873
		High	80,124	120,186	160,247	200,309	240,371	801,237
RP.2	Operating	Low	2,492	6,229	11,212	17,442	24,917	62,291
		High	8,948	22,370	40,267	62,637	89,481	223,703
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		39,200	39,200	39,200	39,200	39,200	196,000
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
IA.1 - IA.6	Implementing Agency		159,938	159,938	159,938	159,938	159,938	799,690
	Yearly Totals	Low	$234,317	$254,398	$275,725	$298,298	$322,117	$1,384,854
		High	$288,210	$341,694	$399,652	$462,084	$528,990	$2,020,630
		Avg.	$261,263	$298,046	$337,689	$380,191	$425,553	$1,702,742

Acceptable Withdrawal Methods That Do Not Require A Permit (Chapter 5)

State Government		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital		N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating		N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		0	0	0	0	0	0
RP.5	Opportunity		N/A	N/A	N/A	N/A	N/A	0
RP.6	Other		N/A	N/A	N/A	N/A	N/A	0
IA.1 - IA.6	Implementing Agency		N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals		$0	$0	$0	$0	$0	$0

Table 2. Summary of Costs and Savings to State Government (continued)

Central Coastal Plain Capacity Use Area Status Report (Chapter 6)

State Government		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital		N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating		N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		N/A	N/A	N/A	N/A	N/A	0
RP.5	Opportunity		N/A	N/A	N/A	N/A	N/A	0
RP.6	Other		N/A	N/A	N/A	N/A	N/A	0
IA.1 - IA.6	Implementing Agency		N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals		$0	$0	$0	$0	$0	$0

Total Costs and Savings to State Government

State Government		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	32,687	49,031	65,375	81,718	98,062	326,873
		High	80,124	120,186	160,247	200,309	240,371	801,237
RP.2	Operating	Low	2,492	6,229	11,212	17,442	24,917	62,291
		High	8,948	22,370	40,267	62,637	89,481	223,703
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		39,200	39,200	39,200	39,200	39,200	196,000
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
IA.1 - IA.6	Implementing Agency		159,938	159,938	159,938	159,938	159,938	799,690
	Yearly Totals	Low	$234,317	$254,398	$275,725	$298,298	$322,117	$1,384,854
		High	$288,210	$341,694	$399,652	$462,084	$528,990	$2,020,630
		Avg.	$261,263	$298,046	$337,689	$380,191	$425,553	$1,702,742

Table 3. Summary of Costs and Savings to Other Water Users

Withdrawal Permitting Requirements (Chapter 2):

Other Water Users		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	1,979,486	2,969,229	3,958,973	4,948,716	5,938,459	19,794,863
		High	4,852,156	7,278,233	9,704,311	12,130,389	14,556,467	48,521,556
RP.2	Operating	Low	150,891	377,226	679,008	1,056,234	1,508,906	3,772,264
		High	541,884	1,354,711	2,438,480	3,793,191	5,418,844	13,547,110
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		490,000	490,000	490,000	490,000	490,000	2,450,000
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
	Yearly Totals	Low	$2,620,377	$3,836,455	$5,127,981	$6,494,950	$7,937,365	$26,017,127
		High	$5,884,040	$9,122,944	$12,632,791	$16,413,580	$20,465,311	$64,518,666
		Avg.	$4,252,208	$6,479,700	$8,880,386	$11,454,265	$14,201,338	$45,267,896

Acceptable Withdrawal Methods That Do Not Require A Permit (Chapter 5)

Other Water Users		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital		N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating		N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		392,560	392,560	392,560	392,560	392,560	1,962,800
RP.5	Opportunity		N/A	N/A	N/A	N/A	N/A	0
RP.6	Other		N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals		$392,560	$392,560	$392,560	$392,560	$392,560	$1,962,800

Table 3. Summary of Costs and Savings to Other Water Users (continued)

Central Coastal Plain Capacity User Area Status Report (Chapter 6)

Other Water Users		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital		N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating		N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		N/A	N/A	N/A	N/A	N/A	0
RP.5	Opportunity		N/A	N/A	N/A	N/A	N/A	0
RP.6	Other		N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals		$0	$0	$0	$0	$0	$0

Total Costs and Savings to Other Water Users

Other Water Users		Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	1,979,486	2,969,229	3,958,973	4,948,716	5,938,459	19,794,863
		High	4,852,156	7,278,233	9,704,311	12,130,389	14,556,467	48,521,556
RP.2	Operating	Low	150,891	377,226	679,008	1,056,234	1,508,906	3,772,264
		High	541,884	1,354,711	2,438,480	3,793,191	5,418,844	13,547,110
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		882,560	882,560	882,560	882,560	882,560	4,412,800
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
	Yearly Totals	Low	$3,012,937	$4,229,015	$5,520,541	$6,887,510	$8,329,925	$27,979,927
		High	$6,276,600	$9,515,504	$13,025,351	$16,806,140	$20,857,871	$66,481,466
		Avg.	$4,644,768	$6,872,260	$9,272,946	$11,846,825	$14,593,898	$47,230,696

Table 4. Summary of Public Benefits

Withdrawal Permitting Requirements (Chapter 2):

Benefits	For all Five Years (FY ending 2002 to 2006)
Human Health	This rule will decrease the human health risks associated with over-pumping of ground water.
Environmental Assets	This rule will help to ensure that there are reliable water supplies to support economic activities in the Central Coastal Plain. A major economic benefit of the rule is to provide for orderly development of alternative water supplies, as opposed to a situation of water shortages and emergency responses. There are significant cost savings associated with a planned approach to water supply development.
Ecosystem Health	N/A
Other	N/A
Total	Overall, the public benefits of this rule cannot be quantified. However, it is clear that the ground water of the Central Coastal Plain has a high economic value to citizens, municipalities, agriculture, industries, and tourism.

Need for the Proposed Capacity Use Area

The Water Use Act of 1967 gives the Environmental Management Commission the authority to declare capacity use areas in the State where it finds that the use of ground or surface water requires coordination and limited regulation for protection of the resource. The Act defines a capacity use area as "one where the Commission finds that the aggregate uses of ground water or surface water, or both, in or affecting said area (i) have developed or threatened to develop to a degree which requires coordination and regulation, or (ii) exceed or threaten to exceed, or otherwise threaten or impair, the renewal or replenishment of such waters or any part of them."

There is increasing evidence of present and future ground water supply shortages within the area encompassed by the following 15 North Carolina counties: Beaufort, Carteret, Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pamlico, Pitt, Washington, Wayne, and Wilson. Within this area, ground water from the Cretaceous aquifer system is being withdrawn at a rate that exceeds the available recharge. To address this problem, the Division of Water Resources has requested the Environmental Management Commission to create the Central Coastal Plain Capacity Use Area. This capacity use area will regulate ground water use through permitting to avoid damage to the ground water resources and to maintain those sources of water indefinitely.

Water levels in Cretaceous aquifers have been declining since the late 1960s as documented by Division of Water Resources databases. The Division has anecdotal information that water flowed freely from artesian wells constructed around the 1920s. The decline from flowing wells to water levels as much as 200 feet below land surface indicates that current withdrawals exceed the sustainable yield of these aquifers. Water users in this area have overused the resource since it has provided the highest quality water for their uses at the lowest cost. Growth in demand and the physical limits of the hydrogeologic system have resulted in the present situation.

The most threatened portions of the Cretaceous aquifer system lie beneath the following eleven North Carolina counties: Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pitt, Wayne, and Wilson. The Division recommends that water use regulation take place in the these counties and four others to the east, namely Beaufort, Carteret, Pamlico, and Washington. The high yielding Castle Hayne aquifer is available in the eastern portion of the proposed capacity use area, and could supply the eastern portion of the stressed area. In this manner, the Division hopes to avoid stressing other water sources in the region.

Demands for water exceed the safe yield of the Cretaceous aquifer system such that water supply systems and other users must develop other sources of water. Surface water and other aquifers will be used to meet this deficit. The availability of surface water sources in these counties is affected by water quality issues. Therefore, the proposed capacity use area includes registration of both surface and ground water withdrawals greater than 10,000 gallons per day (GPD) that are not subject to permitting under the proposed rule. The proposed rule includes those eastern counties in the capacity use area to control the exchange of water and promote prudent development of alternative supplies. Because the proposed capacity use area encompasses most of the existing Capacity Use Area No. 1, the Capacity Use Area No. 1 declaration and rule (15A NCAC 2E.02) should be repealed when this rule becomes effective.

Overview of the Proposed Rule

In early 1998, the Division of Water Resources decided to proceed with rule-making upon finding that ground water levels were declining faster than had been projected. Monitoring well data indicated that dewatering of the Cretaceous aquifer system had begun. In October 1998, the Division completed the Central Coastal Plain Capacity Use Investigation Report. This report describes the extent of the problem and outlines a conceptual capacity use rule.

The Division held two public workshops in Greenville, NC: the first on March 31, 1998 and the second on January 12, 1999. Based on information received at the workshops, the Division prepared draft rules to present to the Environmental Management Commission (EMC). On March 11, 1999, the EMC voted unanimously to allow the Division to proceed with rule-making. A public hearing was held in June 1999. Based on comments received at the public hearing, the Division, with EMC approval, initiated a stakeholders process to draft revised rules. The stakeholder group included a broad range of interested parties. The group met weekly from February 7, 2000 to April 3, 2000 and developed the current rule language.

The Division presented the revised draft rules to the EMC on May 11, 2000. The EMC voted unanimously to allow the Division to proceed with rulemaking. A new public hearing will be held in August, 2000.

The proposed rules consists of a declaration and delineation of the capacity use area and procedures to be used in permitting water use within that area. In general, no one, after the effective date, shall withdraw more than 100,000 gallons per day of ground water without first applying for and obtaining a water use permit from the Division of Water Resources.

The Division will consider the following information before issuing a withdrawal permit:

- Applicant's plan to achieve water use reductions from Cretaceous aquifers
- Cost and availability of alternative supplies
- Impacts of the withdrawal on aquifer drawdown and dewatering
- Existing and proposed conservation measures
- Proposed use of the water
- Benefits provided by the water use.

The withdrawal permit may specify any or all of the following:

- Pumping and withdrawal rates
- Well construction
- Location and depth of well
- Number and spacing of wells
- Placement of well screens and other control structures
- Restrictions on timing of withdrawal
- Construction of monitoring stations.

One outcome of the stakeholder process was the provision for a series of prescriptive reductions in withdrawals from stressed aquifers in the proposed capacity use area. The Division has identified the areas where aquifers are severely to moderately impacted by overuse, based on regional aquifer monitoring data. The rule identifies areas where reductions will be required, including a map of aquifer zones for the prescribed cutbacks. The reductions in allowable withdrawals will be implemented in a three-stage process, which will provide regulated parties time to identify and develop other water sources. This will also allow the Division and the Environmental Management Commission (EMC) to evaluate the response of the aquifers to each phase of reductions in withdrawals. The phased implementation will also allow the EMC to adjust the requirements of the prescriptive cutbacks to assure that the aquifers are used in a sustainable manner.

> It is important to note that the rule specifically states that prescribed reductions do not apply to "intermittent users." This provision is intended to provide regulatory relief to agricultural users who withdraw ground water less than 60 days per year, or who use less than 15 million gallons per year.

In addition, the rules requires all permit holders to report daily water usage and monthly water levels to the Division. The frequency of reporting will be specified in each permit.

A key provision of the rule is the publication of a Central Coastal Plain status report two years after the rule's effective date, and every five years thereafter. The status report will include:

- Compilations of water use data
- Evaluations of surface and ground water resources
- Updated information about the hydrogeologic framework in the Central Coastal Plain Capacity Use Area
- A summary of alternative water sources and water management techniques that may be feasible by generalized location
- A status report on actions by water users to develop new water sources and to increase water use efficiency.

The Fiscal Note Format

The Division of Water Resources has prepared the attached fiscal note for the proposed Central Coastal Plain Capacity Use rule. The format of the fiscal note is based on a template created through a cooperative agreement between the University of North Carolina, Chapel Hill and DENR. This template provides a series of questions about the proposed rule organized into six steps as follows:

Step 1: Basic Information contains a brief description of the proposed rule and identifies the analyst.

Step 2: Screening Analysis includes a number of questions that aid in determining whether or not it is necessary to perform a fiscal analysis.

Step 3: Identify Parties contains a more detailed description of the proposed rule and describes how it would change the behavior of the regulated community.

Step 4: Identifying Impacts describes the costs/savings of implementing the rule to the regulated parties and the implementing agency. It also describes the benefits/harms to public beneficiaries. For each part, underlying assumptions and sources of information are given.

Step 5: Threshold Decision After Preliminary Rule Evaluation includes a table which indicates if the proposed rule shows an estimated annual economic impact of $5million or more.

Step 6: Analysis for Major Rules includes questions and tables that provide further descriptions of how cost were calculated for rules that show an estimated economic impact of $5 million or more.

4-A. Regulated Parties Costs/Savings

Description of the Regulated Community	The regulated community is defined as the group of North Carolina citizens that are affected by the proposed rule. For this rule, the regulated community is split between Local Government, State Government, and Other Water Users.
Capital Costs	These costs are the fixed capital investments required to comply with the proposed rule. Examples of capital costs associated with the Central Coastal Plain capacity use rule include development and modification of surface and ground water supplies, aquifer storage and recovery (ASR), and conservation costs.
Operating Costs	Operating costs include recurring costs to operate and maintain a water supply system, such as chemicals, pumping costs, well maintenance, and labor.
Planning Costs	These are costs of designing/planning new facilities to comply with the proposed rule. These costs were included in the capital cost estimates as engineering fees.
Regulatory Transaction Costs	Regulatory transaction costs are incurred to comply with permit application, monitoring and reporting requirements.
Opportunity Costs	Opportunity costs associated with the proposed rule are estimates of the value of lost treatment capacity due to the proposed rule.
Other Costs	These are additional costs that do not fall under the previous categories. An example of "other costs" is the expense of training plant operators to manage more complex water treatment processes.

4-B. Implementing Agency Costs/Savings

Description of the Implementing Agency	This part describes the unit of DENR that will be the lead agency responsible for implementing the proposed rule.
Regulatory Development Costs	These are the costs for DENR to develop and propose the rule, create permitting procedures and forms, and prepare a status report for the proposed capacity use area.
Monitoring and Recordkeeping Costs	This part describes the costs for DENR to monitor ground and surface water resources and maintain a monitoring database.
Permitting Costs	Permitting costs are the costs for DENR to review and issue withdrawal permits.
Inspection and Enforcement Costs	This part describes the costs for DENR to make periodic inspections of permit holders.
Other Costs	These are additional costs that do not fall under the previous categories. Examples of "other costs" include modeling of the surface and ground water resources, and expenses to operate a new field office.

4-C. Public Beneficiary Costs/Savings

Description of the Public Beneficiary	These are parties that benefit economically from the proposed rule as well as parties that benefit in a non-economic manner.
Human Health Benefits	This part includes benefits and potential benefits of the proposed rule to human health. An example is assuring reliable water supply for fire protection.
Environmental Asset Benefits	Environmental asset benefits are economic benefits associated with the resource protected or improved by the proposed rule. An example is improved availability of water supplies for new industrial developments.
Ecosystem Benefits	This part describes benefits of the proposed rule to the ecosystem that do not have a directly associated economic value. The proposed rules do not have any direct benefit for ecosystems in the regulated area.
Other Benefits	These are additional benefits that do not fall under the previous categories.

Chapter 1: Declaration and Delineation of Central Coastal Plain Capacity Use Area

Step 1: Basic Information

1.1 Rule Reference No.	E-2732
1.2 Analyst (Your Name and Title)	Mark Broadwell, Environmental Engineer
1.3 Office (Your Organizational Location)	NC Division of Water Resources P.O. Box 27687 Raleigh, NC 27611
1.4 Your Phone	(919)715-0386
1.5 Comments on Agency Contact	Nat Wilson, Capacity Use Area Program Manager (919)715-5445
1.6 Title of the Proposed Rule	Declaration and Delineation of Central Coastal Plain Capacity Use Area
1.7 Citation	15A NCAC 2E .0501
1.8 Brief Description of the Proposed Rule	List of the 15 counties included in the proposed capacity use area.
1.9 Rule Category	Regulation

Step 2: Screening Analysis

Circumstances	Yes or No
2.1 Federal Rule Certification Required Does the proposed rule require a federal certification statement under NCGS 150B-21(f1)?	No
2.2 "Substantial Economic Impact" Analysis - Federal Rule Exemption Does this rule meet the criterion of Federal Exemption found in NCGS 150B-21.4(b1)? [*If the answer is yes and there is no impact on local government funds, you may prepare a Special Circumstance Report.*]	No
2.3 Temporary Rules Does this rule meet the criteria listed in NCGS 150B-21 relating to Temporary Rules? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.4 Technical Corrections Does this rule meet the criteria for a Technical Correction laid out in NCGS 150B-21.5? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.5 Repeal of Regulatory "Deadwood" The Help file lists a series of situations which may render a rule obsolete; does this rule meet any of those criteria? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No

2.6 Service/Financial Program - Where Proposed Rule's Impact on State Funds under $5 million	N/A in this Template.

If you answered yes to any of questions 2.2 through 2.5, please describe the Special Circumstances below as part of the written record of this rule-making. If you answered no to all of the questions 2.2 through 2.5, continue to the analysis component. Enter N/A in the Special Circumstance Report.

Special Circumstance Report

Identify the type of Special Circumstance, from above list.	Explain the Special Circumstance.
N/A	N/A

If you have completed a Special Circumstance Report, you may delete the rest of the material on this template, and submit this analysis with the proposed rule. NOTE: even though an economic impact analysis may not be required, a Fiscal Note analysis may still be needed because of local government impacts.

Step 3: Identify Parties

3.1 Why is the Regulatory Proposal Needed? Enter response here:
The rule is needed to define the geographical boundaries of the proposed capacity use area.

3.2 How does the Proposed Rule Change Behavior? Enter response here:
No behavior is changed as a result of the rule. Chapter 2 covers all fiscal impacts pertaining to permit requirements in the defined capacity use area.

Because this rule does not require any changes in behavior, there are no costs to regulated parties or implementing agencies nor are there any public beneficiaries associated with it. Therefore, Step 4 (Identify Impacts), Step 5 (Threshold Decision for Major Rules) and Step 6 (Analysis for Major Rules) are not applicable to this rule and therefore have been omitted.

Chapter 2:
Withdrawal Permits

Step 1: Basic Information

1.1 Rule Reference No.	E-2732
1.2 Analyst (Your Name and Title)	Mark Broadwell, Environmental Engineer
1.3 Office (Your Organizational Location)	NC Division of Water Resources P.O. Box 27687 Raleigh, NC 27611
1.4 Your Phone	(919)715-0386
1.5 Comments on Agency Contact	Nat Wilson, Capacity Use Area Program Manager (919)715-5445
1.6 Title of the Proposed Rule	Withdrawal Permits
1.7 Citation	15A NCAC 2E .0502
1.8 Brief Description of the Proposed Rule	This rule establishes general permitting requirements and specific criteria for ground water withdrawals within the defined capacity use area.
1.9 Rule Category	Regulation

Step 2: Screening Analysis

Circumstances	Yes or No
2.1 Federal Rule Certification Required Does the proposed rule require a federal certification statement under NCGS 150B-21(f1)?	No
2.2 "Substantial Economic Impact" Analysis - Federal Rule Exemption Does this rule meet the criterion of Federal Exemption found in NCGS 150B-21.4(b1)? [*If the answer is yes and there is no impact on local government funds, you may prepare a Special Circumstance Report.*]	No
2.3 Temporary Rules Does this rule meet the criteria listed in NCGS 150B-21 relating to Temporary Rules? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.4 Technical Corrections Does this rule meet the criteria for a Technical Correction laid out in NCGS 150B-21.5? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No

2.5 Repeal of Regulatory "Deadwood" The Help file lists a series of situations which may render a rule obsolete; does this rule meet any of those criteria? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.6 Service/Financial Program - Where Proposed Rule's Impact on State Funds under $5 million	N/A

If you answered yes to any of questions 2.2 through 2.5, please describe the Special Circumstances below as part of the written record of this rule-making. If you answered no to all of the questions 2.2 through 2.5, continue to the analysis component. Enter N/A in the Special Circumstance Report.

Special Circumstance Report

Identify the type of Special Circumstance, from above list.	Explain the Special Circumstance.
N/A	N/A

If you have completed a Special Circumstance Report, you may delete the rest of the material on this template, and submit this analysis with the proposed rule. NOTE: even though an economic impact analysis may not be required, a Fiscal Note analysis may still be needed because of local government impacts.

Step 3: Identify Parties

3.1 Why is the Regulatory Proposal Needed? Enter response here:
Water users in the Central Coastal Plain have traditionally relied on withdrawals from the Cretaceous aquifer system (Black Creek, Upper Cape Fear and Peedee aquifers). The high quality water from these aquifers requires minimal treatment to meet drinking water standards. Consequently, this resource has been pumped at a rate exceeding its natural recharge rate. Monitoring indicates that water levels in the aquifers are dropping 1 to 8 feet per year. As water levels continue to drop, pumping costs will increase while yields decline.

Continued over-pumping leads to an even more serious problem: compaction of the aquifer structure and permanent loss of water storage. Loss of storage jeopardizes Cretaceous aquifers as a sustainable water source by reducing the available yield. Replacing this storage with surface water storage would be extremely costly in both economic and environmental terms.

A secondary impact of over-pumping these aquifers is reduced economic opportunity. New industry is unlikely to locate in the Central Coastal Plain unless dependable water supplies are available. Without regulation, the safe yield of water supplies will be in question as users compete for the same sources.

The proposed rule is needed to prevent further deterioration of ground water resources and encourage development of alternative sources. The rule will foster regional cooperation by requiring all major water users in the Central Coastal Plain to be part of the same regulatory framework.

3.2 How does the Proposed Rule Change Behavior? Enter response here:
The regulated community includes public and private water systems, self-supplied industry, agriculture, and other major withdrawers in the proposed 15-county area. Currently, withdrawals in Beaufort, Pamlico, Washington, and portions of Carteret, Craven, and Martin counties are subject to similar permitting requirements under Capacity Use Area No. 1. Behavior changes would be minor for this area, such as modified reporting requirements. Withdrawals in the remaining area (Duplin, Edgecombe, Greene, Jones, Lenoir, Onslow, Pitt, Wayne, Wilson and portions of Carteret, Craven, and Martin counties) are currently unregulated. For that area, the proposed rule will require significant behavior changes.

All persons withdrawing ground water in excess of 100,000 gallons per day (GPD) in the proposed 15-county capacity use area will be required to obtain a withdrawal permit from the Division. Persons with withdrawals from the Cretaceous aquifer system will also be subject to a three-phased reduction in water use over a 16-year period (see description under Chapter 3). The level of required reductions will depend on local aquifer conditions as delineated on the Cretaceous Aquifer Zone map prepared by the Division of Water Resources (see Appendix A). Three zones have been established: the salt water encroachment zone, the dewatering zone, and the declining water level zone. Phase I reductions will occur within six years from the effective date of the rule. Intermittent users (primarily agricultural) are not required to meet phased reductions.

In most instances where water resources in a particular region are stressed, new source development would eventually occur with or without regulation. However, under the proposed rule, the shift to alternative water sources would occur sooner to protect regional water sources. Regulation of withdrawals will reduce uncertainty in the timing of development of alternative sources.

Each permit holder will be required to file a monthly report of water usage and water levels to the Division. Agricultural water users have the option of reporting water usage through confidential surveys conducted by the NC Department of Agriculture or the US Department of Agriculture. In addition, all permit holders except irrigators of crops and forestry stock must submit a conservation plan describing efforts to reduce water use. Irrigators must report information on the acreage under irrigation.

At intervals not greater than 10 years (five years typically), each permit will be subject to review and renewal. The Division may ask permits holders for additional information at the time of review.

Step 4: Identify Impact

4-A. Regulated Parties

RP.0 Party Description

Name of Party	Major Water Withdrawers

Description	All major water withdrawers using more than 100,000 GPD of ground water in the Central Coastal Plain capacity use area are affected by the rule. These withdrawers include public water systems, agriculture, and self-supplied industry. For analysis purposes, these parties have been split into Local Government, State, and Other Water Users categories. The proposed rule requires: • withdrawers of more than 100,000 GPD to obtain a permit from the Division, and be subject to any conditions placed on the issued permit, including but not limited to maximum withdrawal rate, well location, well depth and placement of screens, and timing of withdrawal. • permit holders using Cretaceous aquifers to reduce water use according to prescribed water reductions (see description in Chapter 3). • intermittent users to be excluded from reduction requirements • permit holders to file a monthly report of water usage and water levels to the Division. • permit applicants to prepare a conservation plan • permit holders to provide any additional information requested by the Division for renewal of the permit.
General Baseline	Currently, withdrawals in Beaufort, Pamlico, Washington, and portions of Carteret, Craven, and Martin counties are subject to similar permitting requirements under Capacity Use Area No. 1. Only minor changes in reporting requirements are anticipated for systems currently regulated. Withdrawals in the remaining area (Duplin, Edgecombe, Greene, Jones, Lenoir, Onslow, Pitt, Wayne, Wilson and portions of Carteret, Craven, and Martin counties) are currently unregulated.
Assumptions	N/A
Data Sources	The proposed rule and the state statute governing capacity use areas (NCGS 143-215).

RP.1 Annual Capital Costs/Savings (AC/S)

(a) Cost Baseline	Water withdrawn from the Cretaceous aquifer system requires minimal treatment, usually only simple disinfection. Based on recent engineering studies [1,2,3], the capital cost for a typical Cretaceous aquifer ground water system including wells, pumps, land , and disinfection facilities ranges from $300,000 to $700,000 for each million gallons per day (MGD) of capacity. Due to the declining condition of the Cretaceous aquifer system, major ground water users will eventually have to make capital investments in new source development. Without regulation, however, substantial investment would likely be delayed until the aquifers have degraded to the point where they can no longer support existing uses. Table 2-1 lists the estimated 2000 water demand for the Cretaceous aquifer in the proposed 15-county area.
(b) Description	Capital costs will occur whenever the reduction in permitted Cretaceous ground water necessitates investment in new water supply infrastructure. Examples of capital costs include: • developing a surface water source to replace or supplement an existing ground water source • changing the number and spacing of wells in a wellfield • constructing wells in alternative aquifers • investment in water conservation programs • constructing connections with other systems
(c) Quantify $	Capital costs for various alternatives are summarized in Table 2-3 below. In Table 2-4, costs are split between Local Government, State Government, and Other Water Users categories. In Table 2-5, costs are distributed over fiscal years ending 2002 through 2006. Total capital costs for the five-year period are estimated to range from about $31.7 to $77.7 million.
(d) Quantification Method	Capital costs are based on the cost of developing new water supplies to replace the reductions in Cretaceous water use as specified under Phase I reductions in the rules. The reduction amount is calculated by the formula: Reductions = (Cretaceous Base Demand) * (Prescribed Reduction Percentage) Cretaceous base demand is derived from water use information collected through the Local Water Supply Planning process and by the U.S. Geological Survey. See Table 2-1. Demand is totaled for each water use category and then split into Local Government, State, and Other Water Users categories. Base demand in 2000 is estimated at 116.4 MGD. Under Phase I reductions, permittees will be required to reduce their annual Cretaceous water use by the following amounts depending on their location as specified on the Cretaceous Aquifer Zone Map (see Appendix A): Salt Water Encroachment Zone - 25% from the base rate Dewatering Zone - 25% from the base rate Declining Water Levels Zone - 10% from the base rate Stable Zone - not exceed existing base rate

(d) Quantification Method (continued)	Table 2-2 summarizes the estimated reductions in each of the 15 affected counties. For each county, an overall reduction percentage was estimated by comparing the known distribution of water use with the location of the Cretaceous aquifer zones. For example, if water use is evenly distributed in County A, and half of County A lies in the Dewatered Zone (25%) and half lies in the Declining Water Level Zone (10%), then the overall reduction for County A is approximately 17.5%. The maximum reduction on a county basis is 25%, corresponding to the prescribed reductions in the two most severe zones. Individual permit requirements will be based on the location of each withdrawal site. The Phase I reduction is calculated as the overall reduction times the base demand. New supplies will be distributed among several alternatives, including surface water treatment, alternative aquifer development, aquifer storage and recovery (ASR), and water conservation. The distribution is based on the Division's knowledge of available water sources in the Central Coastal Plain. See Table 2-3. Unit costs for each water supply alternative are based on recent engineering studies prepared for local water systems in the Central Coastal Plain [1,2,3]. A range of capital unit costs are provided. The actual cost for each alternative would depend on the size of treatment plant, level of treatment required, depth and number of wells, surface intake type, and other factors. This analysis assumes no capital costs for the conservation alternative. The 15% share for conservation represents less than three percent of total water use, and could be achieved with basic water conservation measures. Typically, conservation programs focus on the most cost effective measures first[6,7]. These measures require either little or no capital investment. Rather, the costs are recurring administrative costs and are best represented as operating and maintenance costs. Examples of basic conservation measures include water audits, rate structure changes, meter calibration, leak detection, irrigation scheduling, and consumer education. The proposed rules require public water systems and commercial water users to develop a conservation plan as part of their permit application. Capital costs are calculated as: Capital Cost = (Phase I Reduction) x (Unit Capital Cost) Capital costs for each of the regulated parties (local, State, and other) are summarized in Table 2-4. The share of costs is based on each party's percentage of total Cretaceous water use as shown at the bottom of Table 2-1. Capital costs are fixed costs (design and construction of new facilities) that will be distributed over the first five years after rule implementation. See Table 2-5. This period corresponds roughly to Phase I of rule implementation and allows a reasonable length of time to comply with initial permit requirements. The distribution of capital costs is weighted heaviest at the end of the five-year period to reflect a gradual increase in construction activity .

(e) Assumptions	Although the Division has experience in regulating water use in the existing Capacity Use Area No. 1, that experience has limited applicability to this analysis. The majority of permit holders in Capacity User Area No. 1 are using water from the Castle Hayne aquifer which is a high-yielding water source. This aquifer has not experienced the stress that was originally projected. Consequently, there have been only limited cases where a permit was denied or modified. Those instances are not significant enough to be used for projecting economic impacts in the Central Coastal Plain. Although Phase I of the prescribed reductions extends for a six-year period, all costs associated with Phase I are assumed to occur in the first five years. This assumption assures that all estimated costs, particularly escalating capital and operating costs, are captured in this fiscal analysis. The analysis makes no allowance for intermittent users who are defined as persons withdrawing ground water less than 60 days a year or using less than 15 million gallons per year. Under a provision of the rule, intermittent users are not subject to the prescribed reductions. There was insufficient data available on agricultural withdrawal patterns to quantify the amount of agricultural water use that would be exempt from the prescribed reductions; therefore, capital costs may be overstated for the Other Water Users category. Another assumption is that all categories of withdrawers will behave similarly. One water user, such as a chemical industry, might place a high value on water and be willing to pursue higher cost alternatives. Another user, such as an irrigator, might forego a new water supply and instead switch to crops with lower irrigation requirements. There is insufficient information available to quantify these differences in behavior. This analysis assumes no salvage value for existing facility capacity for using the Cretaceous aquifer system that must be replaced with alternative water supply capacity. In some cases, there may be alternative uses for equipment such as pumps, filters, etc. No cost allowance is included for regional water supply solutions. There is insufficient information to predict where or to what extent regionalization will occur. Although savings can result from construction of shared facilities, there may be substantial costs and institutional constraints to interconnecting water systems.

(f) Data Sources	[1]Personal communication with Tom Howell, Rivers Associates. [2]Personal communication with Dan Boone, Wooten & Company. [3]Personal communication with David Pyne, CH2MHill. [4]NC DENR, Division of Water Resources. Central Coastal Plain Capacity Use Investigation Report. 1998. [5]Robinson, T.M. and Mann Jr., L.T. Public Water Supplies of North Carolina, Part 5 Southern Coastal Plain, U.S. Geological Survey and NC Dept. of Natural Resources and Community Development. 1977. [6]Seattle Public Utilities. Water Conservation Potential Assessment, Final Project Report. 1998. [7]Personal communication with Jennifer Ball, Water Conservation Coordinator for the City of Asheville. The proposed rule. NC DENR, Division of Water Resources. Local Water Supply Plans database. NC DENR, Division of Environmental Health. Database of community water systems. U.S. Geological Survey. Estimated Water Use, By County, in North Carolina, 1995. 1997.

Table 2-1
Estimated 2000 Water Demand for Cretaceous Aquifers
in Proposed Capacity Use Area

County	Average Daily Demand (MGD)							
	Local Govt.	State Govt.	Other Water Use					Total
	Public Water Use	State-Owned Facilities[1]	Self-Supplied Domestic	Self-Supplied Commercial	Self-Supplied Industry	Agriculture	Mining	
Beaufort	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carteret	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Craven	8.96	0.15	0.37	0.10	0.00	3.54	0.00	13.12
Duplin	3.00	0.00	2.27	0.05	4.60	15.19	0.00	25.11
Edgecombe	0.58	0.30	2.91	0.04	0.16	1.51	0.00	5.50
Greene	2.41	0.00	0.48	0.00	0.00	2.54	0.00	5.43
Jones	0.55	0.00	0.11	0.00	0.71	1.30	0.00	2.67
Lenoir	7.18	0.30	1.00	0.04	3.45	1.43	0.00	13.40
Martin	2.51	0.15	1.33	0.07	0.00	0.97	0.00	5.03
Onslow	6.53	0.00	2.95	0.03	0.00	2.89	0.00	12.40
Pamlico	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pitt	6.04	0.00	1.49	0.03	4.38	4.79	0.00	16.73
Washington	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.30
Wayne	3.87	0.00	2.04	0.05	1.11	4.26	0.00	11.33
Wilson	0.88	0.00	1.86	0.07	0.82	1.73	0.00	5.36
Total	42.51	1.20	16.81	0.48	15.23	40.15	0.00	116.38
% of Total	36.5	1.0	62.4					100.0

[1] State-owned facilities include self-supplied research farms operated by the NC Dept. Of Agriculture and NC State University. Most other state-owned facilities purchase water from public water systems.

Sources:

U.S. Geological Survey. Estimated Water Use, By County, in North Carolina, 1995. 1997.

NC-DENR, Division of Water Resources. Local Water Supply Plan Database. 1992

NC Department of Agriculture.

Table 2-2. Estimated Reductions in Cretaceous Water Use

County	Percent of County in Cretaceous Aquifer Zones[1,2]			Estimated Overall Phase I Reduction[3]	Base Demand (MGD)[4]	Phase I Reduction (MGD)[5]
	Salt Water Encroachment or Dewatering (Reduce 25%)	Declining Water Level (Reduce 10%)	Stable (Maintain Base)			
Beaufort	10	0	0	0%	0.00	0.00
Carteret	0	0	0	0%	0.00	0.00
Craven	45	0	0	25%	13.12	3.28
Duplin	0	50	50	5%	25.11	1.26
Edgecombe	0	50	50	5%	5.50	0.28
Greene	90	10	0	25%	5.43	1.36
Jones	80	0	0	25%	2.67	0.67
Lenoir	100	0	0	25%	13.40	3.35
Martin	40	40	0	20%	5.03	1.01
Onslow	70	0	0	25%	12.40	3.10
Pamlico	0	0	0	0%	0.00	0.00
Pitt	100	0	0	25%	16.73	4.18
Washington	0	0	0	0%	0.30	0.00
Wayne	0	10	90	5%	11.33	0.57
Wilson	0	25	75	5%	5.36	0.27
Total					116.38	19.33

[1] Cretaceous aquifer zones are delineated on the Cretaceous Aquifer Zone Map prepared by the Division of Water Resources (see Appendix A). Prescribed reduction amounts are specified in 15A NCAC 2E .0503 of the proposed rules.

[2]Four of the easternmost counties in the proposed capacity use area have significant area outside the Cretaceous aquifer zones. These counties include Beaufort, Carteret, Pamlico, and Washington (see map in Appendix A).

[3]Overall reduction percentages are based on aggregating the Cretaceous aquifer zones applicable to each county. The maximum reduction on a county basis is 25%, corresponding to the prescribed reductions in the two most severe zones. Individual permit requirements will be based on the location of each withdrawal site.

[4]Estimated base demands from Table 2-1.

[5]Estimated Phase I reduction in Cretaceous aquifer water use = (overall reduction percentage) * (base demand)

Table 2-5
Distribution of Capital Costs, Fiscal Years Ending 2002 to 2006

Party	Cost Range	Capital Costs ($)					
		FY 01-02 (10%)	FY 02-03 (15%)	FY 03-04 (20%)	FY 04-05 (25%)	FY 05-06 (30%)	5-Yr. Total (100%)
Local	Low	1,157,946	1,736,920	2,315,893	2,894,866	3,473,839	11,579,464
	High	2,838,381	4,257,571	5,676,762	7,095,952	8,515,142	28,383,808
State	Low	32,687	49,031	65,375	81,718	98,062	326,873
	High	80,124	120,186	160,247	200,309	240,371	801,237
Other	Low	1,979,486	2,969,229	3,958,973	4,948,716	5,938,459	19,794,863
	High	4,852,156	7,278,233	9,704,311	12,130,389	14,556,467	48,521,555
Total	Low	3,170,120	4,755,180	6,340,240	7,925,300	9,510,360	31,701,200
	High	7,770,660	11,655,990	15,541,320	19,426,650	23,311,980	77,706,600

RP.2 Annual Operating Costs/Savings (AOC/S)

(a) Cost Baseline	Water withdrawn from the Cretaceous aquifer system aquifer requires minimal treatment, usually only simple disinfection. Based on recent engineering studies [1,2,3], operating and maintenance costs range from $0.40 to $0.80 per thousand gallons for a typical ground water system in the Central Coastal Plain.
(b) Description	Higher operating costs will occur whenever a reduction in the permitted Cretaceous aquifer withdrawal necessitates a shift from Cretaceous aquifers to other water supplies. Costs will vary depending on the type of alternative source. Examples of operating costs include: • treatment of surface water to drinking water standards • treatment of alternative aquifer ground water to drinking water standards • pumping costs associated with system interconnections • maintenance of new infrastructure • conservation programs
(c) Quantify $	Operating costs for various alternatives are summarized in Table 2-6. In Table 2-7, costs are split between Local Government, State, and Other Water Users categories. Table 2-8 shows the estimated distribution of operating costs over fiscal years ending 2002 to 2006. Total operating costs for the first five years are estimated to range from about $6.0 to $21.7 million.

Table 2-3. Capital Costs, Fiscal Years Ending 2002 to 2006

Alternative Source Type		Surface	Alternative Aquifer	Aquifer Storage & Recovery[2]	Conser-vation	Total
Source Distribution (%)		55	20	10	15	100
Source Distribution (MGD)		10.6	3.9	1.9	2.9	19.3
Unit Capital Cost ($/MGD)						
Regulated Cost[1]	Low	2,000,000	2,500,000	400,000	0	
	High	5,000,000	6,000,000	700,000	0	
Total Capital Costs ($)						
Regulated Cost	Low	21,263,000	9,665,000	773,200	0	31,701,200
	High	53,157,500	23,196,000	1,353,100	0	77,706,600

[1] Capital costs include wells, intakes, pumps, treatment plant, land and engineering fees.
2 Aquifer storage and recovery (ASR) is a process of using injection or other means to store surface water in an aquifer body capable of seasonal water storage, and recovering the water when needed through conventional wells.
Sources:
Personal communication with Tom Howell, Rivers Associates.
Personal communication with Dan Boone, Wooten & Company.
Personal communication with David Pyne, CH2MHill.
Personal communication with Adam Waters, Operations and Pre-treatment Supervisor, City of Washington.
Personal communication with Bob Oreskovitch, Director, Dare County Water.
Seattle Public Utilities. Water Conservation Potential Assessment, Final Project Report. 1998.
Personal communication with Jennifer Ball, Water Conservation Coordinator for the City of Asheville.

Table 2-4. Five-Year Capital Cost, by Party

	Local Govt.	State Govt.	Other Water Users	Total
Percent of Total	36.5	1.0	62.4	100.0
Low Cost	11,579,464	326,873	19,794,863	31,701,200
High Cost	28,383,808	801,237	48,521,555	77,706,600

(d) Quantification Method	Operating costs are based on the cost of operating and maintaining new water supplies to replace the reductions in Cretaceous water use as specified under Phase I reductions in the rules. The reduction amount is calculated by the formula: Reductions = (Cretaceous Base Demand) * (Prescribed Reduction Percentage) Estimated reduction amounts for the 15 regulated counties were derived in the previous section, Capital Costs. See Tables 2-1 and 2-2. For each alternative listed in the capital cost section, a range of unit operating costs were determined. See Table 2-6. Unit costs for the first three alternatives are based on engineering studies prepared for communities in the Central Coastal Plain [1,2,3,4,5]. A range of costs is given. Operating costs will vary at each site according to water quality, well depth, pumping distance, and other factors. Conservation Alternative - The fourth alternative is water conservation. The 15% share of new source development attributed to conservation represents less than three percent of total water use, and could be achieved with basic water conservation measures. Typically, conservation programs focus on the most cost effective measures first [6,7] The primary costs for these measures are recurring administrative costs. Examples of basic conservation measures include water audits, consumer education, meter calibration, leak detection, improved irrigation scheduling, and rate structure changes. The proposed rules requires public water systems and commercial water users to develop a conservation plan as part of their permit application. This analysis assumes that a medium-sized water system (5 MGD water use) would require two additional staff (at $80,000 per year) to implement a conservation program that generates a five percent demand reduction or 0.25 MGD. The conservation unit cost, then, equals $0.88 per thousand gallons. ($80,000) / (250,000 GPD * 365 days) = $0.88/ 1000 gallons. A cost range of $0.80 to $1.00 is used in Table 2-6 to represent variations in system size and conservation potential. Operating costs are calculated using the same distribution of alternative water supplies as in the capital cost section. The distribution is based on the Division's knowledge of available water supplies in the Central Coastal Plain. Annual operating costs at the end of the first five-year period (full implementation of Phase I)are based on the formula: Annual Operating Cost = (Phase I Reduction) x (1000) x (365) x (Unit Operating Cost). The net operating cost is the difference between the baseline cost and the regulated cost. The range of net costs is computed as: Net Cost (low) = Regulated Cost (low) - Baseline Cost (low), and Net Cost (high) = Regulated Cost (high) - Baseline Cost (low).

(d) Quantification Method (continued)	The high baseline cost is not used for determining net costs since it is unreasonable to assume operating costs would decrease under regulation. Operating costs for each of the regulated parties (local, State, and other) are summarized in Table 2-7 . The share of costs is based on each party's share of Cretaceous water use as shown at the bottom of Table 2-1. Operating costs are annual costs that will occur indefinitely over the life of the project (treatment, pumping, maintenance). These costs are expected to increase significantly over the first five-year period as an increasing number of projects come into service. Table 2-8 shows the predicted escalation of operating costs over the five-year period.
(e) Assumptions	This analysis assumes that all categories of water use will require treatment to drinking water standards. Depending on the end use, a lower standard might be acceptable, eg. industrial cooling water. There is insufficient information available to quantify the differences in treatment costs based on user requirements. Although Phase I of the prescribed reductions is a six-year period, all costs associated with Phase I are assumed to occur in the first five years. This assumption assures that all estimated costs, particularly escalating capital and operating costs, are captured in this fiscal analysis. The analysis makes no allowance for intermittent users who are defined as persons withdrawing ground water less than 60 days a year or using less than 15 million gallons per year. Under a provision of the rule, intermittent users are not subject to the prescribed reductions. There was insufficient data available on agricultural withdrawal patterns to quantify the amount of agricultural water use that would be exempt from the prescribed reductions; therefore, operating costs may be overstated for the Other Water Users category. No allowance is included for regionalization costs. There is insufficient information to predict where or to what extent regionalization of water supplies will occur. Although operation savings can result from constructing shared facilities, there may be substantial pumping costs for interconnected water systems.

(f) Data Sources	[1]Personal communication with Tom Howell, Rivers Associates. [2]Personal communication with Dan Boone, Wooten & Company. [3]Personal communication with David Pyne, CH2MHill. [4]Personal communication with Adam Waters, Operations and Pre-treatment Supervisor, City of Washington. [5]Personal communication with Bob Oreskovitch, Director, Dare County Water. [6]Seattle Public Utilities. Water Conservation Potential Assessment, Final Project Report. 1998. [7]Personal communication with Jennifer Ball, Water Conservation Coordinator for the City of Asheville. The proposed rule. NC DENR, Division of Water Resources. Local Water Supply Plans database. NC DENR, Division of Water Resources. Central Coastal Plain Capacity Use Investigation Report. 1998. NC DENR, Division of Environmental Health. Database of community water systems. U.S. Geological Survey. Estimated Water Use, By County, in North Carolina, 1995. 1997.

Table 2-6. Annual Operating Costs at the End of the Five-Year Period, Fiscal Years Ending 2002 to 2006[1]

Alternative Source Type		Surface	Alternative Aquifer	ASR	Conser-vation[3]	Total
Source Distribution (%)		55	20	10	15	100
Source Distribution (MGD)		10.6	3.9	1.9	2.9	19.33
Unit Operating Cost ($/1000 Gal)						
Baseline Cost [2]	Low	0.40	0.40	0.40	0.40	
(High Quality Gd. Water)	High	0.80	0.80	0.80	0.80	
Regulated Cost	Low	0.75	0.85	0.40	0.80	
	High	2.00	1.50	0.80	1.00	
Net Cost	Low[4]	0.35	0.45	0.00	0.40	
	High[5]	1.60	1.10	0.40	0.60	
Total Operating Costs ($)						
Baseline Cost[2]	Low	1,552,199	564,436	282,218	423,327	2,822,180
	High	3,104,398	1,128,872	564,436	846,654	5,644,360
Regulated Cost	Low	2,910,373	1,199,427	282,218	846,654	5,238,672
	High	7,760,995	2,116,635	564,436	1,058,318	11,500,384
Net Cost	Low[4]	1,358,174	634,990	0	423,327	2,416,492
	High[5]	6,208,796	1,552,199	282,218	634,991	8,678,204

[1]Operating costs shown in this table represent annual O&M costs at the end of the first five-year period. Escalation of operating costs and cumulative five-year operating costs are shown in Table 2-7.

[2]Baseline cost is the cost of operating a ground water system utilizing the Cretaceous aquifer system. Costs include chemicals, solids disposal, utilities, and personnel.

[3]Conservation operating costs are based on the cost of additional staff to manage conservation programs. The analysis assumes that one staff person will be required for every 0.125 MGD of conservation savings.

[4]Net Cost (low range) = Regulated Cost (low range) - Baseline Cost (low range).

[5]Net Cost (high range) = Regulated Cost (high range) - Baseline Cost (low range).

Sources:

Personal communication with Tom Howell, Rivers Associates.

Personal communication with Dan Boone, Wooten & Company.

Personal communication with David Pyne, CH2MHill.

Personal communication with Adam Waters, Operations and Pre-treatment Supervisor, City of Washington.

Personal communication with Bob Oreskovitch, Director, Dare County Water.

Seattle Public Utilities. Water Conservation Potential Assessment, Final Project Report. 1998.

Personal communication with Jennifer Ball, Water Conservation Coordinator for the City of Asheville.

Table 2-7. Annual Operating Costs at the End of the Five-Year Period, Fiscal Years 2002-2006, by Party[1]

	Local Govt.	State Govt.	Other Water Users	Total
Percent of Total	36.5	1.0	62.4	100.0
Low Cost	882,669	24,917	1,508,906	2,416,492
High Cost	3,169,878	89,481	5,418,844	8,678,204

[1]Operating costs shown in this table represent annual O&M costs at the end of the first five-year period. Escalation of operating costs and cumulative five-year operating costs are shown in Table 2-7.

Table 2-8. Escalation of Operating Costs, Fiscal Years Ending 2002 to 2006

Party	Cost Range	Operating Costs ($)					
		FY 01-02 (10%)	FY 02-03 (25%)	FY 03-04 (45%)	FY 04-05 (70%)	FY 05-06 (100%)	Five-Year Total
Local	Low	88,267	220,667	397,201	617,869	882,669	2,206,673
	High	316,988	792,470	1,426,445	2,218,915	3,169,878	7,924,696
State	Low	2,492	6,229	11,212	17,442	24,917	62,291
	High	8,948	22,370	40,267	62,637	89,481	223,703
Other	Low	150,891	377,226	679,008	1,056,234	1,508,906	3,772,264
	High	541,884	1,354,711	2,438,480	3,793,191	5,418,844	13,547,110
Total	Low	241,649	604,123	1,087,421	1,691,544	2,416,492	6,041,229
	High	867,820	2,169,551	3,905,192	6,074,742	8,678,204	21,695,509

RP.3 Annual Planning Costs/Savings (APC/S)
N/A (planning costs are included in capital costs)

RP.4 Regulatory Transaction Costs/Savings (RTC/S)

(a) Cost Baseline	Currently, withdrawals in Beaufort, Pamlico, Washington, and portions of Carteret, Craven, and Martin counties are subject to similar permitting requirements under Capacity Use Area No. 1. Only minor changes in reporting requirements are anticipated for these areas. Withdrawals in the remaining area (Duplin, Edgecombe, Greene, Jones, Lenoir, Onslow, Pitt, Wayne, Wilson and portions of Carteret, Craven, and Martin counties) are currently unregulated under the capacity use law. However, withdrawers in the affected counties may already be subject to similar regulatory transaction requirements under other regulations; for example, community water systems should already be reporting monthly water withdrawals to the Department of Environmental Health.
(b) Description	Under the proposed rule, water withdrawers are required to obtain a permit for withdrawals of more than 100,000 GPD. The permitting process consists of submitting an application with all required information including locations of wells or surface water intakes, well depth and screening interval, withdrawal amount, intended use, and plans for water conservation. Note that permits for irrigation of crops and forestry stock do not require a conservation plan, but do require information on irrigated acreage. There is no application fee. The proposed rule also requires permit holders to send a monthly report of water usage and water levels to the Division. Activities would include recording daily water usage and taking a monthly water level reading (wells). Community water systems should already be recording daily withdrawal amounts for monthly reports to the Division of Environmental Health. The additional requirements will be to take a monthly water level reading and send the information to the Division of Water Resources. Every 5 to 10 years, the rule requires the Division to renew the permit. At that time, the Division may request additional information from the permit holder and modify or deny the proposed permit renewal.

(c) Quantify $	The Division estimates that the permit application and renewal process will require each permit holder to spend about five person-days every five years, or one person-day per year. This period will cover data collection, preparation of the application, and a site visit by Division personnel. Preparation of a conservation plan will take an additional five person-days every five years, or one person-day per year. Note that costs for implementing a conservation plan are included under operating costs (conservation alternative). In addition, each permit holder will have to prepare monthly reports. For local governments, each permit holder will spend about one- half person-day per month, or six person-days per year preparing the reports. The total staff time, then, is 8 person-days per year. Note that for local governments this is additional staff time for meeting reporting requirements beyond the current requirements. A local government will have annual regulatory transaction costs of about $2240.00. Annual Cost = (8 person-days) x (8 hours) x ($35/hour) = $2240.00 For state government and other water users, each permit holder will spend about one person-day per month, or 12 person-days per year preparing the reports. The total staff time, then, is 14 person-days per year. State government and other water users will have annual regulatory transaction costs of about $3920.00. Annual Cost = (14 person-days) x (8 hours) x ($35/hour) = $3920.00 See Table 2-9 for a summary of regulatory transaction costs for each category: Local Government, State, and Other Water Users. The estimated total regulatory transaction cost for the five-year period is $1,033,200.
(d) Quantification Method	Estimates of staff time required for permit compliance are based on the Division's experience in implementing the Capacity Use Area No. 1 program. The number of permits for each category is based on water use information collected through the Division's Local Water Supply Planning process, field reconnaissance, telephone surveys, and existing permit records for Capacity Use Area No. 1.
(e) Assumptions	N/A

(f) Data Sources	The proposed rule. Best professional judgement. NC DENR, Division of Water Resources. Local Water Supply Plans database. NC DENR, Division of Water Resources. Telephone surveys. February 1999. NC DENR, Division of Environmental Health. Database of community water systems. U.S. Geological Survey. Estimated Water Use, By County, in North Carolina, 1995. 1997.

Table 2-9. Annual Regulatory Transaction Costs for Permit Holders

Party	No. Permit Holders	Annual Cost Per Permit[1]	Total Annual Cost
Local	225	$2240	$504,000
State	10	$3920	$39,200
Other Water Users	125	$3920	$490,000
TOTAL	350		$1,033,200

[1] Regulatory transaction costs includes permit application preparation, preparation of a conservation plan, record keeping, and monthly reporting. Note that costs of implementing a conservation plan are included under operating costs (Table 2-6). There is no permit application fee.

RP.5 Opportunity Costs/Savings (OC/S)

(a) Cost Baseline	Currently, withdrawals in Beaufort, Pamlico, Washington, and portions of Carteret, Craven, and Martin counties are subject to similar permitting requirements under Capacity Use Area No. 1. Opportunity costs for these areas would be similar under the new rule. Withdrawals in the remaining area (Duplin, Edgecombe, Greene, Jones, Lenoir, Onslow, Pitt, Wayne, Wilson and portions of Carteret, Craven, and Martin counties) are currently unregulated. There are currently no opportunity costs for those areas.
(b) Description	Existing water withdrawal facilities that would be subject to the proposed rule may have capacities that would exceed the permitted withdrawal rates determined by the Division. There is potential for an opportunity cost when a facility has excess capacity that can not be used due to capacity use permit requirements. There may be a significantly higher cost associated with developing an alternative water source compared to the original facility.
(c) Quantify $	Unable to quantify.
(d) Quantification Method	N/A

(e) Assumptions	Opportunity cost is an economic concept that recognizes that every resource has an alternative use. It is defined as the value of the resources in their highest value alternative use.
(f) Data Sources	The proposed rule.

RP.6 Other Costs/Savings (OtC/S)

(a) Cost Baseline	Currently, withdrawals in Beaufort, Pamlico, Washington, and portions of Carteret, Craven, and Martin counties are subject to similar permitting requirements under Capacity Use Area No. 1. Treatment plant personnel costs will be similar under the new rule. Withdrawals in the remaining area (Duplin, Edgecombe, Greene, Jones, Lenoir, Onslow, Pitt, Wayne, Wilson and portions of Carteret, Craven, and Martin counties) are currently unregulated. There are currently no added personnel costs (associated with withdrawal permits) in those areas.
(b) Description	Other costs which may result from the proposed rule include higher grade plant operators for water treatment and aquifer storage and recovery operations.
(c) Quantify $	These costs cannot be quantified as they will vary significantly between alternatives. Costs will depend on: • the size and design of new or expanded facilities • the size and design of existing facilities • the training level of existing plant operators
(d) Quantification Method	N/A
(e) Assumptions	N/A
(f) Data Sources	The proposed rule.

Summary Table - Regulated Parties:

Party 1: Local Government

	Costs/ Savings	Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	1,157,946	1,736,920	2,315,893	2,894,866	3,473,839	11,579,464
		High	2,838,381	4,257,571	5,676,762	7,095,952	8,515,142	28,383,808
RP.2	Operating	Low	88,267	220,667	397,201	617,869	882,669	2,206,673
		High	316,988	792,470	1,426,445	2,218,915	3,169,878	7,924,696
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		504,000	504,000	504,000	504,000	504,000	2,520,000
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
	Yearly Totals	Low	$1,750,213	$2,461,587	$3,217,094	$4,016,735	$4,860,508	$16,306,137
		High	$3,659,369	$5,554,041	$7,607,207	$9,818,867	$12,189,020	$38,828,504
		Avg.	$2,704,791	$4,007,814	$5,412,151	$6,917,801	$8,524,764	$27,567,321

Summary Table - Regulated Parties (continued)

Party 2: State Government

	Costs/ Savings	Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	32,687	49,031	65,375	81,718	98,062	326,873
		High	80,124	120,186	160,247	200,309	240,371	801,237
RP.2	Operating	Low	2,492	6,229	11,212	17,442	24,917	62,291
		High	8,948	22,370	40,267	62,637	89,481	223,703
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		39,200	39,200	39,200	39,200	39,200	196,000
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
	Yearly Totals	Low	$74,379	$94,460	$115,787	$138,360	$162,179	$585,164
		High	$128,272	$181,756	$239,714	$302,146	$369,052	$1,220,940
		Avg.	$101,325	$138,108	$177,751	$220,253	$265,615	$903,052

Summary Table - Regulated Parties(continued)

Party 3: Other Water Users

	Costs/ Savings	Cost Range	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	Low	1,979,486	2,969,229	3,958,973	4,948,716	5,938,459	19,794,863
		High	4,852,156	7,278,233	9,704,311	12,130,389	14,556,467	48,521,556
RP.2	Operating	Low	150,891	377,226	679,008	1,056,234	1,508,906	3,772,264
		High	541,884	1,354,711	2,438,480	3,793,191	5,418,844	13,547,110
RP.3	Planning		N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction		490,000	490,000	490,000	490,000	490,000	2,450,000
RP.5	Opportunity		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
RP.6	Other		Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	Not Quantif.	0
	Yearly Totals	Low	$2,620,377	$3,836,455	$5,127,981	$6,494,950	$7,937,365	$26,017,127
		High	$5,884,040	$9,122,944	$12,632,791	$16,413,580	$20,465,311	$64,518,666
		Avg.	$4,252,208	$6,479,700	$8,880,386	$11,454,265	$14,201,338	$45,267,896

4-B. Implementing Agency

IA.0 Party Description

Name of Party	NC-DENR, Division of Water Resources
Description	The Division manages a wide variety of water resource programs in the State, including water allocation through its capacity use program. Staff located in the central office will handle administrative aspects of the proposed rule including permit review and issuance, inspection, monitoring, and enforcement. At regular intervals corresponding to Phase I, II, and III of the prescribed reductions, staff will analyze aquifer information on a regional scale and develop updated assessments of aquifer conditions in the regulated area. In addition, the staff will continue to conduct scientific investigations of the ground and surface water resources in the proposed capacity use area to aid the policy-making process. Staff located in the New Bern field office will monitor, maintain, and develop groundwater observation wells in support of the capacity use program goals. In addition, the field office staff will assist in inspection and enforcement activities. The NC General Assembly approved a budget expansion request to fund the expanded Capacity Use Program and well monitoring network. The budget expansion became effective July 1, 1998. The budget code/fund is 14300/1620. The implementation costs for the agency are estimated in Table 2-10.

Summary Table - Implementing Agency:

Party: NC-DENR, Division of Water Resources					
FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	5-Year Total
$159,938	$159,938	$159,938	$159,938	$159,938	$799,690

4-C. The Public Beneficiaries

PB.0 Party Description

Name of Party	All citizens and businesses who use or enjoy the water resources of the Central Coastal Plain.
Description	Some of the public beneficiaries of this rule include: • Municipalities that utilize the water resources of the Central Coastal Plain as a water supply. • Industries that utilize the water resources of the Central Coastal Plain as a water supply. • Agriculture that utilize the water resources of the Central Coastal Plain as a water supply. • The commercial fishing industry • The tourism industry. • Property owners.
General Baseline	**Ground Water:** In the Central Coastal Plain, water supply has traditionally relied heavily on withdrawals from the Cretaceous aquifer system. Over-pumping of this resource has caused water levels to drop at a rate of 1 to 8 feet annually. As water levels continue to drop, pumping yields will also decline, eventually reaching a point where pumping becomes impractical and long term damage (compaction) occurs to the aquifer structure. Over-pumping can also lead to intrusion of high salinity water which requires more costly treatment. The Castle Hayne aquifer is the predominant water source in the easternmost portion of the Central Coastal Plain. This aquifer has higher recharge rates than Cretaceous aquifers, but is still subject to problems of salt water intrusion.
Assumptions	N/A
Data Sources	The proposed rule. NC-DENR, Division of Water Resources. Central Coastal Plain Capacity Use Investigation Report. 1998.

PB.1 Human Health Benefits/Harms (HHB/H)

(a) Benefits Baseline	Unregulated withdrawals of ground water increase the risk of water shortages occurring in the Central Coastal Plain.

(b) Description	This rule will reduce the health risks associated with water shortages through better management of ground water sources. Over-pumping of ground water aquifers can lead to reduced yields from municipal wells, and reduced potability due to salt water encroachment. Reliable water supplies help to insure local fire protection by maintaining pressure throughout the water distribution system. In addition, uninterrupted service allows uniform disinfection of potable water supplies.[1] This rule gives permitting priority to public supply purposes including fire protection. The expected human health benefits are reduced injury from fire and more dependable drinking water.
(c) Quantify $	The exact amount of human health benefits that will result from this rule cannot be quantified. Uncertainties exist as to the level of water supply reliability that can be obtained through the proposed system of withdrawal permitting. Under the current statute, permits are required for withdrawals of 100,000 GPD or more. The cumulative effect of smaller unregulated withdrawals will bear on the success of protecting the sustainability of the region's aquifers. Currently, The Division does not have adequate well monitoring data and ground water models to predict the impact of the rule on sustainable yields of the aquifers. The Division is developing a framework model of the Central Coastal Plain that will be used to assist permit decision-making. If sufficient funding is provided in the future, The Division will also expand its network of monitoring wells to improve its ability to model ground water in the Central Coastal Plain.
(d) Quantification Method	N/A
(e) Assumptions	N/A
(f) Data Sources	The proposed rule. NC-DENR, Division of Water Resources. Central Coastal Plain Capacity Use Investigation Report. 1998. [1]Personal communication with Wayne Menden, Technical Services Branch Head, Division of Environmental Health, Public Water Supply Section..

PB.2 Environmental Assets Benefits/Harms (EAB/H)

(a) Benefits Baseline	Excessive withdrawals of ground and surface water adversely affect water supply reliability and water quality in the Central Coastal Plain. These problems, in turn, have negative economic consequences for local governments, agriculture, industry, and tourism.

(b) Description	This rule will manage water withdrawals in the Central Coastal Plain through a system of ground water withdrawal permits. Environmental assets benefits include: • Assuring the long-term reliability of drinking water supplies in the Central Coastal Plain. • Assuring the long-term reliability of water supplies for agricultural and industrial purposes. • Protecting capital investment in new and existing water treatment facilities. Continued economic development in the region depends on adequate future water supplies. An example is the Global TransPark near Kinston. The TransPark is designed to serve as a major manufacturing and employment center. Adequate water supplies are necessary to sustain this initiative. Agriculture depends on the availability of water for crop irrigation during the growing season. The unit cost of water is second only to crop price in the selection of which crops to grow. Depletion of ground water - the major source for agriculture - leads to deeper wells and higher pumping costs. Depletion could also cause farmers to put added stress on surface water sources or use many shallow wells. Industries, like agriculture, treat water as a cost of production. Reliable water supplies are an important factor in site selection and continued plant operation.
(c) Quantify $	The environmental assets benefits that will accrue from this rule cannot be quantified. There is uncertainty in predicting the extent to which the proposed rule will improve water supply reliability (See preceding discussion under Human Health Benefits, section (c)). However, it is clear that a reliable water supply has a high economic value to municipalities, industry, tourism, and agriculture.
(d) Quantification Method	N/A
(e) Assumptions	N/A
(f) Data Sources	The proposed rule.

PB.3 Ecosystem Health Benefits/Harms (EHB/H)
N/A

PB.4 Other Benefits/Harms (OtB/H)
N/A

Summary Table - Public Beneficiaries:

	Benefits/Harms	Party 1:
PB.1	Human Health	This rule will reduce health risks associated with water shortages including injury due to fire and unsafe drinking water.
PB.2	Environmental Assets	This rule will protect the long-term reliability of water supplies for public use, industry, agriculture, and industry.
PC.3	Ecosystem Health	N/A
PB.4	Other	N/A
	Total	Overall, the public benefits of this rule cannot be quantified. However, it is clear that the ground waters of the Central Coastal Plain have a high economic and recreational value to citizens, municipalities, agriculture, industries, and tourism. By managing ground water withdrawals, this rule will ensure the long-term viability of the region's aquifers.

Step 5: Threshold Decision after Preliminary Rule Evaluation

Based on the information you compiled in the previous section, please assess the economic impact in terms of whether or not it exceeds the legislated threshold of $5 million, and provide the information below:

5.1 Threshold Decision: Analysis of the proposed rule shows an estimated annual economic impact of $5 million or more.	Yes.
5.2 Rationale Threshold	The decision was based on a comparison of projected water demand and sustainable aquifer yields, and engineering analyses of the costs for regulated parties to develop additional water sources.

Step 6: Analysis for Major Rules

6.1 What is the rationale for the specific approach DENR has chosen? Enter your response here:
Please refer to Step 4 for the detailed analysis.

Financial Assumption

Financial Parameter	Assumptions	Rationale
6.2 Years of Analysis	The first five years after the rule's effective date.	The majority of capital costs will occur during this period.
6.3 Annual Inflation	N/A	
6.4 Discount Rate	N/A	

6.5 Scenario Development: If your analysis of potential impacts requires the use of scenarios, please describe each scenario here:

Scenario Name	Scenario Description	Factors Affecting Likelihood
No hypothetical scenarios were used in analyzing this rule.	N/A	

6.6 Costs and Benefits over Time, over Scenarios
N/A

Under Phase I reductions, permittees will be required to reduce their annual Cretaceous water use by the following amounts depending on their location:

Salt Water Encroachment Zone - 25% from the base rate
Dewatering Zone - 25% from the base rate
Declining Water Levels Zone - 10% from the base rate
Stable Zone - not exceed existing base rate

Phases II and III provide for additional reductions of the same amount from the base rate. The need for additional reductions will be evaluated at the end of each phase.

It is important to note that the rule specifically states that prescribed reductions do not apply to "intermittent users." This provision is intended to provide regulatory relief to agricultural users who withdraw ground water less than 60 days per year, or who use less than 15 million gallons per year.

This rule lays the necessary framework for implementing the main rule, Withdrawal Permits (Chapter 2). Chapter 2 covers all fiscal impacts pertaining to permit requirements in the defined capacity use area. Therefore, Step 4 (Identify Impacts), Step 5 (Threshold Decision for Major Rules) and Step 6 (Analysis for Major Rules) are not applicable to this rule and therefore have been omitted.

Chapter 4:
Requirements for Entry and Inspection

Step 1: Basic Information

1.1 Rule Reference No.	E-2732
1.2 Analyst (Your Name and Title)	Mark Broadwell, Environmental Engineer
1.3 Office (Your Organizational Location)	NC Division of Water Resources P.O. Box 27687 Raleigh, NC 27611
1.4 Your Phone	(919)715-0386
1.5 Comments on Agency Contact	Nat Wilson, Capacity Use Area Program Manager (919)715-5445
1.6 Title of the Proposed Rule	Requirements for Entry and Inspection
1.7 Citation	15A NCAC 2E .0504
1.8 Brief Description of the Proposed Rule	Specifies legal requirements for regulated parties to allow entry and inspection of regulated activities.
1.9 Rule Category	Regulation

Step 2: Screening Analysis

Circumstances	Yes or No
2.1 Federal Rule Certification Required Does the proposed rule require a federal certification statement under NCGS 150B-21(f1)?	No
2.2 "Substantial Economic Impact" Analysis - Federal Rule Exemption Does this rule meet the criterion of Federal Exemption found in NCGS 150B-21.4(b1)? [*If the answer is yes and there is no impact on local government funds, you may prepare a Special Circumstance Report.*]	No
2.3 Temporary Rules Does this rule meet the criteria listed in NCGS 150B-21 relating to Temporary Rules? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.4 Technical Corrections Does this rule meet the criteria for a Technical Correction laid out in NCGS 150B-21.5? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No

2.5 Repeal of Regulatory "Deadwood" The Help file lists a series of situations which may render a rule obsolete; does this rule meet any of those criteria? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.6 Service/Financial Program - Where Proposed Rule's Impact on State Funds under $5 million	N/A in this Template.

If you answered yes to any of questions 2.2 through 2.5, please describe the Special Circumstances below as part of the written record of this rule-making. If you answered no to all of the questions 2.2 through 2.5, continue to the analysis component. Enter N/A in the Special Circumstance Report.

Special Circumstance Report

Identify the type of Special Circumstance, from above list.	Explain the Special Circumstance.
N/A	N/A

If you have completed a Special Circumstance Report, you may delete the rest of the material on this template, and submit this analysis with the proposed rule. NOTE: even though an economic impact analysis may not be required, a Fiscal Note analysis may still be needed because of local government impacts.

Step 3: Identify Parties

3.1 Why is the Regulatory Proposal Needed? Enter response here:

The rule is needed to specify procedures for entry and inspection of regulated facilities as required by statute for compliance assessment and enforcement actions. It provides notice of the legal basis for the agency to enter and inspect regulated facilities.

3.2 How does the Proposed Rule Change Behavior? Enter response here:

No behavior is changed as a result of the rule. Chapter 2 covers all fiscal impacts pertaining to permit requirements in the defined capacity use area.

Because this rule does not require any changes in behavior, there are no costs to regulated parties or implementing agencies nor are there any public beneficiaries associated with it. Therefore, Step 4 (Identify Impacts), Step 5 (Threshold Decision for Major Rules) and Step 6 (Analysis for Major Rules) are not applicable to this rule and therefore have been omitted.

Chapter 5:
Acceptable Withdrawal Methods That Do Not Require a Permit

Step 1: Basic Information

1.1 Rule Reference No.	E-2732
1.2 Analyst (Your Name and Title)	Mark Broadwell, Environmental Engineer
1.3 Office (Your Organizational Location)	NC Division of Water Resources P.O. Box 27687 Raleigh, NC 27611
1.4 Your Phone	(919)715-0386
1.5 Comments on Agency Contact	Nat Wilson, Capacity Use Area Program Manager (919)715-5445
1.6 Title of the Proposed Rule	Acceptable Withdrawal Methods That Do Not Require a Permit
1.7 Citation	15A NCAC 2E .0505
1.8 Brief Description of the Proposed Rule	Requires registration of withdrawals not covered by permit requirements. Also specifies resource protection requirements for completion of wells that do not require a permit.
1.9 Rule Category	Regulation

Step 2: Screening Analysis

Circumstances	Yes or No
2.1 Federal Rule Certification Required Does the proposed rule require a federal certification statement under NCGS 150B-21(f1)?	No
2.2 "Substantial Economic Impact" Analysis - Federal Rule Exemption Does this rule meet the criterion of Federal Exemption found in NCGS 150B-21.4(b1)? [*If the answer is yes and there is no impact on local government funds, you may prepare a Special Circumstance Report.*]	No
2.3 Temporary Rules Does this rule meet the criteria listed in NCGS 150B-21 relating to Temporary Rules? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No

2.4 Technical Corrections Does this rule meet the criteria for a Technical Correction laid out in NCGS 150B-21.5? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.5 Repeal of Regulatory "Deadwood" The Help file lists a series of situations which may render a rule obsolete; does this rule meet any of those criteria? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.6 Service/Financial Program - Where Proposed Rule's Impact on State Funds under $5 million	N/A in this Template.

If you answered yes to any of questions 2.2 through 2.5, please describe the Special Circumstances below as part of the written record of this rule-making. If you answered no to all of the questions 2.2 through 2.5, continue to the analysis component. Enter N/A in the Special Circumstance Report.

Special Circumstance Report

Identify the type of Special Circumstance, from above list.	Explain the Special Circumstance.
N/A	N/A

If you have completed a Special Circumstance Report, you may delete the rest of the material on this template, and submit this analysis with the proposed rule. NOTE: even though an economic impact analysis may not be required, a Fiscal Note analysis may still be needed because of local government impacts.

Step 3: Identify Parties

3.1 Why is the Regulatory Proposal Needed? Enter response here:
This rule is needed to provide registration of withdrawals not covered by the permit requirements. The rule also provides specifications for the design of new wells to protect the resource.

3.2 How does the Proposed Rule Change Behavior? Enter response here:
Withdrawers of all surface water and withdrawers of ground water under 100,000 gallons per day (GPD) are exempt from permitting under the main rule (Chapter 2). This rule requires all withdrawals of more than 10,000 GPD, and not subject to the rule's permitting requirements, to register their water use with the Division.

Step 4: Identify Impact

4-A. Regulated Parties

RP.0 Party Description

Name of Party	Major Water Withdrawers

Description	All ground water withdrawers using between 10,000 and 100,000 GPD and all surface water withdrawers using more than 10,000 GPD in the Central Coastal Plain capacity use area would be the affected parties. These withdrawers include public water systems, agriculture, and self-supplied industry. For analysis purposes, these parties have been split into Local Government, State, and Other Water Users categories.
General Baseline	Currently, withdrawals under 100,000 GPD in the proposed regulated area are exempt from water use registration. Surface water withdrawals above 100,000 are already required to register under the Registration of Water Withdrawals and Transfers Act. Ground water withdrawals above 100,000 GPD are already subject to permitting under the proposed rules so are not covered by this provision. In addition, wells constructed for ground water withdrawals under 100,000 are currently not required to meet any design standards related to pump location or operation.
Assumptions	N/A
Data Sources	The proposed rule and the state statute governing capacity use areas (NCGS 143-215).

RP.1 Annual Capital Costs/Savings (AC/S)
N/A (There are no capital costs associated with this rule)

RP.2 Annual Operating Costs/Savings (AOC/S)
N/A (There are no operating costs associated with this rule)

RP.3 Annual Planning Costs/Savings (APC/S)
N/A (There are no planning costs associated with this rule)

RP.4 Regulatory Transaction Costs/Savings (RTC/S)

(a) Cost Baseline	There are currently no requirements in the proposed regulated area for reporting water use for withdrawals of less than 100,000 GPD. In addition, wells constructed for ground water withdrawals under 100,000 are currently not required to meet any design standards related to pump location or operation.

(b) Description	The proposed rule requires anyone who withdraws more than 10,000 GPD from surface or ground water to: • register such withdrawals with the Division of Water Resources. • report surface and ground water use to the Division on an annual basis • construct new wells such that the pump intake is above the top of the confined aquifer • withdraw water in a manner that does not damage the aquifer or cause salt water encroachment. Activities would include recording monthly water usage and filling out a form on an annual basis. Community water systems should already be recording water use for monthly reports to the Division of Environmental Health. The additional requirement will be to send the information to the Division of Water Resources. Irrigators of crops and forestry stock have the option of reporting their water use through state or federal agricultural survey forms. Activities associated with proper well construction and operation are not quantifiable.
(c) Quantify $	Table 5-1 summarizes the number of water withdrawers subject to the registration requirement. Withdrawers are split among the categories of Local Government, State, and Other Water Users. The Other Water Users category includes livestock operations, irrigators, and self-supplied industry. There is insufficient information to estimate the number of affected irrigators or industry, although the number should be small. The Division estimates that the registration process will require all affected parties to spend about two person-days annually. This period will cover initial registration, data collection and preparation of the reporting form A water user subject to this rule will have annual regulatory transaction costs of about $560.00. Annual Cost = (2 person-days) x (8 hours) x ($35/hour) = $560.00 See Table 5-2 for a summary of registration costs for each category: Local Government, State, and Other Water Users. The estimated total regulatory transaction cost for the five-year period is $473,200.
(d) Quantification Method	The Division screened databases of public water systems based on criteria of water use between 10,000 and 100,000 GPD. Staff estimated the number of affected livestock operations by using the criteria of 4.0 GPD per head to sort an existing database of animal operations. Although all surface water users above 10,000 GPD are subject to this provision (no upper threshold since surface water is not subject to permitting provisions), surface water withdrawals above 100,000 are not included since they are already required to register their water use with the Division of Water Resources through the Registration of Water Withdrawals Act. Therefore, this rule places no additional regulatory burden on those withdrawers.

(e) Assumptions	N/A
(f) Data Sources	The proposed rule. Best professional judgement. NC DENR, Division of Water Resources. Local Water Supply Plans database. NC DENR, Division of Water Resources. Central Coastal Plain Capacity Use Investigation Report. 1998. NC DENR, Division of Water Quality. Animal Operation Design Capacity Data Base. 1999. NC DENR, Division of Environmental Health. Database of community water systems. U.S. Geological Survey. Estimated Water Use, By County, in North Carolina, 1995. 1997.

Table 5-1 Number of Withdrawers Subject to Registration

County	Number of Withdrawers Using 10,000 GPD or More and Not Subject to Permitting Under Proposed Rules					
	Local Govt.	State Govt.	Other Water Users			Total
	Public Water Systems	Self-Supplied Facilities	Livestock Operations	Irrigators[1]	Self-Supplied Industry[2]	
Beaufort	18	0	9	-	-	27
Carteret	17	0	0	-	-	17
Craven	9	0	18	-	-	27
Duplin	20	0	340	-	-	360
Edgecombe	13	0	17	-	-	30
Greene	6	0	74	-	-	80
Jones	5	0	37	-	-	42
Lenoir	9	0	48	-	-	57
Martin	3	0	0	-	-	3
Onslow	18	0	33	-	-	51
Pamlico	2	0	0	-	-	2
Pitt	5	0	34	-	-	39
Washington	2	0	1	-	-	3
Wayne	3	0	89	-	-	92
Wilson	14	0	1	-	-	15
	144	0	701	Unknown	Unknown	845

[1]Information was not available on individual operations using water for the purpose of irrigating crops or forestry stock.
[2]Information was not available on individual self-supplied industries in the proposed regulated area.
Sources:
NC DENR, Division of Water Resources. Local Water Supply Plans database.
NC DENR, Division of Water Resources. Central Coastal Plain Capacity Use Investigation Report. 1998.
NC DENR, Division of Water Quality. Animal Operation Design Capacity Data Base. 1999.
NC DENR, Division of Environmental Health. Database of community water systems.
U.S. Geological Survey. Estimated Water Use, By County, in North Carolina, 1995. 1997.

Table 5-2. Annual Cost of Water Use Registration, Fiscal Years Ending 2002-2006, by Party[1]

Party	No. Permit Holders	Annual Cost Per Permit[1]	Total Annual Cost
Local	144	$560	$80,640
State	0	$560	$0
Other Water Users	701	$560	$392,560
TOTAL	845	1681	$473,200

RP.5 Opportunity Costs/Savings (OC/S)
N/A (There are no opportunity costs associated with this rule)

RP.6 Other Costs/Savings (OC/S)
N/A

Summary Table - Regulated Parties:

Party 1: Local Government

	Costs/ Savings	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating	N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning	N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction	80,640	80,640	80,640	80,640	80,640	403,200
RP.5	Opportunity	N/A	N/A	N/A	N/A	N/A	0
RP.6	Other	N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals	$80,640	$80,640	$80,640	$80,640	$80,640	$403,200

Party 2: State Government

	Costs/ Savings	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating	N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning	N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction	0	0	0	0	0	0
RP.5	Opportunity	N/A	N/A	N/A	N/A	N/A	0
RP.6	Other	N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals	$0	$0	$0	$0	$0	$0

Party 3: Other Water Users

	Costs/ Savings	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	Five-Yr Total
RP.1	Capital	N/A	N/A	N/A	N/A	N/A	0
RP.2	Operating	N/A	N/A	N/A	N/A	N/A	0
RP.3	Planning	N/A	N/A	N/A	N/A	N/A	0
RP.4	Regulatory Transaction	392,560	392,560	392,560	392,560	392,560	1,962,800
RP.5	Opportunity	N/A	N/A	N/A	N/A	N/A	0
RP.6	Other	N/A	N/A	N/A	N/A	N/A	0
	Yearly Totals	$392,560	$392,560	$392,560	$392,560	$392,560	$1,962,800

4-B. Implementing Agency
Costs for this rule are included in Chapter 2.

4-C. The Public Beneficiaries
N/A

Step 5: Threshold Decision after Preliminary Rule Evaluation

Based on the information you compiled in the previous section, please assess the economic impact in terms of whether or not it exceeds the legislated threshold of $5 million, and provide the information below:

5.1 Threshold Decision: Analysis of the proposed rule shows an estimated annual economic impact of $5 million or more.	No.
5.2 Rationale Threshold	The decision was based on a comparison of projected water demand and sustainable aquifer yields, and engineering analyses of the costs for regulated parties to develop additional water sources.

Step 6: Analysis for Major Rules

6.1 What is the rationale for the specific approach DENR has chosen? Enter your response here:
Please refer to Step 4 for the detailed analysis.

Financial Assumption

Financial Parameter	Assumptions	Rationale
6.2 Years of Analysis	The first five years after the rule's effective date.	The decision was based on a comparison of current regulatory requirements and proposed requirements under the new rule.
6.3 Annual Inflation	N/A	
6.4 Discount Rate	N/A	

6.5 Scenario Development: If your analysis of potential impacts requires the use of scenarios, please describe each scenario here:

Scenario Name	Scenario Description	Factors Affecting Likelihood
No hypothetical scenarios were used in analyzing this rule.	N/A	

6.6 Costs and Benefits over Time, over Scenarios
N/A

Chapter 6: Central Coastal Plain Capacity Use Area Status Report

Step 1: Basic Information

1.1 Rule Reference No.	E-2732
1.2 Analyst (Your Name and Title)	Mark Broadwell, Environmental Engineer
1.3 Office (Your Organizational Location)	NC Division of Water Resources P.O. Box 27687 Raleigh, NC 27611
1.4 Your Phone	(919)715-0386
1.5 Comments on Agency Contact	Nat Wilson, Capacity Use Area Program Manager (919)715-5445
1.6 Title of the Proposed Rule	Central Coastal Plain Capacity Use Area Status Report
1.7 Citation	15A NCAC 2E .0506
1.8 Brief Description of the Proposed Rule	The rule requires the agency to report periodically on the status of water resources in the Capacity Use Area..
1.9 Rule Category	Regulation

Step 2: Screening Analysis

Circumstances	Yes or No
2.1 Federal Rule Certification Required Does the proposed rule require a federal certification statement under NCGS 150B-21(f1)?	No
2.2 "Substantial Economic Impact" Analysis - Federal Rule Exemption Does this rule meet the criterion of Federal Exemption found in NCGS 150B-21.4(b1)? [*If the answer is yes and there is no impact on local government funds, you may prepare a Special Circumstance Report.*]	No
2.3 Temporary Rules Does this rule meet the criteria listed in NCGS 150B-21 relating to Temporary Rules? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.4 Technical Corrections Does this rule meet the criteria for a Technical Correction laid out in NCGS 150B-21.5? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No

2.5 Repeal of Regulatory "Deadwood" The Help file lists a series of situations which may render a rule obsolete; does this rule meet any of those criteria? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.6 Service/Financial Program - Where Proposed Rule's Impact on State Funds under $5 million	N/A in this Template.

If you answered yes to any of questions 2.2 through 2.5, please describe the Special Circumstances below as part of the written record of this rule-making. If you answered no to all of the questions 2.2 through 2.5, continue to the analysis component. Enter N/A in the Special Circumstance Report.

Special Circumstance Report

Identify the type of Special Circumstance, from above list.	Explain the Special Circumstance.
N/A	N/A

If you have completed a Special Circumstance Report, you may delete the rest of the material on this template, and submit this analysis with the proposed rule. NOTE: even though an economic impact analysis may not be required, a Fiscal Note analysis may still be needed because of local government impacts.

Step 3: Identify Parties

3.1 Why is the Regulatory Proposal Needed? Enter response here:
The rule is needed to provide periodic assessments of aquifer conditions in the Central Coastal Plain.

3.2 How does the Proposed Rule Change Behavior? Enter response here:
Development of a status report will require staff to perform hydrogeologic analysis and modeling.

Step 4: Identify Impact

4-A. Regulated Parties
N/A

4-B. Implementing Agency
Costs for this rule are included in Chapter 2.

4-C. The Public Beneficiaries
N/A

Step 5: Threshold Decision after Preliminary Rule Evaluation

Based on the information you compiled in the previous section, please assess the economic impact in terms of whether or not it exceeds the legislated threshold of $5 million, and provide the information below:

5.1 Threshold Decision: Analysis of the proposed rule shows an estimated annual economic impact of $5 million or more.	No.
5.2 Rationale Threshold	The decision was based on a comparison of projected water demand and sustainable aquifer yields, and engineering analyses of the costs for regulated parties to develop additional water sources.

Step 6: Analysis for Major Rules

6.1 What is the rationale for the specific approach DENR has chosen? Enter your response here:
Please refer to Step 4 for the detailed analysis.

Financial Assumption

Financial Parameter	Assumptions	Rationale
6.2 Years of Analysis	The first five years after the rule's effective date.	The decision was based on a comparison of current regulatory requirements and proposed requirements under the new rule.
6.3 Annual Inflation	N/A	
6.4 Discount Rate	N/A	

6.5 Scenario Development: If your analysis of potential impacts requires the use of scenarios, please describe each scenario here:

Scenario Name	Scenario Description	Factors Affecting Likelihood
No hypothetical scenarios were used in analyzing this rule.	N/A	

6.6 Costs and Benefits over Time, over Scenarios
N/A

Chapter 7:
Definitions

Step 1: Basic Information

1.1 Rule Reference No.	E-2732
1.2 Analyst (Your Name and Title)	Mark Broadwell, Environmental Engineer
1.3 Office (Your Organizational Location)	NC Division of Water Resources P.O. Box 27687 Raleigh, NC 27611
1.4 Your Phone	(919)715-0386
1.5 Comments on Agency Contact	Nat Wilson, Capacity Use Area Program Manager (919)715-5445
1.6 Title of the Proposed Rule	Definitions and activities requiring water use permits
1.7 Citation	15A NCAC 2E .0507
1.8 Brief Description of the Proposed Rule	Lists key terms used in the revised Capacity Use Area rules.
1.9 Rule Category	Regulation

Step 2: Screening Analysis

Circumstances	Yes or No
2.1 Federal Rule Certification Required Does the proposed rule require a federal certification statement under NCGS 150B-21(f1)?	No
2.2 "Substantial Economic Impact" Analysis - Federal Rule Exemption Does this rule meet the criterion of Federal Exemption found in NCGS 150B-21.4(b1)? [*If the answer is yes and there is no impact on local government funds, you may prepare a Special Circumstance Report.*]	No
2.3 Temporary Rules Does this rule meet the criteria listed in NCGS 150B-21 relating to Temporary Rules? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.4 Technical Corrections Does this rule meet the criteria for a Technical Correction laid out in NCGS 150B-21.5? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No

2.5 Repeal of Regulatory "Deadwood" The Help file lists a series of situations which may render a rule obsolete; does this rule meet any of those criteria? [*If the answer is yes, you may prepare a Special Circumstance Report.*]	No
2.6 Service/Financial Program - Where Proposed Rule's Impact on State Funds under $5 million	N/A in this Template.

If you answered yes to any of questions 2.2 through 2.5, please describe the Special Circumstances below as part of the written record of this rule-making. If you answered no to all of the questions 2.2 through 2.5, continue to the analysis component. Enter N/A in the Special Circumstance Report.

Special Circumstance Report

Identify the type of Special Circumstance, from above list.	Explain the Special Circumstance.
N/A	N/A

If you have completed a Special Circumstance Report, you may delete the rest of the material on this template, and submit this analysis with the proposed rule. NOTE: even though an economic impact analysis may not be required, a Fiscal Note analysis may still be needed because of local government impacts.

Step 3: Identify Parties

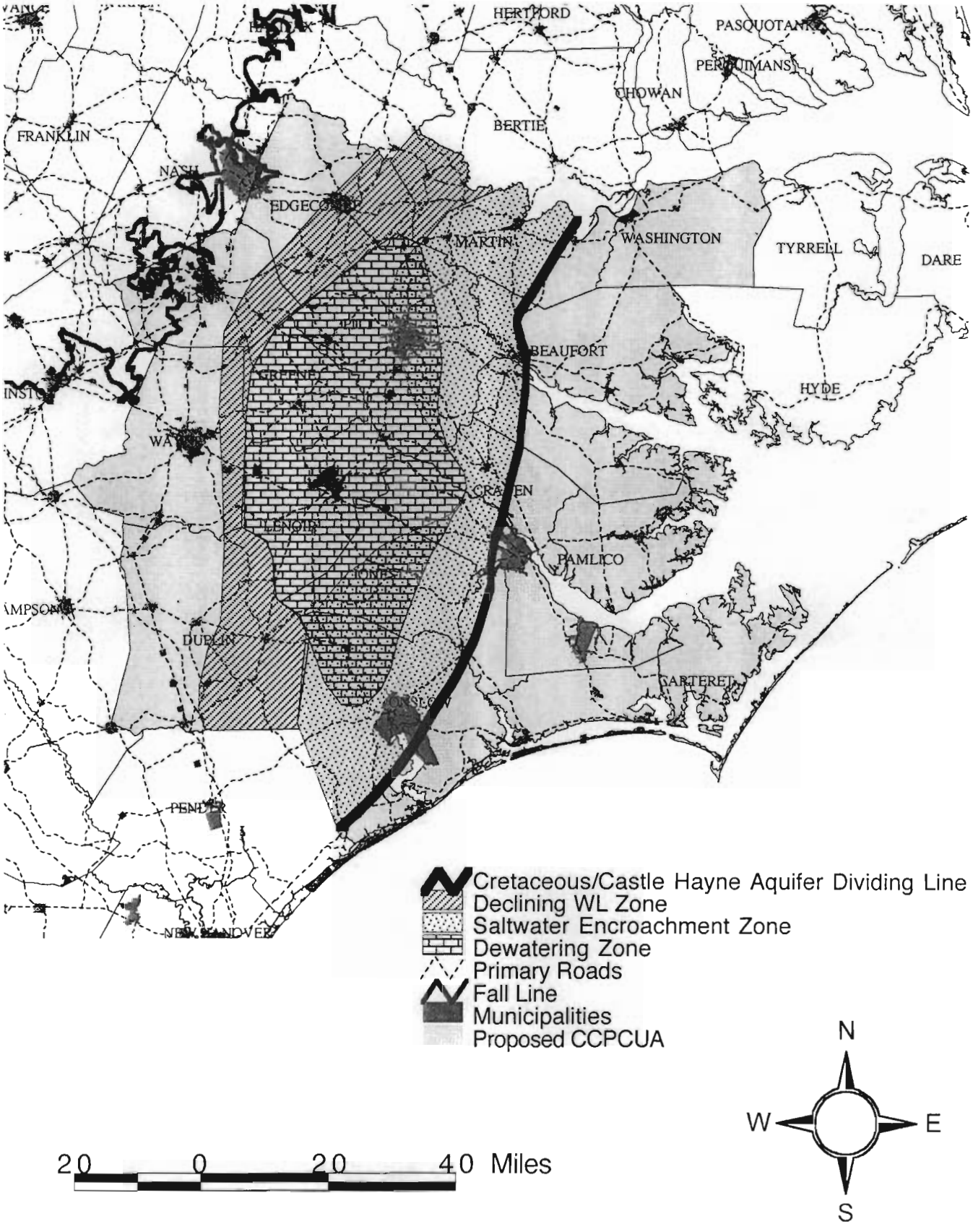
3.1 Why is the Regulatory Proposal Needed? Enter response here:
The rule is needed to clarify key terms in the revised Capacity Use Area rules.

3.2 How does the Proposed Rule Change Behavior? Enter response here:
No behavior is changed as a result of the rule.

Because this rule does not require any changes in behavior, there are no costs to regulated parties or implementing agencies nor are there any public beneficiaries associated with it. Therefore, Step 4 (Identify Impacts), Step 5 (Threshold Decision for Major Rules) and Step 6 (Analysis for Major Rules) are not applicable to this rule and therefore have been omitted.

APPENDICES

CCPCUA Cretaceous Aquifer Zones



TITLE 15A - DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

CHAPTER 2 - ENVIRONMENTAL MANAGEMENT

SUBCHAPTER 2E - WATER USE REGISTRATION AND ALLOCATION

SECTION .0100 - AUTHORITY

.0102 PURPOSE

~~These regulations are intended to provide for the management of water withdrawal and uses in the designated capacity use areas as needed to conserve water resources in the areas, and to maintain conditions that are conductive to the orderly development and beneficial use of these resources.~~

History Note: *Authority G.S. 143-215.12; 143-215.14;*
Eff. February 1, 1976;
Repealed Eff. April 1, 2001.

.0103 SCOPE

~~These regulations establish general and specific requirements that are applicable to all persons who withdraw, obtain or utilize water within the designated capacity use areas. Special requirements applicable to individual users will normally be included in appropriate water use permits.~~

History Note: *Authority G.S. 143-215.14;*
Eff. February 1, 1976;
Repealed Eff. April 1, 2001.

.0106 DEFINITIONS

As used herein, unless the context otherwise requires:

(1) "Director" means the Director of the Division of ~~Environmental Management.~~ Water Resources.

(2) "Division" means the Division of ~~Environmental Management.~~ Water Resources.

History Note: *Authority G.S. 87-87; 143-215.14; 143-215.21;*
Eff. March 1, 1985;
Amended Eff. April 1, 2001.

.0107 DELEGATION

(a) The Director is delegated the authority to grant, modify, revoke or deny permits under G.S. 143-215.15 and G.S. 143-215.16.

(b) The Director may delegate any permitting function given by the rules of this Subchapter.

(c) The Director is delegated the authority to assess civil penalties and request the Attorney General to institute civil actions under G.S. 143-215.17.

(d) The Director ~~of the Division of Water Resources~~ is delegated the authority to process applications and collect fees for registration of water withdrawals and transfers under G.S. 143-215.22H and G.S. 143- 215.3(a)(1b).

(e) The Director ~~of the Division of Water Resources~~ may delegate any water withdrawal or transfer registration processing functions given by the rules of this Subchapter.

History Note: *Filed as a Temporary Amendment Eff. October 14, 1991 for a period of 180 Days to Expire on April 11, 1992;*
Authority G.S. 143-215.3(a)(1); 143-215.3(a)(4);
Eff. March 1, 1985;
Amended Eff. April 1, 2001; September 1, 1994; April 1, 1992.

SECTION .0200 - CAPACITY USE AREA NO. 1

.0201 DECLARATION AND DELINEATION OF CAPACITY USE AREA NO. 1

~~The Environmental Management Commission on the 18th day of December, 1968, declared and delineated the following described~~ ~~geographical area a capacity use area:~~

~~"That area bounded by a line beginning at the intersection of Highway US 17 and Roanoke River, at Williamston, and running south along Highway US 17 to the Martin-Beaufort Counties line; thence northwest along the Martin-Beaufort Counties line to the Pitt County line; thence generally south along the Pitt-Beaufort Counties line to the Craven County line; thence southwest along the Pitt-Craven Counties line to the Neuse River; thence southeast along the Neuse River to New Bern; thence south along Highway US 70 to Morehead City and on to Atlantic; thence north along the eastern edge of Cedar Island, across Pamlico Sound, along the eastern edge of Great Island, to the intersection of Highways US 264 and NC 94 near the south shore of Lake Mattamuskeet; thence north along Highway NC 94 to Columbia; thence west along the south shore of Albemarle Sound to the mouth of Roanoke River; thence generally southwest along Roanoke River to Highway US 17 at Williamston, the beginning."~~

History Note: *Authority G.S. 143-215.13;*
Eff. February 1, 1976;
Repealed Eff. April 1, 2001.

.0202 PERSONS WITHDRAWING GROUNDWATER IN CAPACITY USE AREAS

~~(a) Permits Required~~

~~(1) Water Use Permit~~

~~(A) No person shall, after June 18, 1969 (as designated the Commission), withdraw, obtain or utilize surface waters or ground waters, or both, in excess of 100,000 gallons per day for any purpose unless such person shall first apply for a water use permit therefor from the Director.~~

~~(B) Application for such water use permit shall be submitted on a form approved by the Director. An approved form, may be obtained from the Department of Natural Resources and Community Development, P.O. Box 27687, Raleigh, N.C. 27611. The application shall describe the specific purpose or purposes for which the water will be withdrawn or used, and shall justify the quantity needed for each purpose. Each application submitted to the Division will be considered and acted upon as soon as practicable. Pending the Director's issuance or denial of a permit, the applicant may continue the same withdrawal or use which existed prior to the date of declaration of the capacity use area.~~

~~(C) Water use permits shall be issued for a period to be determined by the Director but not to exceed the longest of the following:~~

~~(i) 10 years, or~~

~~(ii) the duration of the existence of the capacity use area, or~~

~~(iii) the period found by the Director to be necessary for reasonable amortization of the applicant's water withdrawal and water using facilities.~~

~~(D) Each water use permit shall be subject to review, modification or renewal by the Director as set forth in Section 143-215.15(c) of the General Statutes of North Carolina (Water Use Act of 1967). Holders of water use permits will be expected to notify the Director of any major changes in usage. Review of water use permits may require the justification of continuing needs and the documentation of all water conservation measures.~~

~~(E) Water use permits shall not be transferred except with the approval of the Director.~~

~~(F) Water withdrawn under any water use permit shall be used only for the purpose(s) set forth in the permit.~~

~~(2) Well Construction Permit~~

~~(A) A well construction permit shall be obtained prior to construction of all wells except those constructed for individual domestic water supplies.~~

~~(B) Application for a well construction permit shall be made of Form GW22, "Application for Permit to Construct a Well," which can be obtained from the Division. The application shall state the purpose of the well, and shall include the proposed location, construction specifications, the estimated withdrawal rate, the location and ownership of all water-supply wells within a radius of either:~~

~~(i) 1,000 feet for wells withdrawing less than 100,000 gallons per day;~~

~~(ii) 1,500 feet for wells withdrawing 100,000 to 1,000,000 gallons per day;~~

~~(iii) 2,500 feet for wells withdrawing more than 1,000,000 gallons per day; and such other information as the Director may reasonably deem necessary.~~

~~(b) Withdrawal and Water-Level Controls Required~~

~~(1) Total Quantity. The water use permit issued by the Director shall establish the maximum total quantity that may be withdrawn daily, and may specify the timing of withdrawals.~~

~~(2) Maximum Withdrawal Rates. Maximum rates of withdrawal of water from individual wells or surface water intakes may be set forth in the water use permit issued by the Director, when the Director determines that such control is required to conserve water or protect the water quality.~~

~~(3) Maximum Drawdown Levels. The water use permit may specify the lowest water level that may be produced in any well or wells.~~

(4) Additional Provisions. The water use permit shall be issued subject to such other provisions as the Director deems necessary to conserve or protect the water resources of the capacity use area. The permit may:

(A) require that the applicant cooperate with the Division, and with other users of water in the affected area, in determining and implementing reasonable and practical methods and processes to conserve and protect the water resources while avoiding or minimizing adverse effects on the quantity and quality of water available to persons whose water supply has been materially reduced or impaired as a result of withdrawals made pursuant to water use permits;

(B) require that any portion of the water withdrawn be returned to the source or to any other stream or aquifer as approved by the Director;

(C) require the holder of a water use permit to obtain the Director's approval of the locations and distribution of individual surface water intakes and wells, and of the depths, zones, aquifers or parts of aquifers from which withdrawals may be made;

(D) require that each well or surface water intake be equipped with an approved monitoring device that will provide a continuous record of withdrawals within an accuracy of plus or minus five percent;

(E) require that observation stations or wells be installed and maintained for monitoring water levels and water quality;

(F) require that holders of water use permits unite in joint efforts to conserve water quantity and quality by any and all of the requirements in this Rule when applicable.

(c) Reports Required

(1) Well Record or Well Completion or Abandonment Report. Any person completing or abandoning any well shall furnish the Director, on Form GW-1, a certified record of the construction or abandonment of such well within a period of 30 days from completion of construction or abandonment, as required in the provisions of Article 7, Chapter 87 and Article 38, Chapter 143, General Statutes of North Carolina. The required completion report shall include the location, size, depth, casing record, method of finishing, formation log, static water level, yield data and records of any surveys, geophysical logs, test or water analyses. Samples of formation cuttings from all wells shall be furnished to the Director except when the Director specifies that such samples are not required. For wells withdrawing more than 1,000,000 gallons a day, a description of the proposed device for metering withdrawals is required. The required abandonment report shall include the location and method of sealing and plugging.

(2) Reports and Records of Withdrawal from each Source. For withdrawals of more than 100,000 gallons per day, monthly reports of daily withdrawals from each well or surface water intake shall be furnished to the Director not later than 15 days after the end of each calendar month. Withdrawals shall be measured by a method acceptable to the Director. Withdrawals of 1,000,000 gallons per day or more shall be measured by an approved metering device, equipped with an automatic chart recorder, and having any accuracy of plus or minus five percent. The required reports shall include copies of chart recordings.

(3) Reports of Water Levels. For withdrawals of less than 1,000,000 gallons per day, water level reporting, if required, may be specified in the permit. For withdrawals of 1,000,000 gallons per day or more monthly reports of water levels shall be furnished to the Director not later than 15 days after the end of each calendar month as follows:

(A) the pumping water level for each supply well as measured with a steel or electric tape from a fixed reference point each day at approximately the same hour, or at such other time intervals as may be satisfactory to the Director. The measurements shall be within accuracy limits of plus or minus 0.25 of a foot or three inches.

(B) The level of each surface water used as a source of supply, as measured by a method and at such frequency as specified in the permit.

(C) The Water levels in observation wells other than supply wells as measured from a fixed reference point at intervals specified by the permit.

(4) Other Reports. The Director may require reports of other data pertinent and necessary to the evaluation of the effects of withdrawals.

History Note: *Authority G.S. 143-215.14; 143-215.15;*
Eff. February 1, 1976;
Amended Eff. March 1, 1985;
Repealed Eff. April 1, 2001.

.0205 ACTIVITIES

Activities Requiring Prior Approval by the Commission. No construction or installation of works of improvement which may significantly affect the quantity or quality of the water resources shall be undertaken without prior approval from the Commission. These include, but are not necessarily limited to, the following:

(1) Surface Drainage Projects

~~(a) Any project involving the drainage or diversion of ponded or standing water, except water temporarily impounded as the result of flooding, from an area in excess of five acres;~~

~~(b) Application for approval of any such project shall include:~~

~~(i) a description of the area,~~

~~(ii) purpose of the project and method of drainage, and~~

~~(iii) a general evaluation of the probable effects of the project on the water resources.~~

~~(2) Subsurface Drainage Projects~~

~~(a) Any project involving the withdrawal or diversion of ground water, except for the purpose of water supply or agricultural use, that will probably result in lowering existing ground water levels or artesian head more than three feet for a period of one year in any area of more than five acres;~~

~~(b) Application for approval of any such project shall include a description of the area, purpose of the project and method of drainage, and a general evaluation of the probable effects of the project on the water resources.~~

~~(3) Well Mining Projects~~

~~(a) Any projects involving the removal or extraction of minerals through wells;~~

~~(b) Application for approval of any such project shall include:~~

~~(i) a description of the location and extent of the area;~~

~~(ii) methods, procedures and processes of removal or extraction;~~

~~(iii) well plugging and abandonment procedures, and~~

~~(iv) an evaluation of the effects of the water resources.~~

~~(4) Excavation Projects~~

~~(a) Any project involving the excavation of any land that lies under water;~~

~~(b) Any project involving the excavation of any single area in excess of five acres to any depth below the highest natural level of groundwater;~~

~~(c) Application for approval of any such projects shall include a description of the location and the extent of the area, purpose, depth, and excavation methods.~~

History Note: *Authority G.S. 143-215.14; 143-215.20;*
Eff. February 1, 1976;
Repealed Eff. April 1, 2001.

SECTION .0500 - CENTRAL COASTAL PLAIN CAPACITY USE AREA

.0501 DECLARATION AND DELINEATION OF CENTRAL COASTAL PLAIN CAPACITY USE AREA

The area encompassed by the following 15 North Carolina counties and adjoining creeks, streams, and rivers is hereby declared and delineated as the Central Coastal Plain Capacity Use Area: Beaufort, Carteret, Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pamlico, Pitt, Washington, Wayne and Wilson. The Environmental Management Commission finds that the use of ground water requires coordination and limited regulation in this delineated area for protection of the public interest.

History Note: *Authority G.S. 143-215.13;*
Eff. April 1, 2001.

.0502 WITHDRAWAL PERMITS

(a) Existing ground water withdrawal permits issued in Capacity Use Area No. 1 (15A NCAC 2E .0200) within the Central Coastal Plain Capacity Use Area are reissued under Section .0500 of this Subchapter and are valid until the expiration date specified in each permit. Water use permits are no longer required for withdrawals in Hyde and Tyrrell Counties as of the effective date of this Rule. Permits are not required for surface water use under Section .0500 of this Subchapter in the Central Coastal Plain Capacity Use Area as delineated in Rule .0501 of this Section.

(b) No person shall withdraw ground water after the effective date of this Rule in excess of 100,000 gallons per day by a well or group of wells operated as a system for any purpose unless such person shall first obtain a water use permit from the Director. Existing withdrawals of ground water as of the effective date of this Rule and proposed withdrawals previously approved for funding appropriated pursuant to the "Clean Water and Natural Gas Critical Needs Bond Act of 1998" or other local, state or federally funded projects as of the effective date of this Rule shall be allowed to proceed with construction or to continue to operate under interim status until a permit has been issued or denied by the Director, provided that persons withdrawing in excess of 100,000 gallons per day by a well or group of wells operated as a system comply with the following requirements:

(1) Persons conducting withdrawals in the Capacity Use Area that require a permit shall submit a permit application to the Division of Water Resources within 60 days of the effective date of this Rule.

(2) Persons who have submitted applications shall provide any additional information requested by the Division of Water Resources for processing of the permit application within 30 days of the receipt of that request.

(3) Persons conducting withdrawals in the Capacity Use Area that require a permit shall submit water level and water use data on a form supplied by the Division four times a year, within 30 days of the end of March, June, September, and December until a permit has been issued or denied by the Division of Water Resources.

(c) Ground water withdrawals will be governed by the following standards:

(1) Adverse impacts of ground water withdrawals shall be avoided or minimized. Adverse impacts include, but are not limited to:

(A) dewatering of aquifers;

(B) encroachment of salt water;

(C) land subsidence or sinkhole development;

(D) long-term declines in aquifer water levels.

(2) Adverse impacts on other water users from ground water withdrawals shall be corrected or minimized through efficient use of water and development of sustainable water sources.

(3) In determining the importance and necessity of a proposed withdrawal the efficiency of water use and implementation of conservation measures shall be considered.

(d) An application for a water use permit must be submitted on a form approved by the Director to the North Carolina Division of Water Resources. The application shall describe the purpose or purposes for which water will be used, shall set forth the method and location of withdrawals, shall justify the quantities needed, and shall document water conservation measures to be used by the applicant to ensure efficient use of water and avoidance of waste. Withdrawal permit applications shall include the following information:

(1) Location by latitude and longitude of all wells to be used for withdrawal of water.

(2) Specifications for design and construction of existing and proposed production and monitoring wells. Exceptions may be made where specific items of information are not critical, as determined by the Director, to manage the ground water resource.

(A) Well diameter;

(B) Total depth of the well;

(C) Depths of all open hole or screened intervals that will yield water to the well;

(D) Depth of pump intake(s);

(E) Size, capacity and type of pump;

(F) Depth to top of gravel pack;

(G) Depth measurements shall be within accuracy limits of plus or minus 0.10 feet and referenced to a known land surface elevation.

(3) Withdrawal permit applications for use of ground water from the Cretaceous aquifer system shall include plans to reduce water use from these aquifers as specified in Rule .0503 of this Section. Withdrawal rates from the Cretaceous aquifer system that exceed the approved base rate may be permitted during Phase I of Rule .0503 of this Section if the applicant can demonstrate to the Director's satisfaction a need for the greater amount. Cretaceous aquifer system wells will be identified using the specifications in Rule .0502(d)(1) and .0502(d)(2) of this Section and the hydrogeological framework.

(4) Withdrawal permit applications for dewatering of mines, pits or quarries shall include a dewatering or depressurization plan that includes:

(A) a hydrogeological analysis of the dewatering or depressurization activity;

(B) the location, design and specifications of any sumps, drains or other withdrawal sources including wells and trenches;

(C) the lateral extent and depth of the zone(s) to be dewatered or depressurized;

(D) a monitoring plan that provides data to delineate the nature and extent of dewatering or depressurization;

(E) certification by an appropriate North Carolina Licensed Engineer or Geologist of all plans and hydrogeological analyses prepared to meet these requirements.

(5) Conservation Measures. The applicant shall provide information on existing conservation measures and conservation measures to be implemented during the permit period as follows:

(A) Public water supply systems shall develop and implement a feasible water conservation plan incorporating, at a minimum, the following components. Each component shall be described, including a timetable for implementing each component that does not already exist.

(i) Adoption of a water conservation-based rate structure, such as: flat rates, increasing block rates, seasonal rates, or quantity-based surcharges.

(ii) Implementation of a water loss reduction program if unaccounted for water is greater than 15 percent of the total amount produced, as documented annually using a detailed water audit. Water loss reduction programs shall consist of annual water audits, in-field leak detection, and leak repair.

(iii) Adoption of a water conservation ordinance for irrigation, including such measures as: time-of-day and day-of-week restrictions on lawn and ornamental irrigation, automatic irrigation system shut-off devices or other appropriate measures.

(iv) Implementation of a retrofit program that makes available indoor water conservation devices to customers (such as showerheads, toilet flappers, and faucet aerators).

(v) Implementation of a public education program (such as water bill inserts, school and civic presentations, water treatment plant tours, public services announcements, or other appropriate measures).

(vi) Evaluation of the feasibility of water reuse as a means of conservation, where applicable.

(B) Users of water for commercial purposes, other than irrigation of crops and forestry stock, shall develop and implement a water conservation plan as follows:

(i) an audit of water use by type of activity (for example, process make-up water, non-contact cooling water) including existing and potential conservation and reuse measures for each type of water use;

(ii) an implementation schedule for feasible measures identified in the above item for conservation and reuse of water at the facility.

(C) Users of water for irrigation of crops and forestry stock shall provide the following information:

(i) total acreage with irrigation available;

(ii) types of crops that may be irrigated;

(iii) method of irrigation (for example, wells that supply water to canals, ditches or central pivot systems or any other irrigation method using ground water);

(iv) a statement that the applicant uses conservation practice standards for irrigation as defined by the Natural Resources Conservation Service.

(6) If an applicant intends to operate an aquifer storage and recovery program (ASR), the applicant shall provide information on the storage zone, including the depth interval of the storage zone, lateral extent of the projected storage area, construction details of wells used for injection and withdrawal of water, and performance of the ASR program.

(e) The Director shall issue, modify, revoke, or deny each permit as set forth in G.S. 143-215.15. Permittees may apply for permit modifications. Any application submitted by a permittee shall be subject to the public notice and comment requirements of G.S. 143-215.15(d).

(f) Permit duration shall be set by the Director as described in G.S. 143-215.16(a). Permit transferability is established in G.S. 143-215.16(b).

(g) Persons holding a permit shall submit signed water usage and water level reports to the Director not later than 30 days after the end of each permit reporting period as specified in the permit. Monitoring report requirements may include:

(1) Amounts of daily withdrawal from each well.

(2) Pumping and static water levels for each supply well as measured with a steel or electric tape, or an alternative method as specified in the permit, at time intervals specified in the permit.

(3) Static water levels in observation wells at time intervals specified in the permit.

(4) Annual sampling by applicants located in the salt water encroachment zone and chloride concentration analysis by a State certified laboratory.

(5) Any other information the Director determines to be pertinent and necessary to the evaluation of the effects of withdrawals.

(h) Water use permit holders shall not add new wells without prior approval from the Director.

(i) The Director may require permit holders to construct observation wells to observe water level and water quality conditions before and after water withdrawals begin if there is a demonstrated need for aquifer monitoring to assess the impact of the withdrawal on the aquifer.

(j) For all water uses other than dewatering of mines, pits or quarries, withdrawals shall be permitted only from wells that are constructed such that the pump intake or intakes are at a shallower depth than the top of the uppermost confined aquifer that yields water to the well. Confined aquifer tops are established in the hydrogeological framework. Where wells in existence as of the effective date of this Rule are not in compliance with the requirements of this provision, the permit shall include a compliance schedule for retrofitting or replacement of non-compliant wells. Withdrawals from unconfined aquifers shall not lower the water table by an amount large enough to decrease the effective thickness of the unconfined aquifer by more than 50 percent.

(k) For withdrawals to dewater mines, pits or quarries, the permit shall delimit the extent of the area and depths of the aquifer(s) to be dewatered or depressurized. Maximum well withdrawal rates, total use limits, and the permissible extent of dewatering or depressurization will be determined by the Director using available methods of hydrogeologic analysis.

(l) Withdrawals of water that cause changes in water quality such that the available uses of the resource are adversely affected will not be permitted. For example, withdrawals shall not be permitted that result in migration of ground water

that contains more than 250 milligrams per liter chloride into pumping wells that contain chloride at concentrations below 250 milligrams per liter.

(m) General permits may be developed by the Division and issued by the Director for categories of withdrawal that involve the same or substantially similar operations, have similar withdrawal characteristics, require the same limitations or operating conditions, and require similar monitoring.

(n) Permitted water users may withdraw and sell or transfer water to other users provided that their permitted withdrawal limits are not exceeded.

(o) A permitted water user may sell or transfer to other users a portion of his permitted withdrawal. To carry out such a transfer, the original permittee must request a permit modification to reduce his permitted withdrawal and the proposed recipient of the transfer must apply for a new or amended withdrawal permit under Section .0500 of this Subchapter.

(p) Where an applicant or a permit holder can demonstrate that compliance with water withdrawal limits established under Section .0500 of this Subchapter is not possible because of construction schedules, requirements of other laws, or other reasons beyond the control of the applicant or permit holder, and where the applicant or permit holder has made appropriate efforts to conserve water and to plan the development of adequate water sources, the Director may issue a temporary permit with an alternative schedule to attain compliance with provisions of Section .0500 of this Subchapter, as authorized in G.S. 143-215.15(c)(ii).

History Note: *Authority G.S. 143-215.14; 143-215.15; 143-215.16;*
Eff. April 1, 2001.

.0503 PRESCRIBED WATER USE REDUCTIONS IN CRETACEOUS AQUIFER ZONES

Cretaceous aquifer water use shall be reduced in prescribed areas over a 16 year period, starting from approved base rates on the effective date of this Rule. The Cretaceous aquifer system zones and the three phases of water use reductions are listed as follows:

(1) Cretaceous aquifer system zones are regions established in the fresh water portion of the Cretaceous aquifer system that delimit zones of salt water encroachment, dewatering and declining water levels. These zones are designated on the paper and digital map entitled "Central Coastal Plain Capacity Use Area Cretaceous Aquifer Zones" (CCPCUA) on file in the Office of the Secretary of State one week prior to the effective date of these Rules.

(2) The reductions specified in Rule .0503 of this Section do not apply to intermittent users.

(3) If a permittee implements an aquifer storage and recovery program (ASR), reduction requirements will be based on the total net withdrawals. The reductions specified in Rule .0503 of this Section do not apply if the volume of water injected into the aquifer is greater than the withdrawal volume. If the withdrawal volume is greater than the injected volume, reductions specified in Rule .0503 of this Section apply to the difference between the withdrawal volume and the injected volume.

(4) The reductions specified in Rule .0503 of this Section shall not reduce permitted water use rates below 100,001 gallons per day.

(5) Phase definitions:

(a) Phase I: The six year period extending into the future from the effective date of this Rule.

(b) Phase II: The five year period extending into the future from six years after the effective date of this Rule to 11 years after the effective date of this Rule.

(c) Phase III: The five year period extending into the future from 11 years after the effective date of this Rule to 16 years after the effective date of this Rule.

(6) Phase reductions:

(a) Phase I:

(i) At the end of the Phase I, permittees who are located in the dewatering zone will be required to reduce annual water use from Cretaceous aquifers by 25% from their approved base rate.

(ii) At the end of the Phase I, permittees who are located in the salt water encroachment zone will be required to reduce annual water use from Cretaceous aquifers by 25% from their approved base rate.

(iii) At the end of the Phase I, permittees who are located in the declining water level zone will be required to reduce annual water use from Cretaceous aquifers by 10% from their approved base rate.

(iv) At the end of the Phase I, permittees who are located in the Cretaceous zone, but outside of the salt water encroachment, dewatering, or declining water level zones will be required not to exceed annual water use from Cretaceous aquifers as established by their approved base rate.

(c) Phase II:

(i) At the end of the Phase II, permittees who are located in the dewatering zone will be required to reduce annual water use from Cretaceous aquifers by 50% from their approved base rate.

(ii) At the end of the Phase II, permittees who are located in the salt water encroachment zone will be required to reduce annual water use from Cretaceous aquifers by 50% from their approved base rate.

(iii) At the end of the Phase II, permittees who are located in the declining water level zone will be required to reduce annual water use from Cretaceous aquifers by 20% from their approved base rate.

(iv) At the end of the Phase II, permittees who are located in the Cretaceous zone, but outside of the salt water encroachment, dewatering, or declining water level zones will be required not to exceed annual water use from Cretaceous aquifers as established by their approved base rate.

(c) Phase III:

(i) At the end of the Phase III, permittees who are located in the dewatering zone will be required to reduce annual water use from Cretaceous aquifers by 75% from their approved base rate.

(ii) At the end of the Phase III, permittees who are located in the salt water encroachment zone will be required to reduce annual water use from Cretaceous aquifers by 75% from their approved base rate.

(iii) At the end of the Phase III, permittees who are located in the declining water level zone will be required to reduce annual water use from Cretaceous aquifers by 30% from their approved base rate.

(iv) At the end of the Phase III, permittees who are located in the Cretaceous zone, but outside of the salt water encroachment, dewatering, or declining water level zones will be required not to exceed annual water use from Cretaceous aquifers as established by their approved base rate.

(7) The CCPCUA Cretaceous Aquifer Zones map will be updated, if necessary, in the sixth, eleventh, and sixteenth years following the effective date of this Rule to account for aquifer water level responses to phased withdrawal reductions. The map update will be based on the following conditions:

(a) Rate of decline in water levels in the aquifers;
(b) Rate of increase in water levels in the aquifers;
(c) Stabilization of water levels in the aquifers;
(d) Chloride concentrations in the aquifers.

This aquifer information will be analyzed on a regional scale and used to develop updated assessments of aquifer conditions in the Central Coastal Plain Capacity Use Area. The Environmental Management Commission (EMC) may adjust the aquifer zones and the water use reduction percentages for each zone based on the assessment of conditions. The EMC will adopt the updated map and reduction percentage changes after public hearing.

History Note: *Authority G.S. 143-215.15;*
Eff. April 1, 2001.

.0504 REQUIREMENTS FOR ENTRY AND INSPECTION

(a) The Division may enter and inspect property in order to evaluate wells, pumps, metering equipment or other withdrawal or measurement devices and records of water withdrawals and water levels, if:

(1) Persons conduct an activity that the Division believes requires the use of water at quantities that subject the person to regulation under these Rules;
(2) A permittee or applicant has not provided data or information on use of water and wells and other water withdrawal facilities as required by these Rules; or
(3) Water levels and chloride concentrations at the person's facility, or at nearby facilities or monitoring stations, indicate that aquifers may be damaged by overpumping or salt water encroachment, or other adverse affects that may be attributed to withdrawal by the person.

(b) All information submitted to fulfill the requirements of these Rules, or to obtain a permit under these Rules, or obtained by inspection under these Rules, shall be treated as Confidential Business Information, if requested by the applicant, and found to be such by the Division. Reports defined in Rule .0502(g) of this Section are not considered Confidential Business Information.

History Note: *Authority G.S. 143-215.19;*
Eff. April 1, 2001.

.0505 ACCEPTABLE WITHDRAWAL METHODS THAT DO NOT REQUIRE A PERMIT

(a) As of the effective date of this Rule, any person who is not subject to Rule .0502 of this Section and withdraws more than 10,000 gallons per day from surface or ground water in the Central Coastal Plain Capacity Use Area, shall register such withdrawals on a form supplied by the Division and comply with the following provisions:

(1) Construct new wells such that the pump intake or intakes are above the top of the uppermost confined aquifer that yields water to the well. Confined aquifer tops are established in the hydrogeological framework.

(2) Report surface and ground water use to the Division of Water Resources on an annual basis on a form supplied by the Division.
(3) Withdraw water in a manner that does not damage the aquifer or cause salt water encroachment or other adverse impacts.

(b) These requirements do not apply to withdrawals to supply an individual domestic dwelling.

(c) Agricultural water users may either register water use with the Division of Water Resources as provided in this Rule or may provide the information through confidential water use surveys conducted by the North Carolina Department of Agriculture or the United States Department of Agriculture.

History Note: *Authority G.S. 143-215.14; 143-355(k);*
Eff. April 1, 2001.

.0506 CENTRAL COASTAL PLAIN CAPACITY USE AREA STATUS REPORT

Within two years of the effective date of this Rule, and at five year intervals thereafter, the Division of Water Resources shall publish a status report on the Central Coastal Plain Capacity Use Area. The report shall include the following:

(1) Compilations of water use data,
(2) Evaluations of surface and ground water resources,
(3) Updated information about the hydrogeologic framework in the Central Coastal Plain Capacity Use Area,
(4) A summary of alternative water sources and water management techniques that may be feasible by generalized geographic location, and
(5) A status report on actions by water users to develop new water sources and to increase water use efficiency.

History Note: *Authority G.S. 143-215.14;*
Eff. April 1, 2001.

.0507 DEFINITIONS

The following is a list of definitions for terms found in Section .0500 of this Subchapter.

(1) Approved base rate: The larger of a person's January 1, 1997 through December 31, 1997 or August 1, 1999 through July 31, 2000 annual water use rate from the Cretaceous aquifer system, or an adjusted water use rate determined through negotiation with the Division using documentation provided by the applicant of:
  (a) water use reductions made since January 1, 1992,
  (b) use of wells for which funding has been approved or for which plans have been approved by the Division of Environmental Health by the effective date of this Rule, or
  (c) other relevant information.
(2) Aquifer: Water-bearing earth materials that are capable of yielding water in usable quantities to a well or spring.
(3) Aquifer storage and recovery program (ASR): Controlled injection of water into an aquifer with the intent to store water in the aquifer for subsequent withdrawal and use.
(4) Confining unit: A geologic formation that does not yield economically practical quantities of water to wells or springs. Confining units separate aquifers and slow the movement of ground water.
(5) Cretaceous aquifer system: A system of aquifers in the North Carolina coastal plain that is comprised of water-bearing earth materials deposited during the Cretaceous period of geologic time. The extent of the Cretaceous Aquifer System is defined in the hydrogeological framework.
(6) Dewatering: Dewatering occurs when aquifer water levels are depressed below the top of a confined aquifer or water table declines adversely affect the resource.
(7) Flat rates: Unit price remains the same regardless of usage within customer class.
(8) Fresh water: Water containing chloride concentrations equal to or less than 250 milligrams per liter.
(9) Gravel pack: Sand or gravel sized material inside the well bore and outside the well screen and casing.
(10) Ground water: Water in pore spaces or void spaces of subsurface sediments or consolidated rock.
(11) Hydrogeological framework: A three-dimensional representation of aquifers and confining units that is stored in Division data bases and may be adjusted by applicant supplied information.
(12) Increasing block rates: Unit price increases with additional usage.
(13) Intermittent users: Persons who withdraw ground water less than 60 days per calendar year or who withdraw less than 15 million gallons of ground water in a calendar year.
(14) Observation well: A non-pumping well screened in a particular aquifer where water levels can be measured and water samples can be obtained.
(15) Pumping water level: The depth to ground water in a pumping well as measured from a known land surface elevation. Measurements shall be made four hours after pumping begins. Measurements shall be within accuracy limits of plus or minus 0.10 feet.
(16) Quantity based surcharges: Surcharges billed with usage over a certain determined quantity.

(17) Salt water: Water containing chloride concentrations in excess of 250 milligrams per liter.
(18) Salt water encroachment: The lateral or vertical migration of salt water toward areas occupied by fresh water. This may occur in aquifers due to natural or man-made causes.
(19) Seasonal rates: Unit prices change according to the season.
(20) Static water level: The depth to ground water in a non-pumping well as measured from a known land surface elevation. Measurements shall be made after pumping has ceased for 12 hours. Measurements shall be within accuracy limits of plus or minus 0.10 feet.
(21) Unaccounted for water: The difference between the total water entering the system (produced and purchased) and the total metered or otherwise accounted for water usage.
(22) Water table: The water level in an unconfined aquifer.

History Note: *Authority G.S. 143-215.14;*
Eff. April 1, 2001.