

ATTACHMENT A

**A RESOLUTION TO ACCEPT THE UPDATE OF THE JORDAN LAKE NUTRIENT
MANAGEMENT STRATEGY AND TOTAL MAXIMUM DAILY LOAD AND
DESIGNATE THE TOWN MANAGER AS THE TOWN'S AUTHORIZED
REPRESENTATIVE TO THE STATE OF NORTH CAROLINA ENVIRONMENTAL
MANAGEMENT COMMISSION**

Resolution No. 128/2004-05

WHEREAS, in 2002, the North Carolina Department of Environment and Natural Resources Division of Water Quality placed portions of the Upper New Hope Arm of Jordan Lake on the 303(d) list of impaired waters and committed to developing a Total Maximum Daily Load standard for nutrients for that portion of Jordan Lake; and

WHEREAS, in 2003, stakeholder groups were established to work with the North Carolina Department of Environment and Natural Resources Division of Water Quality and Environmental Management Commission to develop the Total Maximum Daily Load nutrient standards and associated Nutrient Management Strategies for Jordan Lake watersheds; and

WHEREAS, the planning jurisdictions of Carrboro and Chapel Hill, as well as portions of the City of Durham and unincorporated areas in Durham, Orange, and Chatham County are located within the Upper New Hope Arm of Jordan Lake watershed; and

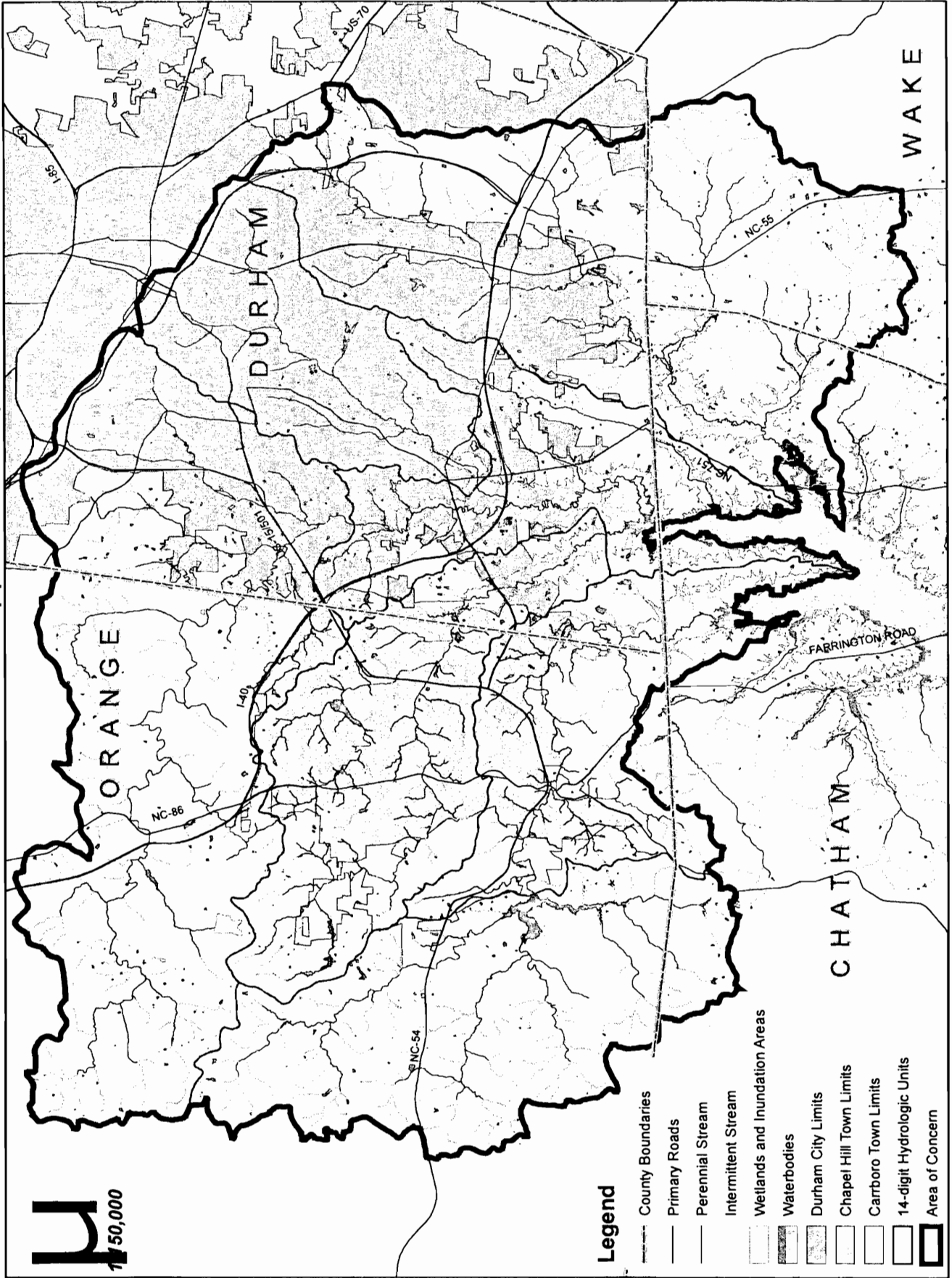
WHEREAS, the proposed nutrient loading reduction target for the Upper New Hope Arm portion of Lake Jordan is 35% total nitrogen reduction and 5% total phosphorous reduction; and

WHEREAS, the Upper New Hope Arm stakeholder work group will continue to discuss issues and will prepare comments regarding the proposed nutrient standards and strategies for submittal to the North Carolina Environmental Management Commission.

NOW, THEREFORE BE IT RESOLVED by the Carrboro Board of Aldermen that the Aldermen accept the staff report, that the Town Manager or his designee serve as the Town's authorized representative in the Jordan Lake Upper New Hope multi-jurisdictional stakeholder work group.

This is the 19th day of April in the year 2005.

Local Jurisdictions and Basins of the Upper New Hope Arm of Jordan Lake



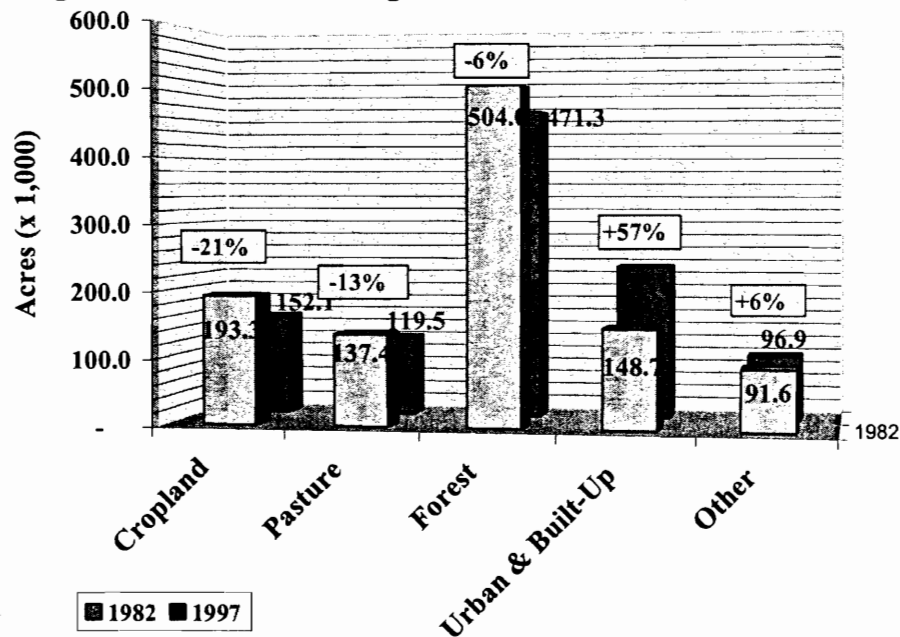
V.2 Proposed Nonpoint Source Nutrient Strategy For Jordan Lake Nutrient Sensitive Waters

Background

In 1983, the NC Environmental Management Commission designated Jordan Lake and its contributing watershed as “Nutrient Sensitive Waters”, requiring a plan to reduce nutrient inputs from the watershed into the lake. Initially, the NC Division of Water Quality placed phosphorus limits on the discharges of wastewater treatment facilities. However, nutrient problems persisted.

The watershed encompasses the high-growth areas of Greensboro, Burlington, Chapel Hill, and western portions of Durham, Cary and Apex. The extent of growth following the watershed’s NSW designation through 1997 is illustrated in Figure 1.

Figure 1. Land Cover Changes, Jordan Watershed, 1982-1997



In 2002, the NC Division of Water Quality (DWQ) placed the upper New Hope Arm of Jordan Lake on the state’s list of impaired waters, the 303(d) list, and identified it as a segment requiring a Total Maximum Daily Load (TMDL) to meet the water quality criterion for chlorophyll *a*. Excess nutrients (nitrogen and phosphorus) from both point source and nonpoint source pollution contribute to excess algal growth in the lake. The bullets and Table 1 below provide modeled estimates of nitrogen loading from point and nonpoint sources to the entire lake as well as breakdowns of those loadings to both the Upper New Hope and Haw River Arms of the lake. Phosphorus estimates follow in the same format (B. Everett Jordan Lake TMDL Watershed Model Development, Tetra Tech 2003).

- **Total Nitrogen:** for the entire lake, Point sources = 32%; Nonpoint Source (NPS) = 68%.
 - *Among NPS contributions to the entire Lake:* 36% of NPS from agriculture, 29% from residential, 9% from comm./Indus., 19% from forest and 7% from other.
 - *Among NPS contributions to the Haw River arm:* 46% of NPS is from agriculture, 25% from residential, 7% from comm./Indus., 16% from forest and 6% from other (NPS accounts for 68% of total loading).
 - *Among NPS contributions to the Upper New Hope Aim of Jordan Lake,* 10% of the NPS is from agriculture, 39% from residential, 21% from comm./Indus., 19 % from forest, and 11% from other (NPS accounts for 55% of total loading).

Table 1. *Percentage of N Loading by Source Category and Percent TMDL Loading Reduction Targets for Jordan Lake, Haw River Arm, and New Hope Arm

	Point Sources	Agriculture	**Residential	Comm./Indus.	Forest	Other (NPS)	N TMDL Target
Jordan Lake	32	24	20	6	13	5	
Haw River	32	31	17	5	11	4	8
Upper New Hope	45	6	21	12	10	6	35

* Percentages for Ag, Res., Comm./Indus., Forest, and Other NPS are based on % of total PT/NPS, e.g. Ag. Loading = 36% x 68% (NPS) = 24%
 ** Includes stormwater subject to Phase I and Phase II NPDES permitting requirements

- **For total phosphorus:** for the entire lake, Point sources = 16%; NPS = 84%.
 - *Among NPS contribution to Jordan Lake,* 51% from agriculture, 12% from residential, 6% from comm./Indus., 15% from forest and 16% from other.
 - *Among NPS contribution to the Haw River,* 62% from agriculture, 8% from residential, 4% from comm./Indus., 12% from forest and 14% from other (NPS accounts for 83% of total loading).
 - *Among NPS contribution to the Upper New Hope Aim of Jordan Lake,* 17% from agriculture, 29% from residential, 18% from comm./Indus., 19 % from forest, and 17% from other (NPS accounts for 82% of total loading).

Table 2. Percentage of P Loading by Source Category and Percent TMDL Loading Reduction Targets for Jordan Lake, Haw River Arm, and New Hope Arm

	Point Sources	Agriculture	**Residential	Comm/Indus	Forest	Other (NPS)	P TMDL Target
Jordan Lake	16	43	10	5	13	13	
Haw River	17	51	7	3	10	12	5
Upper New Hope	18	14	24	15	15	14	5

* Percentages for Ag, Res., Comm./Indus., Forest, and Other NPS are based on % of total PT/NPS
 ** Includes stormwater subject to Phase I and Phase II NPDES permitting requirements

- Alamance, Chatham, Durham, Guilford and Orange counties each contribute 10% or more of total N to Jordan Lake.
- For the lake as a whole, the largest contributors of total N are Alamance and Guilford counties, together accounting for 57 percent of the total. For the TMDL segments, Orange and Durham counties are the major contributors, with approximately equal total loads.
- A significant portion of the residential N load is due to onsite wastewater disposal.
- Alamance, Chatham, Guilford and Orange counties each contribute 9% or more of total P.

In 2003, a stakeholder group was established to assist DWQ and the NC Environmental Management Commission (EMC) in developing the Jordan Lake TMDL and a nutrient management strategy for the Jordan Lake Watershed. The TMDL target was drafted after a series of meetings. **The TMDL target for the Haw River Arm of the lake is 8 % total N reduction and 5 % total P reduction, both relative to the baseline period of 1997-2001. The TMDL target for the Upper New Hope Arm of the lake is 35 % total N reduction and 5 % total P reduction, both relative to the baseline period of 1997-2001 (Michelle Woolfolk, 2003)¹.** The middle and lower portions of the New Hope Arm are currently meeting their intended uses. However, DWQ has proposed a cap on existing loading to maintain current conditions in this heavily-used portion of the lake and to prevent loading to this portion from affecting conditions in the impaired and stressed portions (Upper New Hope and Haw River Arms).

Proposed Strategy for Public Comment

The stakeholders and DWQ staff developed and evaluated several possible scenarios of NPS management strategies before DWQ prepared the recommended strategy for public comment in Table 3, below. The five scenarios are provided in an Appendix for information purposes. They covered the spectrum of possibilities from completely voluntary to full regulation of all significant nutrient sources.

The resulting NPS management strategy proposed here builds from concepts implemented in the Neuse and Tar-Pamlico River Basins. It is recognized that this strategy will be controversial in some quarters, and that public input will be needed before the Division staff can recommend a final strategy to the Water Quality Committee and the Environmental Management Commission for potential rule-making.

For the subject areas of agriculture, urban stormwater, nutrient management, and riparian buffer protection, the Division would propose to work in general from the rules adopted in the Tar-Pamlico River Basin. The text of each of the Tar-Pamlico rules can be found at <http://h2o.enr.state.nc.us/nps/tarpam.htm>.

¹Control of point and nonpoint sources of nutrients may require a higher reduction percentage if reductions from background sources are not sought and therefore must be achieved elsewhere. If the necessary reduction is achieved by the point and nonpoint sources in proportion to their contribution to existing load, the targets for implementation would increase to 9% TN and 6% TP reduction in the Haw River Arm, and 42% TN and 7% TP reduction in the Upper New Hope Arm.

Table 3. Proposed NPS Management Strategy for Public Comment

	Upper New Hope	Haw	Lower New Hope
	<p>Reduction Goal* Loading Target N: 35% 4.1 lb N/ac-yr P: 5% 1.1 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>	<p>Reduction Goal* Loading Target N: 8% 5.6 lb N/ac-yr P: 5% 1.5 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>	<p>Reduction Goal* Loading Target N: 0% 4.8 lb N/ac-yr P: 0% 0.8 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>
AGRICULTURE	<p>In general, the Division would propose to work from the agriculture rule adopted in the Tar-Pamlico River Basin. The Tar-Pamlico agriculture rule, 15A NCAC 2B .0256, is available at http://h2o.enr.state.nc.us/nps/tarpam.htm.</p> <p>What: Local strategies achieve and maintain annual N and P loading targets for the subwatershed from all agricultural lands in their area within the subwatershed.</p> <p>Who Administers: Local committees and a watershed oversight committee. Local committees would include representation from Soil and Water Conservation Districts, local USDA-NRCS staff, NC Department of Agriculture & Consumer Services, local Cooperative Extension Service staff, Division of Soil and Water Conservation, and farmers. The watershed oversight committee would include representation from USDA-NRCS, NC Department of Agriculture & Consumer Services, Cooperative Extension Service, Division of Soil and Water Conservation, DWQ, environmental interests, farming interests, and the scientific community.</p> <p>Who is Affected: All agricultural operations lying wholly or partly within the subwatershed, including cropland, animal operations, pasture, and horticulture.</p> <p>How: Local committees would be responsible for registering all producers, drafting strategies to achieve load targets, and submitting annual progress reports. A watershed oversight committee would oversee adaptation or development of tools to account for loading, review and approve local strategies, and provide reports to the EMC. Accounting methods developed for the Neuse and Tar-Pamlico agriculture rules would be considered first. For nitrogen, the committee would be asked to approve use of the Nitrogen Loss Evaluation Worksheet, or NLEW. Individual producers could comply automatically by implementing standard BMPs or they could contribute as needed to their collective local strategy and rely on it to comply.</p> <p>When: Relative to rule effective date, producers register within 1 year, accounting tool completed in 2 years, strategies developed in 3 years, targets reached in 5 years. If a local committee did not meet its goal in 5 years, then producers in that area would be subject to additional implementation needs as determined by the EMC.</p>		

Table 3. (continued)

	Upper New Hope	Haw	Lower New Hope
NUTRIENT MANAGEMENT In general, the Division would propose to work from the nutrient management rule adopted in the Tar-Pamlico River Basin. The Tar-Pamlico nutrient management rule, 15A NCAC 2B .0257, is available at http://h2o.enr.state.nc.us/nps/tarpam.htm . What: Completion of training and continuing education in nutrient management, and completion and implementation of a written nutrient management plan addressing both N and P for all lands where nutrients are applied. Who Administers: DWQ. Who is Affected: All persons who are responsible for applying fertilizer or biosolids (including consultants and hired applicators) to ten or more acres of, or who own or manage ten or more acres of: cropland; golf courses; recreational lands; rights-of-way; residential, commercial, or industrial lawns and gardens; or other turfgrass areas. Owners and managers have the option of ensuring that applicators they hire complete the requirements. Applicators to cropland with a certified animal waste management plan would be exempt. Applicators of domestic, commercial, and industrial wastewater would be subject. How: DWQ would coordinate with Cooperative Extension Service to provide professional training. DWQ would be responsible for ensuring compliance. When: Upon rule effective date, persons affected would be required to complete initial training and plans within five years. Persons who become subject after the effective date would be given a shorter time period to comply. Biosolids applicators would be given until 2010 to begin implementation of plans addressing both N and P. All persons would be required to comply with continuing education requirements on a periodic basis, which may include soil testing and renewing nutrient management plans.	Reduction Goal* N: 35% P: 5% * vs. 1997-2001 baseline period	Reduction Goal* N: 8% P: 5% * vs. 1997-2001 baseline period	Reduction Goal* N: 0% P: 0% * vs. 1997-2001 baseline period
	Loading Target 4.1 lb N/ac-yr 1.1 lb P/ac-yr	Loading Target 5.6 lb N/ac-yr 1.5 lb P/ac-yr	Loading Target 4.8 lb N/ac-yr 0.8 lb P/ac-yr

Table 3. (continued)

	Upper New Hope	Haw	Lower New Hope
URBAN STORMWATER	<p>Reduction Goal* Loading Target N: 35% 4.1 lb N/ac-yr P: 5% 1.1 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>	<p>Reduction Goal* Loading Target N: 8% 5.6 lb N/ac-yr P: 5% 1.5 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>	<p>Reduction Goal* Loading Target N: 0% 4.8 lb N/ac-yr P: 0% 0.8 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>
NPDES Phase II	<p>DWQ would consider applying Phase II requirements to <i>all</i> local governments that own or operate municipal separate storm sewer systems in these two subwatersheds, using the state designation process in Section 7 of S1210. This would not include counties.</p>		
Stormwater Rule: New Development & Redevelopment	<p>In general, the Division would propose to work from the stormwater rule adopted in the Tar-Pamlico River Basin. The Tar-Pamlico stormwater rule, 15A NCAC 2B .0258, is available at http://h2o.enr.state.nc.us/nps/tarpam.htm.</p> <p>What: New development and redevelopment activities in all subwatersheds would achieve and maintain annual N and P loading targets for their respective subwatersheds. These developments would also be required to minimize their increases in stormwater runoff flows so as to avoid degradation of receiving waters. Redevelopment projects would have the option of meeting a subwatershed's percentage reduction targets relative to the previous development on that site. Projects would have the ability to achieve partial load reductions through offsite options. Offsite options could potentially include activities on other sites identified by the developer, reductions achieved by the local government elsewhere within the jurisdiction, or activities conducted by state programs. Local governments would have the option to develop regional or jurisdiction-wide load reduction initiatives to help individual projects meet loading targets.</p> <p>Who Administrators: All local governments – municipalities and counties – wholly or partly within a subwatershed.</p> <p>Who is Affected: All new development and redevelopment projects.</p> <p>How: A watershed oversight committee would be responsible for developing a tool for load accounting by all local governments and for presenting the tool to the EMC. DWQ would work with local governments to develop a model local program and model ordinances to be approved by the watershed oversight committee. Local governments would adopt programs and ordinances using the models as guidance. The EMC would approve local programs. Local programs would include permitting of new development and redevelopment projects, ensuring proper maintenance of permitted stormwater systems, compliance monitoring and enforcement, and education of development interests and the public.</p> <p>When: The model local program and ordinances would be completed within one year of rule effective date. Local governments would develop and submit their programs for DWQ review within six months of model approval. Local governments would adopt programs and ordinances, and the EMC would approve local programs within one year of submittal. Local governments would implement new development and redevelopment permitting upon adoption of local ordinances. Other elements of local programs would be implemented following stormwater rule timeframes.</p>		

Table 3. (continued)

	Upper New Hope	Haw	Lower New Hope
Stormwater Rule: Existing Development	<p>Reduction Goal* Loading Target</p> <p>N: 35% 4.1 lb N/ac-yr</p> <p>P: 5% 1.1 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>	<p>Reduction Goal* Loading Target</p> <p>N: 8% 5.6 lb N/ac-yr</p> <p>P: 5% 1.5 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>	<p>Reduction Goal* Loading Target</p> <p>N: 0% 4.8 lb N/ac-yr</p> <p>P: 0% 0.8 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>
	<p>What: Local governments in these two subwatersheds would analyze existing developed areas within their jurisdictions to identify stormwater retrofitting opportunities toward meeting the loading targets allocated to the subwatershed. They would prioritize BMP installations, propose implementation schedules for DWQ approval, and then implement retrofits in keeping with those schedules. Local governments would be given the option to develop regional or jurisdiction-wide load reduction initiatives to contribute toward loading targets. Local governments would also be required to develop and implement programs to map stormwater systems and identify and remove illegal discharges.</p> <p>When: Local governments would conduct retrofit evaluations, prioritize opportunities, and propose implementation schedules within 5 years of program adoption. They would begin implementing retrofits at 5 years, and provide annual implementation reports to the EMC. The EMC would reexamine the retrofit approach every 5 years in light of progress toward strategy water quality objectives. Local governments would complete initial mapping of stormwater systems and begin field screening for illicit discharges within two years of program adoption. Field screening would be phased in over time.</p>	<p>Existing programs.</p>	
TRADING	<p>DWQ would establish the ability for point source dischargers within each arm to conduct effluent trading. To the extent of technical and administrative feasibility, DWQ would also establish the ability to develop trading or other nutrient loading offset options between point and nonpoint sources, and among nonpoint sources.</p>		
FORESTRY	<p>While the EMC does not have direct authority over the Division of Forest Resources, DWQ would work with DFR to evaluate the potential for using pre-harvest notification to improve accountability by forest harvest operations throughout the watershed. To effectively establish such notification, new statutory authority would likely be required.</p> <p>The proposed buffer rule (see below) would include forest-harvesting provisions as established in the Neuse and Tar-Pamlico River Basin buffer rules. On forest lands that have an approved forest management plan, these provisions would allow for selective harvesting in the first 30 feet of buffer and full harvesting in the outer 20 feet.</p>		
REPORTING / ADAPTIVE MANAGEMENT	<p>Local governments and agricultural committees would provide annual reports to the EMC. The EMC would evaluate progress of the management strategy toward meeting water quality objectives every five years, and the need for additional management actions.</p>		

Table 3. (continued)

	Upper New Hope	Haw	Lower New Hope
BUFFER PROTECTION	<p>Reduction Goal* Loading Target N: 35% 4.1 lb N/ac-yr P: 5% 1.1 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>	<p>Reduction Goal* Loading Target N: 8% 5.6 lb N/ac-yr P: 5% 1.5 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>	<p>Reduction Goal* Loading Target N: 0% 4.8 lb N/ac-yr P: 0% 0.8 lb P/ac-yr</p> <p>* vs. 1997-2001 baseline period</p>
	<p>In general, the Division would propose to work from the buffer rules adopted in the Tar-Pamlico River Basin. The Tar-Pamlico buffer protection rule, (15A NCAC 2B .0259), buffer mitigation rule (15A NCAC 2B .0260), and buffer delegation rule (15A NCAC 2B .0261) are available at http://h2o.enr.state.nc.us/nps/tarpam1.htm.</p>		
	<p>What: Existing vegetated riparian buffers would be protected and maintained on both sides of perennial and intermittent streams, lakes, and ponds in all three subwatersheds.</p>		
	<p>Who Administers: DWQ. DWQ may delegate programs to interested, qualified local governments.</p>		
	<p>Who is Affected: Potentially all owners of property with riparian buffers.</p>		
	<p>How: Buffer rules would be fashioned after those in the Neuse and Tar-Pamlico River Basins. 50 feet of riparian area would be protected on each side of water bodies. The first 30 feet adjacent to the water, or Zone 1, would remain undisturbed with the exception of certain activities. The outer 20 feet, or Zone 2, would be revegetated, with certain additional uses allowed. Specific activities would be identified in the rule as “exempt”, “allowable”, or “allowable with mitigation”. Examples of “exempt” activities would include driveway and utility crossings of certain sizes through zone 1, and grading and revegetating in zone 2. “Allowable” and “allowable with mitigation” activities would require review by DWQ staff and would include activities such as new ponds in drainage ways and road crossings. Mitigation options would be defined. Footprints of existing uses within the buffer such as cropland, buildings, commercial facilities, lawns, utility lines, and onsite wastewater systems would be exempt. A newly vegetated buffer would not be required unless the existing use of the riparian area changes.</p>		
	<p>When: Upon rule effective date. DWQ may propose a temporary rule to better ensure protection of existing buffers.</p>		
WASTEWATER LAND APPLICATION	<p>DWQ will investigate strengthening its existing permitting program to address nutrient export as needed for the entire Jordan Lake watershed. Changes may include requiring all domestic, industrial, and commercial non-discharge systems within a certain distance of the lake or mainstems of the Haw or New Hope tributaries that are not currently meeting reclaimed water effluent standards to do so, with the exception of individual single-family homes. New industrial non-discharge facilities would be required to establish vegetated buffers compliant with the riparian buffer rule, and existing facilities may be required to establish such buffers.</p>		
ON-SITE WASTEWATER	<p>While the EMC does not have direct authority over the agency that administers onsite wastewater programs, DWQ would work with the Division of Environmental Health to pursue strategies to reduce N and P loading from onsite wastewater systems. Best options would vary for specific areas, and could include extending centralized sewer connections, remedying failing systems, improving maintenance, or installing alternative onsite designs. DWQ would also work with local governments to determine best options for addressing individual residential discharging sand filter systems.</p>		

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural ResourcesAlan W. Klimek, P.E. Director
Division of Water Quality

Now Available Upon Request

**B. Everett Jordan Reservoir
Nutrient Management Strategy and TMDL
Public Review Draft – April 1, 2005**

Is now available upon request from the North Carolina Division of Water Quality. This nutrient management strategy and TMDL study was prepared as a requirement of the NCGS §143.215 and the Federal Water Pollution Control Act, Section 303(d). The study identifies the sources of the pollutants, determines allowable loads to surface waters, and provides pollutant allocations.

TO OBTAIN A FREE HARD COPY OF THE TMDL REPORTS:

Please contact Ms. Robin Markham (919) 733-5083, extension 558 or write to:

Robin Markham
Water Quality Planning Branch
NC Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

The draft TMDL is also located on the following website: <http://h2o.enr.state.nc.us/tmdl>. Interested parties are invited to comment on the draft TMDL study by May 31, 2005. Comments concerning the report should be directed to Ms. Michelle Woolfolk of the Division of Water Quality at the above address.

Nutrient Management Strategy and TMDL Public Meeting
May 2, 2005, 6:00 pm
Building 1
Alamance Community College
1247 Jimmie Kerr Rd
Graham, NC

