

Appendix C

Town of Cary Water Shortage Response Plan and Water Shortage Conservation Ordinance

POLICY STATEMENT 127

Water Shortage Response Plan

Prepared by: Kim Fisher, Public Works/Utilities Director

Supersedes: 5/11/00

Approved by Council: 4/12/01

Effective: 4/12/01

Purpose: To establish a Water Shortage Response Plan according to guidelines provided by the State Division of Water Resources

In 1998, the NC Division of Water Resources updated its *Water Shortage Response Handbook for North Carolina Water Supply Systems*. According to the *Handbook*, municipalities should develop a Water Shortage Response Program, and include the following components:

- 1) adoption of an ordinance to provide authority to enact system measures to reduce demand in the case of an emergency;
- 2) development of a method to evaluate ability to meet demand; and
- 3) development of procedures for implementing appropriate water use restriction stages.

Each of these components has been implemented by the Town of Cary, and is described below.

1. Adoption of Water Use Restriction Ordinance or Bylaw

The NC Division of Water Resources recommends that every municipality adopt an ordinance to

“provide for the declaration of a water shortage and specify voluntary and mandatory conservation measures to be imposed at each level of water shortage severity.”

Two sections of the Town code provide staff authority to implement measures to address potential water shortages, including Section 19-44, Water Service Provided by Town Includes only Alternate Day Outdoor Irrigation; and Section 19-45, Water Shortage Conservation Measures.

2. Evaluation of Ability to Meet Demand

The ability to meet demand is dependent on several components of the Town’s water supply system: the water source (Jordan Lake and/or purchase from others), raw water intake and pipeline, treatment plant, storage tanks, and distribution system. Town staff and the Town Manager continually evaluate the status of all these components to determine if a water shortage condition exists or is approaching. There are several indicators used by staff to signal the potential for a water shortage condition, which are described below:

Jordan Lake Allocation

Cary and Apex have a joint allocation of water supply storage volume in the Jordan Lake Water Supply Pool. The Division of Water Resources has recommended guidelines for monitoring the available raw water supply, based on the number of days the volume of water remaining in the allocated storage could meet current demands. Cary Public Works/Utilities staff track the amount of water in storage on a daily basis. The Division of Water Resources defines four water use reduction stages as shown in Table 1. Storage thresholds for considering implementation of the stages are based on levels recommended by the Division of Water Resources.

TABLE 1
Water Use Reduction Stages and Associated Storage Thresholds

Stage	Description	Days of Storage Remaining	Example Of Volume Remaining If Demand Is 10 Million Gallons Per Day
Voluntary	Potential for a serious shortage of water supply exists.	60	600 million gallons (MG)
Mandatory	Visible or measurable signs indicate that supplies are significantly lower than the seasonal norm and are diminishing.	50	500 MG
Water Shortage Emergency	The system is experiencing a water shortage.	30	300 MG
Declaration of Rationing	The supply is clearly inadequate and mandatory water allocation and other emergency measures are called for.	15	150 MG

The thresholds in Table 1 are only guidelines – the actual implementation of specific water use reduction measures during periods of water shortage will be determined based on an assessment of all the factors influencing water supply. As an example, if demands are averaging 10 million gallons per day and storage falls below 630 million gallons, which represents 63 days of supply, voluntary measures - in addition to normal measures - would be considered.

Available Water Index

The Available Water Index (AWI) was developed by staff as a measure of the available treated water on a given day stored in the Town's elevated water tanks and ground storage reservoir at the water treatment plant. Water is provided by the Cary/Apex WTP year-round and additional water may be purchased from Durham or

Raleigh under some conditions. If one or more of the Town's water sources are unable to supply water on a given day, or if the demand for water exceeds treatment or pumping capacity, the AWI is affected.

Decreasing AWI from one day to the next indicates that less treated water is available for use by the Town's customers. The AWI informs Town staff when there is a trend toward critically low storage levels so that corrective action can be taken for the protection of public health and safety.

The AWI normally ranges between 60 and 80. An AWI within this range ensures sufficient capacity within the system to meet daily water demand. When the AWI falls below 60, Town staff begin careful monitoring of supply and demand levels. If the AWI continues trending downward past 55, this situation indicates that the water system demand is potentially exceeding supply capacities and planning should begin for demand reduction. An AWI of 50 or less indicates that immediate measures must be taken to reduce demand and ensure water system viability.

For example: After several weeks of drought and high irrigation demand, the index may be as low as 50 on Monday (the production of water was exceeded by the demand for water). Following an inch of rain on Tuesday, the index may climb to 65 (the stores of available water are climbing) and be as high as 75 by Wednesday when hardly any outdoor irrigation is occurring (production is significantly exceeding demand and the storage tanks and reservoirs are nearly full).

The AWI normally ranges between 60 and 80. Levels lower than 60 trigger consideration of the following actions:

- AWI < 60, begin careful monitoring of supply and demand
- AWI < 55, begin planning demand reduction measures
- AWI < 50, implement demand reduction measures

Other Factors

Other factors that will trigger evaluation of the potential for water shortage conditions include:

- Sudden loss of supplemental water supplies during periods of high demand.
- The occurrence of a major water transmission main break, fire, or any other emergency that would require high volumes of water, such that demand could exceed supply.
- Indications of short or long-term water quality concerns regarding Jordan Lake or other sources.
- Level of interbasin transfers relative to Cary and Apex's interbasin transfer certificate amount.
- DWR notification of low levels in Jordan Lake or the surrounding area, or overall regional water shortage conditions.

3. Procedure for Implementing Restriction Stages

If the Jordan Lake allocation storage level, AWI, or other factors indicate the potential for a water shortage, the steps below are taken. Mandatory measures will remain in effect until declared otherwise by the Town Manager, and updates will be provided in the sequence outlined below.

STEP 1. Water Treatment Plant Superintendent (or designee) or Water Resources Manager contacts the PWUT Director or Utilities Director.

STEP 2. The PW/UT or UT Director (or designee) notifies the Town Manager. If appropriate, depending on the cause of the water shortage condition, the Apex Public Works Director and Town Manager and/or representatives of bulk users are also notified. The Town Manager then determines if implementation of water usage restrictions is appropriate.

STEP 3: Once water usage restrictions are implemented, the following notifications are made:

1. The Town Manager (or designee) notifies the Mayor, Town Council, neighboring municipal contract water recipients, and town government departments.
2. The Public Information Officer (PIO) will contact the media (if the PIO is unavailable, media contacts will be made by the Town Manager's designee). The media, including television, news, and radio, will inform the public. PWUT's 469-4090 number will be provided if additional information is needed by the public.
3. Utilities Customer Service will contact Finance Customer Service and the Water Distribution System Operator, and distribute a general e-mail so Town employees can help provide accurate information to the public.
4. Finance Customer Service will call major water customers (both irrigation and water accounts) and inform them of the implemented measures.
5. The Water Distribution System Operator will contact the Fire Department and coordinate with bulk users.

Public Works and Utilities will supply fliers for distribution by field employees to place on customers' doors or provide to customers that need more information.

STEP 4. Public Works Operations will begin repairing water leaks on a high priority basis.

STEP 5. Staff will regularly evaluate the ability to meet demand and make changes accordingly, ded in sequence outlined above.

Appendix D

Town of Apex Draft Water Shortage Response Plan and Water Conservation Ordinance

Water Shortage Response Plan

Effective Date: _____

Purpose: To establish a Water Shortage Response Plan according to guidelines provided by the State Division of Water Resources

In 1998, the NC Division of Water Resources updated its *Water Shortage Response Handbook for North Carolina Water Supply Systems*. According to the *Handbook*, municipalities should develop a Water Shortage Response Program, and include the following components:

- 1) adoption of an ordinance to provide authority to enact system measures to reduce demand in the case of an emergency;
- 2) development of a method to evaluate ability to meet demand; and
- 3) development of procedures for implementing appropriate water use restriction stages.

Each of these components has been implemented by the Town of Apex, and is described below.

1. Adoption of Water Use Restriction Ordinance or Bylaw

The NC Division of Water Resources recommends that every municipality adopt an ordinance to

“provide for the declaration of a water shortage and specify voluntary and mandatory conservation measures to be imposed at each level of water shortage severity.”

Two sections of the Town code provide staff authority to implement measures to address potential water shortages, including Section 12-101, Continuing Water Conservation Measures and Section 12-102, Stages of Conservation Measures in Response to Water Shortage.

2. Evaluation of Ability to Meet Demand

The ability to meet demand is dependent on several components of the Town’s water supply system: the water source (Jordan Lake and/or purchase from others), raw water intake and pipeline, treatment plant, storage tanks, and distribution system. Town staff and the Town Manager continually evaluate the status of all these components to determine if a water shortage condition exists or is approaching. There are several indicators used by staff to signal the potential for a water shortage condition, which are described below:

Jordan Lake Allocation

Cary and Apex have a joint allocation of water supply storage volume in the Jordan Lake Water Supply Pool. The Division of Water Resources has recommended guidelines for monitoring the available raw water supply, based on the number of

days the volume of water remaining in the allocated storage could meet current demands. Apex Public Works/Utilities staff monitor the joint allocation of water in storage on a daily basis. The Division of Water Resources defines four water use reduction stages as shown in Table 1. Storage thresholds for considering implementation of the stages are based on levels recommended by the Division of Water Resources.

TABLE 1
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Stage	Description	Days of Storage Remaining	Example Of Volume Remaining If Demand Is 10 Million Gallons Per Day
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The thresholds in Table 1 are only guidelines – the actual implementation of specific water use reduction measures during periods of water shortage will be determined based on an assessment of all the factors influencing water supply. As an example, if demands are averaging 10 million gallons per day and storage falls below 630 million gallons, which represents 63 days of supply, voluntary measures - in addition to normal measures - would be considered.

Available Water Index

The Available Water Index (AWI) was developed as a measure of the available treated water on a given day stored in the Town's elevated water tanks and ground storage reservoir at the water treatment plant. Water is provided by the Cary/Apex WTP year-round and additional water may be purchased from Harnett County, Durham or Raleigh under some conditions. If one or more of the Town's water

sources are unable to supply water on a given day, or if the demand for water exceeds treatment or pumping capacity, the AWI is affected.

Decreasing AWI from one day to the next indicates that less treated water is available for use by the Town's customers. The AWI informs Town staff when there is a trend toward critically low storage levels so that corrective action can be taken for the protection of public health and safety.

The AWI normally ranges between 60 and 80. An AWI within this range ensures sufficient capacity within the system to meet daily water demand. When the AWI falls below 60, Town staff begin careful monitoring of supply and demand levels. If the AWI continues trending downward past 55, this situation indicates that the water system demand is potentially exceeding supply capacities and planning should begin for demand reduction. An AWI of 50 or less indicates that immediate measures must be taken to reduce demand and ensure water system viability.

For example: After several weeks of drought and high irrigation demand, the index may be as low as 50 on Monday (the production of water was exceeded by the demand for water). Following an inch of rain on Tuesday, the index may climb to 65 (the stores of available water are climbing) and be as high as 75 by Wednesday when hardly any outdoor irrigation is occurring (production is significantly exceeding demand and the storage tanks and reservoirs are nearly full).

The AWI normally ranges between 60 and 80. Levels lower than 60 trigger consideration of the following actions:

- AWI < 60, begin careful monitoring of supply and demand
- AWI < 55, begin planning demand reduction measures
- AWI < 50, implement demand reduction measures

Other Factors

Other factors that will trigger evaluation of the potential for water shortage conditions include:

- Sudden loss of supplemental water supplies during periods of high demand.
- The occurrence of a major water transmission main break, fire, or any other emergency that would require high volumes of water, such that demand could exceed supply.
- Indications of short or long-term water quality concerns regarding Jordan Lake or other sources.
- Level of interbasin transfers relative to Cary and Apex's interbasin transfer certificate amount.
- DWR notification of low levels in Jordan Lake or the surrounding area, or overall regional water shortage conditions.

3. Procedure for Implementing Restriction Stages

If the Jordan Lake allocation storage level, AWI, or other factors indicate the potential for a water shortage, the steps below are taken. Mandatory measures will remain in effect until declared otherwise by the Town Manager, and updates will be provided in the sequence outlined below.

STEP 1. Public Works and Utilities staff contact the Public Works and Utilities Director if the shortage is due to conditions specific to the Town's allocation, storage or distribution. If the cause of the water shortage is related to conditions specific to the Cary/Apex WTP, Cary Public Works and Utilities Director will notify the Apex Public Works and Utilities Director.

STEP 2. The Apex Public Works and Utilities Director (or designee) notifies the Town Manager. The Town Manager then determines if implementation of water usage restrictions is appropriate.

STEP 3: Once water usage restrictions are implemented, the following notifications are made:

1. The Town Manager (or designee) notifies the Mayor, Board of Commissioners, neighboring municipal contract water recipients (if any), and town government departments.
2. The Public Information Officer (PIO) will contact the media (if the PIO is unavailable, media contacts will be made by the Town Manager's designee). The media, including television, news, and radio, will inform the public. Public Works and Utilities 362-8166 number will be provided if additional information is needed by the public.
3. Public Works and Utilities will coordinate with Finance Department Customer Service so Town employees can help provide accurate information to the public and to get a list of major water customers.
4. Public Works and Utilities will call major water customers (both irrigation and water accounts) and inform them of the implemented measures.
5. Public Works and Utilities will contact the Fire Department and coordinate with bulk users.

Public Works and Utilities will supply fliers for distribution by field employees to place on customers' doors or provide to customers that need more information.

STEP 4. Public Works and Utilities will begin repairing water leaks on a high priority basis.

STEP 5. Staff will regularly evaluate the ability to meet demand and make changes accordingly in sequence outlined above.

- (c) (1) Bypass is prohibited, and the POTW director may take an enforcement action against a user for a bypass, unless
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, and maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - c. The user submitted notices as required under paragraph (b) of this section.
- (2) The POTW director may approve an anticipated bypass, after considering its adverse effects, if the POTW director determines that it will meet the three (3) conditions listed in paragraph (c)(1) of this section.

(Ord. of 4-5-94, § A)

Sec. 12-99.8. Severability.

If any provision, paragraph, word, section or article of this division is invalidated by any court of competent jurisdiction, the remaining provisions, paragraphs, words, sections, and chapters shall not be affected and shall continue in full force and effect.

DIVISION 5. WATER CONSERVATION*

Sec. 12-100. Definitions.

(a) *Impervious surface.* Impervious surface is any surface which cannot be penetrated by water or which causes water to run off the surface, including streets, driveways, and sidewalks.

***Editor's note**—An Ordinance adopted Feb. 2, 1999, deleted §§ 12-100—12-104 in their entirety and replaced them with similar provisions to read as herein set out. Former §§ 12-100—12-104 derived from the 1973 Code and an Ordinance of July 24, 1986.

(b) *Irrigation.* Irrigation is the act of applying water to the outdoor landscape through means such as moveable sprinklers, installed watering systems, hoses, or other devices.

(c) *Irrigation system.* Irrigation system means a device or combination of devices that transmit or apply town water or any mixture containing town water to residential or commercial lawns, landscapes or green space.

(d) *Person.* Any individual, corporation, company, association, partnership, or other entity.

(e) *Public works director.* The town department head in charge of the public works department.

(f) *Rain sensor.* Rain sensor means a device that measures rainfall and overrides the irrigation cycle of a litigation system, thus turning it off, when a predetermined amount of rain has fallen. To meet the requirements of this division, a rain sensor shall be adjusted to shut off irrigation systems when one-fourth (1/4) inch of rain has fallen.

(g) *Town manager.* For the purposes of this division, town manager means the town manager or his designee.

(h) *Town water.* Town water means all water available to the town for treatment and any treated water introduced by the town into its potable water distribution system. Not included in this definition is any treated wastewater effluent reclaimed for reuse in irrigation or other approved uses.

(i) *Water shortage.* A water shortage exists when the town cannot satisfy the ordinary demands and requirements of water consumers served by the town without depleting the water supply to a level that jeopardizes the continued availability of water for human consumption, sanitation, and fire protection.

(j) *Water system.* The system of pipes, valves, meters, tanks, pumps, and treatment facilities owned and operated by the Town of Apex for the purpose of collecting, treating, and distributing town water.

(Ord. of 2-2-99, § 1)

- (c) (1) Bypass is prohibited, and the POTW director may take an enforcement action against a user for a bypass, unless
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, and maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
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(j) *Water system.* The system of pipes, valves, meters, tanks, pumps, and treatment facilities owned and operated by the Town of Apex for the purpose of collecting, treating, and distributing town water.

(Ord. of 2-2-99, § 1)

- (2) Water shrubbery the minimum required, reusing household water when possible.
 - (3) Limit vehicle washing to the minimum.
 - (4) Refrain from washing down outside areas such as sidewalks, patios, etc.
 - (5) Use shower for bathing rather than bathtub, and limit shower to no more than four (4) minutes.
 - (6) Limit flushing of toilets by multiple usages.
 - (7) Refrain from leaving faucets running while shaving or while rinsing dishes.
 - (8) Limit use of clothes washers and dishwashers and when used, to operate fully loaded.
 - (9) Install water-flow restrictive devices in showerheads.
 - (10) Use disposable and biodegradable dishes.
 - (11) Install water-saving devices such as bricks, plastics, bottles or commercial units in toilet tanks.
 - (12) Limit hours of operation of water-cooled air conditioners.
- (b) *Stage II - Moderate Mandatory Conservation.* In Stage II, the town shall continue all recommendations of Stage I and the following measures shall be mandatory:
- (1) No watering of lawns, grass, shrubbery, trees, flowers or vegetable gardens except between the hours of 6:00 p.m. and 9:00 p.m. on Saturdays and Sundays.
 - (2) No filling of newly constructed swimming and/or wading pools, which have been drained. A minimal amount of water may be added to maintain continued operation of pools, which are in operation at the time the provisions of Stage II are placed into effect.
 - (3) No operating water-cooled air conditioners or other equipment that does not recycle cooling water, except, when health and safety are adversely affected.
- (4) No washing automobiles, trucks, trailers, boats, airplanes, or any other type of mobile equipment except at commercial car washes.
 - (5) No washing down outside areas such as streets, driveways, service station aprons, parking lots, office buildings, exterior of existing or newly-constructed homes or apartments, sidewalks, or patios, or use of water for other similar purposes.
 - (6) No introducing water into any ornamental fountain, pool or pond or other structure making similar use of water.
 - (7) No serving drinking water in restaurants, cafeterias, or other food establishments, except upon request.
 - (8) No using water from public or private fire hydrants for any purposes other than fire suppression or other public emergency.
 - (9) No using water for dust control or compaction.
 - (10) No using water for any unnecessary purpose or intentionally wasting water.
- (c) *Stage III - Severe Mandatory Conservation.* In Stage III, all the provisions of Stages I and II apply and, in addition, the following measures shall be mandatory:
- (1) No watering of lawns, grass, shrubbery, trees, flowers, or vegetable gardens.
 - (2) No nonessential use of water for commercial or public use, and the use of single service plates and utensils is encouraged and recommended in restaurants.
- (d) *Stage IV - Stringent Mandatory Conservation.* In Stage IV, all the provisions of

Stages I through III apply and, in addition, the following measures shall be mandatory:

- (1) No using water outside of structures for any use other than emergencies involving fire.
 - (2) No operating evaporative air conditioning units which recycle water except during the operating hours of the business.
 - (3) No introducing water into swimming pools.
- (e) *Stage V - Rationing.* In Stage V, all the provisions of Stages I through IV apply and, in addition, the following measures are mandatory:
- (1) All industrial uses of water are prohibited.
 - (2) Fire protection will be maintained, but where possible, tank trucks shall use raw water.
 - (3) All other uses of water will be limited to those uses necessary to meet essential health and safety needs of customers.

(Ord. of 2-2-99, § 1)

Sec. 12-103. Violation, enforcement and penalties.

(a) *Violations.* It shall be unlawful for any person to violate any provision of this division including any mandatory water conservation measure.

(b) *Criminal penalties.* As authorized by N.C.G.S. § 14-4, a violation of this division shall constitute a misdemeanor and be punishable by a fine of up to five hundred dollars (\$500.00), imprisonment for up to thirty (30) days or both.

(c) *Civil penalties.* Any person who violates this division is subject to a civil penalty of up to one thousand dollars (\$1,000.00) per violation per day for so long as the violation exists. Violations and penalties shall be determined by the public works director. In determining the amount of a civil penalty, the public works director shall take into account all relevant circumstances, includ-

ing, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, efforts to correct the violation, the compliance history of the parties against whom the violation is assessed, the cost of enforcement to the town, whether the violation was willful or intentional and any other factor as justice requires. The town shall serve a written citation on the violator, and the customer if different, by personal delivery or by certified or registered mail, return receipt requested. The citation shall describe the violation and shall specify the amount of the civil penalty levied. If a person fails to pay a civil penalty within ten (10) days after receiving written notice of violation, then the town may recover the penalty through a civil action in the nature of debt, including all further accruing penalties for continuing violations.

(d) *Continuing violations.* Each day that a violation continues shall constitute an additional and separate offense for the purpose of criminal and civil penalties.

(e) *Discontinuance of service.* The town may discontinue service to a customer upon a determination by the public works director that the customer violated a provision of this division. Prior to discontinuance, the public works director shall give the customer written notice of the violation and an opportunity to contest the discontinuance within forty-eight (48) hours.

(f) *Multiple remedies.* The town may seek to enforce this division through any appropriate equitable or legal action or through any combination of these or the foregoing remedies.

(g) *Appeal.* A person who is assessed civil penalties or whose service is discontinued may appeal to the board of adjustment by serving written notice on the town clerk within in ten (10) days of the person being served with a citation or notice of discontinuance. An order of discontinuance is not stayed pending appeal to the board of adjustment.

(Ord. of 2-2-99, § 1)

Appendix E

Town of Morrisville Water Shortage Response Plan

Introduction

The purpose of this Water Shortage Response Plan is to provide a framework for making water supply and conservation decisions during times when water supplies in the region may be low. This Plan supplements the Town of Morrisville's Water Shortage Conservation Measures Ordinance (Appendix A), which became effective September 11, 1995.

Water Supply Assessment

The Town of Morrisville currently has a contract with the Town of Cary for 1 million gallons per day of water from B. Everett Jordan Lake. This water is treated at the Cary / Apex Water Treatment Plant. Morrisville may also receive a committed amount of up to 1.8 million gallons per day by contract with the City of Durham through April 30, 2002, and an uncommitted amount through June 30, 2008. Morrisville communicates closely with both of these communities to determine when conservation measures may be necessary.

Upon completion of Round 2 of the Jordan Lake Water Supply Allocation process, Morrisville anticipates receiving an allocation of 2.5 percent of the Jordan Lake water supply pool, which is 687 acre feet or 373 million gallons. This is nominally equivalent to an average annual supply of 2.5 million gallons per day (mgd) based on the estimated 100-mgd yield of the full Jordan Lake water supply pool. The Town of Morrisville's Jordan Lake allocation will be treated at the Cary / Apex WTP.

Water use in Morrisville has steadily increased over the past three years and this trend is projected to continue in the near future. Average day demands for the Town of Morrisville are expected to increase from 0.857 mgd in 2000 to 4.0 mgd in 2050. Morrisville has submitted a draft application for an additional allocation from Jordan Lake in the Round 3 process.

In general, the Town of Morrisville's water supply is not extremely vulnerable to water shortages. Jordan Lake is a very reliable water source, since the water supply pool is only a small portion of the entire lake. During the time Jordan Lake has been used for water supply there have been no water shortage failures. However, only about a third of the estimated safe yield has been allocated, and not all of the allocations are being used. The reliability of Jordan Lake during drought conditions is currently being evaluated by the Division of Water Resources (DWR) using the Cape Fear Hydrologic Model.

Connections to the water supplies of others (Cary and Durham) are sufficient enough so that there will be back-up supplies in the event of a failure that requires repair of major transmission lines. This gives the Town some flexibility in dealing with drought periods or other water supply emergencies.

Conservation Education Efforts

The Town provides information to notify customers of conservation stages and to help discourage wasteful water use. Current and anticipated conservation education programs include:

- Articles declaring stages of water conservation in the *Board Briefs* newsletter.
- Newspaper articles in the *Cary News*.
- Distribution of flyers with tips and reminders about water conservation.
- Distribution of free rain gauges and conservation information.
- Information and conservation tips on the Town's website.
- Posting of conservation stage information on entrances to Town buildings.

Examples of many of these items can be found in *Appendix B*.

Water Conservation Measures

In order to reduce unaccounted-for water, the Town responds immediately to customer or staff observations of leaking water, and to customer inquiries about unusually high water bills. A new SCADA system is being installed to allow better tracking of water in the system and to identify potential problem areas. In addition, a new program will be implemented to replace older existing water meters and add remote meter reading electronics to new and existing meters in an effort to reduce reading and billing errors, and increase the accuracy of water use measurement.

In recent years, the Town of Morrisville has instituted both voluntary and mandatory even-odd water conservation measures during the summer months, while relying on the Town of Cary and the City of Durham for information on the severity of water shortages.

The Town has an officially appointed Local Water Shortage Management Task Force that consists of the Town Manager, Assistant Town Manager, and the Town Engineer. This Task Force monitors the status of Morrisville's portion of the water supply pool and meets to assess the need for conservation measures. This group also communicates closely with the Town of Cary Department of Public Works and Utilities to assess other potential water shortage scenarios. Once the Task Force has determined the appropriate level of conservation for the Town of Morrisville, those measures will be implemented and administered by the Task Force.

Morrisville may obtain water from other sources in order to reduce water use from Jordan Lake without implementing water conservation measures.

Conservation Stages

Three stages of conservation measures that describe the condition of the water supply source are established for the Town of Morrisville. These stages or levels of conservation measures will be enacted when the conditions listed below exist.

- **Voluntary:** potential for a serious shortage of water supply.
- **Mandatory:** supplies are significantly lower than the seasonal norm and drought conditions are expected to persist.
- **Water Shortage Emergency:** the water utility is experiencing a water shortage.

These conditions will be determined by the Task Force, with input from the Town of Cary Public Works and Utilities Staff. The appropriate conservation stage may be determined by the Task Force as a result of any of the following conditions:

- The usable water supply of the Town of Morrisville allocation in Jordan Lake has fallen below one of the thresholds below (in accordance with guidelines from the *DWR Water Shortage Response Handbook for North Carolina Water Supply Systems*):
 - Voluntary: 80%
 - Mandatory: 60%
 - Emergency: 40%;
- The Town of Cary has instituted conservation measures;
- There is inadequate treatment capability;
- Water transmission capability is disrupted or inadequate;
- Finished water storage problems exist to the level that normal needs cannot be met;
- Any other unforeseen circumstance which results in or may result in a severe water shortage.

Water Use Classification

In addition, three classes of water use are defined as noted below:

- **Class 1: Essential Water Uses**, including domestic, health care facilities, public and nonresidential. These uses are necessary for maintenance of public health.

- **Class 2: Socially or Economically Important Uses**, including domestic and commercial/public uses of water.
- **Class 3: Nonessential Uses**, including residential/nonresidential and public uses. These can be restricted or totally banned without significant economic or social impacts.

For specific examples of each class of water use, see *Appendix C*.

Staged Conservation Measures

Voluntary conservation measures are encouraged on an ongoing basis. Additionally, educational efforts are increased as the staged conservation levels begin. The specific actions that should be taken for each class of water use during the three stages of conservation are summarized below.

- Declaration of voluntary conservation measures.** Whenever the Task Force finds potential for a serious shortage of water supply, the Town Manager will be empowered to declare a state of voluntary conservation.
- Declaration of mandatory conservation measures.** Whenever the Task Force determines that the Town of Morrisville supply is significantly lower than the seasonal norm and is diminishing, the Town Manager may declare a state of mandatory conservation. Under a state of mandatory conservation, the Town of Morrisville shall continue to encourage voluntary water conservation measures as well.
- Declaration of water shortage emergency measures.** Whenever the task force finds that a water shortage situation exists, the Town Manager will be empowered to declare a state of water shortage emergency. During a water shortage emergency, all classes of water use will be required to employ mandatory conservation measures. These restrictions or bans shall continue until the water shortage emergency for the Town of Morrisville is declared ended by the Town Manager.

Table 1 summarizes how the classes of water use are affected during each stage of conservation.

Table 1: Water Use Classes and Conservation Stages

<u>Class</u>	<u>Voluntary</u>	<u>Mandatory</u>	<u>Emergency</u>
1:Essential	Voluntary Conservation	Voluntary Conservation	Mandatory Restriction
2:Socially or Economically Important	Voluntary Conservation	Voluntary Conservation / Mandatory Restriction	Mandatory Restriction
3:Non-Essential	Voluntary Conservation	Mandatory Restriction	Mandatory Restriction

Implementation

Once the Town of Morrisville determines that the Jordan Lake water supply pool level has fallen below normal levels, the Town will convene the Water Shortage Response Task Force and lead discussion regarding implementation of staged conservation measures. Once a decision is made on the appropriate level of conservation, the Town of Morrisville will notify water users in Town and advise them of the appropriate conservation stage and measures.

Adopted this 9th day of April, 2001.

Gordon Cromwell, Mayor
Town of Morrisville

Attest:

G.J. Hooks, Deputy Town Clerk

Appendix F

Water Shortage Response Plan for RTP South

Research Triangle Park - Wake County

Water Shortage Response Plan

February 2001

Prepared by



CH2M HILL, Inc.
3125 Poplarwood Court, Suite 304
Raleigh, NC 27604
919-875-4311

Project Number 161932.R2.01

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1.0 Introduction

The purpose of this Water Shortage Response Plan is to provide a framework for making water supply and conservation decisions during times when water supplies in the region may be low. This plan applies to the Wake County (southern) portion of the Research Triangle Park (RTP South).

1.1 Water Supply Assessment

RTP South currently obtains water from B. Everett Jordan Lake by contract with the Town of Cary, with the water being treated at the Cary/Apex WTP. The availability and general conditions of water supply for RTP South are established through a three-way contract between Wake County, the Research Triangle Foundation (RTF) of North Carolina and the Town of Cary. Water and sewer accounts are established directly between individual owners and tenants of RTP South and the Town of Cary - neither Wake County nor the RTF purchase water in bulk from the Town of Cary. The present contract is nominally for 250,000 gallons per day of reserve capacity beyond the present level of demand, and will expire in 2014.

Upon completion of Round 2 of the Jordan Lake Water Supply Allocation process, Wake County anticipates receiving an allocation of 1.5 percent of the Jordan Lake water supply pool, which is 687 acre-feet or 224 million gallons. This is nominally equivalent to an average annual supply of 1.5 million gallons per day (mgd) based on the estimated 100-mgd yield of the full Jordan Lake water supply pool. Since the water supply could be treated and delivered by utilities other than the Town of Cary, the utility providing these services for RTP will be referred to in this Plan as the "Service Provider".

Water use in RTP South is dominated by industrial and commercial accounts, and there is no residential water use. Average day water demands for the RTP South service area are expected to increase from 0.27 mgd in 2000 to 3.9 mgd in 2050, so Wake County, on behalf of RTP, has submitted a draft application for an additional allocation from Jordan Lake in the Round 3 process.

In general, the current water supply from Jordan Lake is not extremely vulnerable to water shortages. Jordan Lake is extremely reliable, since the water supply pool is only a small portion of the entire lake. During the time Jordan Lake has been used for water supply, there have been no water shortage failures. However, only about a third of the estimated safe yield has been allocated, and not all of the allocations are being used. The reliability of Jordan Lake during drought conditions is being evaluated by the Division of Water Resources DWR using the Cape Fear Hydrologic Model.

2.0 Conservation Education Efforts

RTP South's conservation education programs originate either with the Service Provider (the Town of Cary provided these services as of February 2001) or the Research Triangle Foundation (RTF), which manages the Park. Current and anticipated conservation education programs include:

- "Beat the Peak" program to reduce peak water usage rates
- Formation of a coalition of one designated contact from each RTP South water customer to solicit support for water conservation practices and coordinate notifications of conservation measures via email and postings at each business.

- Email distribution list during staged conservation, including the stage and required actions. The email distribution list would be initiated by the RTF to notify the designated contact from each company in RTP South, who will then send a broadcast email to their employees to raise awareness of the conservation action.
- Utilize RTP South companies to post notices of the conservation stage and the required actions at entrances to their buildings, in break rooms, etc.
- Newspaper advertisements in *News and Observer* and *Durham Herald* to raise conservation awareness and communicate conservation actions among RTP South employees.
- Information about stages and required actions/tips for RTP South companies in the *RTP Notes* and *RTP Viewpoints* newsletters. Educational information on water conservation at home could also be included. RTP South businesses are encouraged to get this information into their company's newsletter.
- Distribution of brochures with questions and answers from the Water Service Provider to RTP South managers and employees through billing stuffers, internet site and other means.

3.0 RTP South Permanent Conservation Measures

Permanent conservation measures have been instituted by RTF for companies located in RTP South. These measures are described below.

3.1 Landscaping and Irrigation

- More than 1/3 of the total acreage in RTP South is in a natural area preserve or a surface cover maintenance area where existing native vegetation will be retained, so there will be no need for water to irrigate these areas.
- Roadside landscaping is watered from the onsite lake, reducing the need for potable irrigation water.
- Companies such as Cisco Systems have made extensive use of native vegetation in their landscaping program because these species are hardy and resistant to drought. Compared with other industrial and office parks, relatively little landscaped area on the companies' sites is irrigated. Meters are typically installed on irrigation systems, which are monitored based on rain conditions.

3.2 Plumbing Fixtures

Recently, companies have used low-volume flush valves and flow regulators in showers. These are expected to be included in all future development.

3.3 Peak Demand Management

Biogen has a 50,000-gallon storage tank onsite, which enables them to reduce their demand for potable water during peak-use periods and during droughts.

Covance is considering the inclusion of on-site water storage in the company's long-range expansion plans.

3.4 Water Reuse/Recycling

Companies have expressed an interest in using recycled water for irrigation if a duplicate system became available.

Water recycling is also maximized in manufacturing-related processes where appropriate, to conserve water. For example, Covance currently recycles some of the reject water from their reverse osmosis system to the cooling towers.

3.5 Reducing Water Losses (Unaccounted for Water)

The Service Provider investigates potential leaks and meter accuracy issues upon notification by the RTP South water customer. RTP South businesses are encouraged to monitor their monthly account statements, as well as their site, for indications of leaks or inaccurate meters.

4.0 Service Provider Demand Management Programs

In addition to measures instituted by the RTF, RTP South businesses intend to work with the Water Service Provider to implement their demand management programs where applicable. Programs of the Town of Cary (the current Water Service Provider) are listed below.

4.1 Toilet Flapper Rebate Program

This program provides customers with the incentive to replace existing flappers with early closure models.

4.2 Conservation Rate Structure

A rate structure was designed by the Town of Cary to encourage more efficient use of water resources by charging higher unit rates to customers as their level of consumption increases. A two-tiered increasing block rate for commercial and industrial customers, including those in RTP South, becomes effective in March 2001. Irrigation meters for both residential and non-residential customers are billed at a two-tiered increasing block rate as well. The higher-rate tier for both regular and irrigation accounts is designed to encourage irrigation conservation, and is applied to water use in excess of a "landscape water budget" for each customer.

4.3 Landscape Water Budgets

A landscape water budget was prepared by Town of Cary staff for every irrigation account based on plant watering needs specific to the landscaped area served by each account. Billing notices will assist the customer in understanding the relationship between actual use and the water budget. Customers may contract with private water auditors as a means of reducing water use to budgeted amounts.

4.4 Rain Sensors

The Town of Cary requires customers with automatic irrigation systems to install a rain sensor that measures rainfall and overrides the irrigation cycle of the system.

5.0 Staged Conservation Measures

RTP South will rely on its Service Provider (currently the Town of Cary) to monitor the status of the Wake County/RTP South Jordan Lake water supply pool allocation. A Water Shortage Response Task Force, to be made up of the RTF Vice President for Planning and Development,

the Service Provider's System Manager and Water Conservation Coordinator, and a representative appointed by Wake County, will be established in order to determine when conservation efforts should be enacted by RTP South.

If the Jordan Lake water supply pool level falls below normal levels, the Service Provider will convene the Task Force to discuss appropriate water conservation measures. RTP South may obtain water from other sources (such as the City of Raleigh, as was done in the summer of 2000) in order to reduce water use from Jordan Lake without implementing water conservation measures. Once the Task Force has determined the appropriate level of conservation for RTP South, the Service Provider will declare and administer the conservation measures.

5.1 Conservation Stages

Four stages of conservation measures that describe the condition of the water supply source are established for RTP South. These stages or levels of conservation measures will be enacted when the conditions listed below exist.

- Voluntary: potential for a serious shortage of water supply.
- Mandatory: supplies are significantly lower than the seasonal norm and drought conditions are expected to persist.
- Water Shortage Emergency: the water utility is experiencing a water shortage.

These conditions will be determined with communications and guidance of the Service Provider. The appropriate conservation stage may be determined by the Task Force as a result of any of the following conditions:

- The usable water supply of the RTP South allocation in Jordan Lake has fallen below one of the thresholds below (in accordance with Guidelines from the DWR *Water Shortage Response Handbook for North Carolina Water Supply Systems*):
 - Voluntary: 80%
 - Mandatory: 60%
 - Emergency: 40%;
- The Service Provider has instituted conservation measures;
- There is inadequate treatment capability;
- Water transmission capability is disrupted or inadequate;
- Finished water storage problems exist to the level that normal needs cannot be met;
- Any other unforeseen circumstance which results in or may result in a severe water shortage.

6.0 Water Use Classification

In addition, three classes of water use are defined as noted below:

- **Class 1: Essential Water Uses**, including domestic, hospital and health care facilities, public, and nonresidential. These uses are necessary for maintenance of public health.
- **Class 2: Socially or Economically Important Uses**, including domestic and commercial/public uses of water.

- **Class 3: Nonessential Uses**, including residential/nonresidential and public uses. These uses can be restricted or totally banned without significant economic or social impacts.

7.0 Staged Conservation Measures

Many voluntary measures are implemented on an ongoing basis as discussed in the prior section of this document. Additionally, the educational efforts will be increased as the staged conservation levels begin. The specific actions that should be taken for each class of water use during the four stages of conservation are summarized below.

- (a) **Declaration of voluntary conservation measures.** Whenever the Task Force finds potential for a serious shortage of water supply, the Service Provider will be empowered to declare a state of voluntary conservation, and to call upon RTP South water customers to employ voluntary water conservation measures.
- (b) **Declaration of mandatory conservation measures.** Whenever the Task Force finds visible or measurable signs that the RTP South supply is significantly lower than the seasonal norm and is diminishing, the Service Provider may declare a state of mandatory conservation. Under a state of mandatory conservation, the Service Provider shall continue to encourage voluntary water conservation measures, and in accordance with the contract for water services, impose a scheduled water use program or an outright ban on all Class 3 uses, and potentially on Class 2 uses, until the mandatory conservation period for RTP South is declared to be over by the Service Provider in consultation with the Task Force.

The Town of Cary (the current Service Provider) has been proactive in addressing its peak demand management during past drought periods by providing for mandatory water use restrictions on outdoor watering. These peak demand management restrictions include:

- Odd-even day outdoor watering
 - Odd-even day turf watering
 - Total ban on turf watering
- (c) **Declaration of water shortage emergency measures.** Whenever the Task Force finds that a water shortage situation exists, the Service Provider will be empowered to declare a state of water shortage emergency. During a water shortage emergency, all classes of water use will be required to employ mandatory conservation measures. Pricing measures should be used to significantly reduce water usage. These restrictions or bans shall continue until the water shortage emergency for RTP South is declared ended by the Service Provider.

Table 1 summarizes how the classes of water use are affected during each stage of conservation.

Class	Voluntary	Mandatory	Emergency
1: Essential	Voluntary Conservation	Voluntary Conservation	Mandatory Restriction
2: Socially or Economically Important	Voluntary Conservation	Voluntary Conservation / Mandatory Restriction	Mandatory Restriction
3: Non-Essential	Voluntary Conservation	Mandatory Restriction	Mandatory Restriction

8.0 Implementation

Once RTP South's Service Provider determines that the Jordan Lake water supply pool level has fallen below normal levels, the Service Provider will convene the Water Shortage Response Task Force and lead discussion regarding implementation of staged conservation measures to match the water service provider's staged conservation measures. Once a decision is made of the appropriate level of conservation, Wake County and the RTF will notify all water users in RTP South and advise them of the appropriate conservation stage and measures. Each RTP South customer will then use the methods discussed in the Conservation Education Efforts section to advise its employees and visitors of the conservation stage and measures.

Appendix G

Town of Cary Community Appearance and Environmental protection Standards (from Unified Development Ordinance)

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2001.

Chapter 14. Community Appearance and Environmental Protection Standards

Part 1. Building Design, Preservation of Existing Natural Areas and Installation of New Landscape Areas

Sec. 14.1.1. Purpose and Applicability

Sec. 14.1.2. General Provisions

Sec. 14.1.3. Building Design: Statement of Architectural Compatibility (SAC)

Sec. 14.1.4. Undisturbed Perimeter Buffers, Perimeter Landscaping, and Other Landscape Requirements

Sec. 14.1.5. Streetscape Landscaping: Preservation of Existing Vegetation and Installation of New Landscape Areas

Sec. 14.1.6. Tree Survey

Sec. 14.1.7. Tree Protection During Construction

Sec. 14.1.8. Vehicular Use Area Landscaping

Sec. 14.1.9. Other Landscape Requirements

Sec. 14.1.10. Incentives

Sec. 14.1.11. Exterior Lighting

Sec. 14.1.12. Mechanical, Utility, and Trash Containment Areas

Sec. 14.1.13. Time for Installation of Required Landscaping

Sec. 14.1.14. Implementation of Landscape Plan; Inspections

Sec. 14.1.15. Maintenance Responsibility, Replacement of Damaged Vegetation, and Associated Fines

Part 2. Flood Damage Prevention

Sec. 14.2.1. Purposes

Sec. 14.2.2. Applicability

Sec. 14.2.3. Development in and near Areas of Special Flood Hazard

Sec. 14.2.4. Development in Floodways

Sec. 14.2.5. Standards for Streams Without Established Base Flood Elevations and/or Floodways

Sec. 14.2.6. Special Requirements for Manufactured Homes

Sec. 14.2.7. Special Requirements for Development Proposals Requiring Subdivision or Site Plan Approval

Part 3. Soil Erosion and Sedimentation Control, Stream and Wetland Protection

Sec. 14.3.1. Purposes

Sec. 14.3.2. Permit and Approval Requirements

Sec. 14.3.3. General Erosion and Sedimentation Control Standards

Sec. 14.3.4. Basic Control Objectives for Erosion Control Plans

Sec. 14.3.5. Borrow and Waste Areas

Sec. 14.3.6. Access and Haul Roads

Sec. 14.3.7. Operations in Lakes or Natural Watercourses

Sec. 14.3.8. Stream Buffers Outside the Reservoir Watershed Protection Overlay District

Part 4. Tree Protection

Sec. 14.4.1. Purposes

Sec. 14.4.2. Preservation and Removal of Trees on Town Property

Sec. 14.4.3. Preservation and Removal of Trees on Private Property

Sec. 14.4.4. Waivers in Emergencies

Part 5. Pollution Control Standards.

Sec. 14.5.1. Purpose and Applicability

Sec. 14.5.2. General Standards and Measures for Compliance

Sec. 14.5.3. Performance Standards

Sec. 14.5.4. Effects of Concurrent Operations on Different Properties

Sec. 14.5.5. Determination of Violation of Performance Standards

Part 6. Stormwater Management Plan for New Development

Sec. 14.6.1. Purpose

Sec. 14.6.2. Applicability

Sec. 14.6.3. Protecting Riparian Buffers

Sec. 14.6.4. Nutrient Reduction Requirements

Sec. 14.6.5. Peak Runoff Control

Sec. 14.6.6. Allowable Best Management Practices

Sec. 14.6.7. Maintenance of Best Management Practices

Sec. 14.6.8. Modification by Variance

Part 7. Illegal Discharges to the Storm Sewer System

Sec. 14.7.1. Purpose

Sec. 14.7.2. Applicability

Sec. 14.7.3. Enforcement and Administration of Article

Sec. 14.7.4. Depositing Certain Substances in Storm Sewer System

Sec. 14.7.5. Obstructing Storm Sewer Systems

Sec. 14.7.6. Permit Required for Construction, Repair or Alteration of Storm Sewer Systems

Sec. 14.7.7. Inspection by Town Manager or Designee

Sec. 14.7.8. Nuisances.

Sec. 14.7.9. Notice to Property Owner of Obstruction

Sec. 14.7.10. Violations; Penalties

violator may appeal to the Town Council. The Director shall then transmit to the Town Council a copy of the notice given to the alleged violator, along with any recommendations as to alterations, modifications, or securing the services of a consultant to determine whether a standard has been violated. The determination as to whether a violation exists shall be made by the Town Council.

- (3) If the Town Council finds the alleged violation to exist, then the costs of making that determination shall be charged to the owner or occupant of the property responsible for the violation. If the Town Council determines that no violation exists, then the Town shall cover the costs of making the determination.
- (4) If a violation is not removed or corrected as directed by the Town Council, then the Director of Planning and Development may:
 - a. Recommend to the Town Council that any occupancy permits previously issued to the violator be voided and that the operator be required to cease operation until the violation is removed, corrected, or otherwise remedied; and/or
 - b. Initiate further enforcement actions under Chapter 18 of this Ordinance.

PART 6. STORMWATER MANAGEMENT PLAN FOR NEW DEVELOPMENT

14.6.1. Purpose.

This part is intended to protect water quality for present and future residents of the town and surrounding regions by limiting the amount of pollutants including but not limited to nitrogen in stormwater runoff. Specific objectives include: protection of riparian buffers, control of nitrogen export from development, control of peak stormwater runoff, and the use of best management practices.

(Ord. No. 00-018.1, 4-12-01)

14.6.2. Applicability.

This article shall apply within the Town and Town's extraterritorial jurisdiction area.

(Ord. No. 00-018.1, 4-12-01)

14.6.3. Protecting Riparian Buffers.

(a) *Establishment of Buffer.* All perennial and intermittent streams including lakes, ponds, and other bodies of water as indicated on the most recent version of the 1:20,000 scale (7.5 minutes) quadrangle topographic maps prepared by the United States Geological Survey (USGS) shall have a 100-foot wide riparian buffer directly adjacent to such surface waters, excluding wetlands. All other surface waters as indicated by the most recent version of the Soil Survey of Wake or Chatham County, North Carolina shall have a 50 foot-wide riparian buffer adjacent to such waters. In the Neuse River Basin, where obvious conflicts between actual field conditions and USGS and Wake county Soil Survey maps exist, appeals may be made to the North Carolina Division of Water Quality. All other appeals for obvious conflicts may be made to the Town Manager or his designee. Appeals to the 100-foot wide riparian buffer may be made as allowed by Section 14.6.8(a).

(b) *Delineation of Buffer Zones.* There are hereby established three zones of the riparian buffer as follows:

- (1) Zone 1 (30' landward adjacent to streambank, severe development restrictions)
- (2) Zone 2 (20' landward adjacent to) zone 1, strict development restrictions)
- (3) Zone 3 (50' landward adjacent to zone 2, moderate development restrictions)

The buffers must be measured horizontally from the edge of the water body, i.e. from top of bank.

(c) *Activity within Buffer.* Activity may take place within any stream buffer zone as defined by 15A NCAC 2B.0233. Likewise, those activities are also allowed within Zone 3.

Within the Neuse River Basin development activity within Zone 1 and Zone 2 of the may take place within a riparian buffer provided that the landowner has one of the following:

- (1) An authorization certificate that documents that the NC Division of Water Quality has approved an allowable use.
- (2) An opinion from the NC Division of Water Quality that vested rights have been established for that activity.
- (3) A letter from the NC Division of Water Quality documenting that a variance has been granted for the proposed activity.

- (d) *Description of Buffers on Development Plans.* Stream buffers shall be shown on all approved site plans and subdivision plans (see Sections 5.6.5 (a)(2) and 5.7.3 application requirements).
- (e) *Exclusion of Buffer from Lots.* No single family lots, created through a development plan, shall be platted into a riparian buffer as required by Chapter 14.1.4(m). The Town Council may allow buffers to be included in lots only when all of the following conditions are met:
 - (1) The buffer impacts a limited part of the subdivision (i.e., less than 10 lots);
 - (2) There is no other reason for the formation of a homeowners association (e.g., covenant, other common areas);
 - (3) The buffer is placed in a permanent conservation or other legal instrument dedicated to the Town (required documents must be provided prior to recording the plat for the impacted area).
- (f) *Exemptions.* All single family residential lots platted prior to July 27, 2000 outside of the Neuse River 50 ft. Riparian Buffer or residential subdivision plans submitted to the Town prior to July 27, 2000 whose lots are located outside of the 50 ft. Neuse River Riparian Buffer shall be exempt from the requirements of this part.
- (g) *Enforcement.* For violations of this part, refer to Chapter 14.1.15(c).

(Ord. No. 00-018.1, 4-12-01)

14.6.4. Nutrient Reduction Requirements.

- (a) *Definition of Development/Land Disturbance.* For purposes of this part, development or land disturbance shall be defined to include the following:
 - (1) Any activity that disturbs greater than one acre of land in order to establish, expand or modify a single family or duplex residential development or a recreational facility.
 - (2) Any activity that disturbs greater than 12,000 square feet of land in order to establish, expand or modify a multifamily residential development or a commercial, industrial or institutional facility.
 - (3) Any grubbing, stump removal and/or grading activity.

Appendix H

Town of Apex Watershed Protection Ordinance



TOWN OF APEX, NORTH CAROLINA

OFFICE OF THE CLERK

PO BOX 250, APEX, NC 27502

Phone (919) 362-7300 Fax (919) 249-3305

E-mail: gparker@apexnc.org

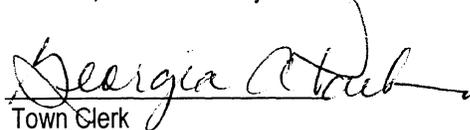
Website: www.apexnc.org

CLERK'S CERTIFICATION

STATE OF NORTH CAROLINA
COUNTY OF WAKE

I, Georgia A. Parker, Town Clerk of Apex, North Carolina, do hereby certify that the attached is a true and correct copy of Ordinance to Amend Certain Sections of the Unified Development Ordinance (Watershed Protection Overlay Districts), Apex, North Carolina and having been adopted by the Town of Apex Board of Commissioners at their meeting held on October 16, 2001, having been signed by its Mayor and attested by me as Town Clerk, with the original of which is now on file in the Office of the Town Clerk of Apex, North Carolina, and being located at 73 Hunter Street.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official Seal of the Town of Apex, North Carolina, this the 7th day of November 2001.


Town Clerk

- SEAL -

AN ORDINANCE TO AMEND CERTAIN SECTIONS OF THE UNIFIED DEVELOPMENT ORDINANCE

BE IT ORDAINED by the Board of Commissioners of the Town of Apex:

Section 1. Section 2.3.14(F) “Vested Rights” “Application of Existing and New Regulations” is hereby amended as follows:

- F) ***Application of Existing and New Regulations***
The establishment of a vested right pursuant to this Section shall not preclude the application of Sec. 6.1, *Watershed Protection Overlay Districts*, Sec. 6.2, *Flood Damage Prevention Overlay District*, Article 8: *General Development Standards*, and Article 9: *Design Standards* to the site specific development plan (except that these regulations shall not affect the allowable type or intensity of use), or ordinances or regulations that are general in nature and are applicable to all land in the Town subject to land use regulation, including but not limited to, state building, fire, plumbing, electrical, and mechanical codes and the Town’s Standard Specifications and Construction Details. Otherwise, applicable new or amended regulations shall become effective to a site-specific development plan approved pursuant to this Section upon the expiration or termination of the vested right.

Section 2. Section 2.3.15(E) “Tree Removal and Non-Development Plan” “Standards” is hereby amended as follows:

- E) ***Standards***
Prior to approval of a Tree Removal and Non-Structural Development Permit, the Technical Review Committee shall find that the Tree Removal and Non-Structural Development Plan complies with all applicable sections of the Ordinance, as well as any other applicable federal, state, or local requirements. Applicable sections of the Ordinance include, but are not limited to, Sec. 2.3.15 *Tree Removal and Non-Structural Development Plan*, Sec. 6.1 *Watershed Protection Overlay Districts*, Sec. 6.2 *Flood Damage Prevention Overlay District*, Sec. 8.1 *Resource Conservation*, and Sec. 8.2 *Landscaping, Buffering, and Screening*.

Section 3. Section 3.2.9(A) “Overlay Districts” “Watershed Protection Overlay District” is hereby amended as follows:

- A) ***Watershed Protection Overlay Districts; and***

Section 4. Section 3.3.5(A) “Overlay Districts” “Watershed Protection Overlay District” is hereby amended as follows:

- A) ***Watershed Protection Overlay Districts***
The purpose and intent of the Watershed Protection Overlay Districts (Primary and Secondary) is to ensure the quality of the public drinking water supplies in the Swift Creek Watershed and the Jordan Lake

Watershed are preserved and maintained for present and future residents of the Town and the Triangle region. This is done through the application of land use controls and water quality performance standards to development within each watershed.

Section 5. Section 5.1 “Table of Intensity and Dimensional Standards” is hereby amended to change the column title “Maximum Site Coverage” to “Maximum Built-Upon Area”, to change references to the “Watershed Protection Overlay District” to “Watershed Protection Overlay Districts” and to adjust the Maximum Built-Upon Area percentages within the zoning districts as shown on the attached table.

Section 6. Section 5.2.4(A) “Bulk Measurement and Requirements” “Site Coverage” is hereby amended as follows:

A) ***Built-Upon Area***

Calculation of the built-upon area within the proposed development shall include, but not be limited to, all existing and proposed public and private streets, sidewalks, driveways, rooftops, parking lots, patios, and all other impervious and partially impervious surfaces, including CABC and gravel within the development. The calculation of built-upon area is expressed as a percentage of total site area. Swimming pools and wooden decks shall not be included in the calculation of the built-upon area.

Section 7. Section 6.1 “Watershed Protection Overlay District” is hereby amended as follows:

6.1 WATERSHED PROTECTION OVERLAY DISTRICTS

6.1.1 Purpose, Authority, and Enactment

The purpose of the Watershed Protection Overlay Districts is to ensure the availability of public water supplies at a safe and acceptable level of water quality, to ensure protection of public water supplies for recreational and aesthetic purposes, to minimize sedimentation of streams, and to protect the environment, health, and general welfare of present and future residents of the Town and the Triangle Region under the authority set forth in Article 1, Sec. 1.2 AUTHORITY of this ordinance. In addition, the Legislature of the State of North Carolina has, in Chapter 143, Article 21 of the North Carolina General Statutes, entitled Water and Air Resources, directed local governmental units to adopt regulations designed to promote the public health, safety, and general welfare pursuant to the more specific requirements set forth in 15A NC Administrative Code 2B.0100, and 15A NCAC 2B .0200. (Additional specific purposes may be found in the Swift Creek Land Management Plan, the 2010 Land Use Plan Update, and the Growth Management Plan.) In furtherance of these goals and under such authorities, the Town of Apex promulgated this Sec. 6.1, *Watershed Protection Overlay Districts*.

6.1.2 Primary and Secondary Watershed Protection Overlay Districts

Except for those lands and uses exempted pursuant to Sec. 6.1.3 *Exemptions*, the Watershed Protection Overlay Districts shall encompass

all lands within the Town of Apex and its extraterritorial jurisdiction as established in Article 1, Sec. 1.2.2 *Authority to Regulate Zoning, Subdivision And Building Practices in ETJ*. The boundaries for the Town's extraterritorial jurisdiction area (hereinafter "ETJ") are delineated on the Town of Apex's "Official Zone District Map." A copy of this map shall be on record in the office of the Town Clerk and in the Planning Department for inspection by the general public during normal business hours.

The Town and its ETJ shall be divided into two districts for the purpose of watershed protection. The Primary Watershed Protection District shall consist of all lands identified by the state as water supply watershed protected areas. The Secondary Watershed Protection District shall consist of the remainder of lands within the Town and its ETJ. These two districts shall be identified on the Town of Apex's "Watershed Protection Overlay District Map." A copy of this map shall be on be on record in the office of the Town Clerk and in the Planning Department for inspection by the general public during normal business hours. All subsequent changes to the area that is identified by the state as water supply watershed protected area are herein adopted by reference, and the Planning Department shall cause such changes to be reflected on said map.

6.1.3 Exemptions

The following activities are exempted from the requirements of Sec. 6.1 *Watershed Protection Overlay Districts*:

- A) ***Single Family Lots***
The construction of a single residence and appurtenant facilities on single-family lots not requiring subdivision approval within both Watershed Protection Overlay Districts;
- B) ***Two Acre Lots***
Division of lots of two acres or less pursuant to N.C.G.S. Sec. 160A-376(4) under the following circumstances:
 - 1) *Within the Primary Watershed Protection District.* The division of lots of two acres or less for single-family use in a manner that is exempt from the requirements of Article 7, *Subdivision*;
 - 2) *Within the Secondary Watershed Protection District.* The division of lots of two acres or less in a manner that is exempt from the requirements of Article 7, *Subdivision*;
- C) ***Development Existing as of the Effective Date of this Section***
 - 1) *Date built.* The continued use of structures that were built prior to the effective date of this Section;

- 2) *Substantial expenditures.* The completion of development for which the developer prior to the effective date of this Section made substantial expenditures of resources (e.g. time, labor, money) based on a good faith reliance on a valid permit received from the Town;
- 3) *Outstanding building permit.* The construction of any structure for which a developer has an outstanding valid building permit in compliance with N.C.G.S. Sec. 160A-385.1 prior to []; or
- 4) *Vested right.* The completion of development for which a vested right, as defined in N.C.G.S. Sec. 160A-385.1(b)(6), was obtained prior to that date.

D) ***Redevelopment***

Redevelopment of land to the extent the redevelopment does not result in a net increase in built-upon area, or greater storm water protection is provided as a part of the redevelopment plan. Such redevelopment shall be subject to the limitations set forth in Article 10, *Nonconformities*, Sec. 10.3.3 *Relocation* and Sec. 10.3.4 *Damage and Restoration of Nonconforming Structure*.

E) ***Expansions to Existing Development***

Any expansion to a lot or project that is defined as existing development pursuant to Sec. 6.1.3 (C) *Development Existing as of the Effective Date of this Section* must meet the requirements of Sec. 6.1; however, the built-upon area of the existing development is not required to be included in the built-upon area calculations.

F) ***Developments and Uses Exempted by State Law***

Any use, development, or activity that has been specifically exempted by any applicable state law from local regulations of this sort.

G) ***Central Business District***

Within the Secondary Watershed Protection District, in addition to all other exemptions, development within the Central Business District, which shall be identified on the “Watershed Protection Overlay District Map,” shall be exempt from the requirements of Sec. 6.1 *Watershed Protection Overlay Districts*.

H) ***Complete Applications***

All projects for which a complete application for site plan or master subdivision plan was submitted and accepted by the Town on or before the effective date of Sec. 6.1 shall be exempt from complying with all provisions of this Section if the application is approved and development occurs in conformity with the permit

terms. However, the project is not exempt from the watershed regulations in effect at the time of submittal.

6.1.4 General

- A) ***Development Review***
All development within the Watershed Protection Overlay Districts shall comply with the watershed protection standards of Sec. 6.1 *Watershed Protection Overlay Districts*, and shall demonstrate compliance concurrent with the submission for approval of a site plan (major or minor) (Sec. 2.3.6), master plan for subdivision (Sec. 2.3.7(D)) or development plan for MEC, PUD or TND (Sec. 2.3.4), whichever occurs first.
- B) ***Compliance Prior to Approval of Certificate of Occupancy and/or Recording of a Plat***
Prior to approval of a final plat (with respect to a subdivision), issuance of a certificate of occupancy (with respect to a site plan), or commencement of a use, in addition to meeting all other requirements of this ordinance, all of the watershed protection standards required by this Section must be met, all required facilities must be in place, be operational, and be approved by the Soil and Erosion Control Officer and/or the Town Engineer.
- C) ***Definitions***
Certain words in this Section have meanings that are specific for the purposes of Sec. 6.1 *Watershed Protection Overlay Districts*. Such words shall be defined in Article 12, *Definitions*.

6.1.5 Uses

The uses allowed within the Watershed Protection Overlay Districts shall be governed by the use regulations permitted in the base zone district within which the land is located as set forth in the Sec. 4.2.2 *Use Table*.

6.1.6 Low-Density Development Option

- A) ***General***
All development within both the Primary Watershed Protection District and the Secondary Watershed Protection District shall be designed to comply with the standards of the low-density development option unless the Board of Commissioners approves a plan of development pursuant to the procedures and standards for the high-density development option, or unless a minor or major variance is approved pursuant to Sec. 6.1.13, *Modifications by Variance*.
- B) ***Standards***
All development under the low-density development option shall meet the following standards:
 - 1) ***Within the Primary Watershed Protection District***

- a) *Built-Upon Area*
Within the Primary Watershed Protection District, built-upon area for a development shall not exceed 12 percent of the total lot(s) area.
 - b) *Riparian Buffers for Perennial Streams*
Within the Primary Watershed Protection District, a vegetative buffer with a width of not less than 100 feet shall be maintained along each side of a perennial stream (defined for purposes of this Section in Article 12, *Definitions*). All buffers shall meet the requirements of Sec. 6.1.11 *Riparian Buffers*.
 - c) *Riparian Buffers for Intermittent Streams*
Within the Primary Watershed Protection District, a vegetative buffer with a width of not less than 50 feet shall be maintained along each side of an intermittent stream (defined for purposes of this Section in Article 12, *Definitions*). All buffers shall meet the requirements of Sec. 6.1.11 *Riparian Buffers*.
 - d) *Riparian Buffers for Lakes and Ponds*
Within the Primary Watershed Protection District, a vegetative buffer with a width of not less than 50 feet shall be maintained around any lake or pond, provided, however, that any lake or pond that joins with a perennial stream shall have a vegetative buffer width of not less than 100 feet around the lake or pond. All buffers shall meet the requirements of Sec. 6.1.11 *Riparian Buffers*.
- 2) *Within the Secondary Watershed Protection District*
Within the Secondary Watershed Protection, the standards are the same as in Sec. 6.1.6 (B)(1) *Within the Primary Watershed Protection District*:
- a) *Built-Upon Area*
Within the Secondary Watershed Protection District, the built-upon area for a development shall not exceed 12 percent of the total lot(s) area.
 - b) *Riparian Buffers for Perennial Streams*
Within the Secondary Watershed Protection District, a vegetative buffer with an average width of not less than 100 feet shall be maintained along each side of a perennial stream. At no point shall the buffer width along each side of a perennial stream be less than 60 feet. All variable width buffers must be delineated with monuments. All buffers shall meet the requirements of Sec. 6.1.11 *Riparian Buffers*.

- c) *Riparian Buffers for Intermittent Streams*
Within the Secondary Watershed Protection District, a vegetative buffer with a width of not less than 50 feet shall be maintained along each side of an intermittent stream. All buffers shall meet the requirements of Sec. 6.1.11 *Riparian Buffers*.
- d) *Riparian Buffers for Lakes and Ponds*
Within the Secondary Watershed Protection District, a vegetative buffer with a width of not less than 50 feet shall be maintained around any lake or pond, provided, however, that any lake or pond that joins with a perennial stream shall have a vegetative buffer with an average width of not less than 100 feet maintained along each side of the lake or pond. At no point shall the buffer width around the lake or pond be less than 60 feet. All variable width buffers must be delineated with monuments. All buffers shall meet the requirements of Sec. 6.1.11 *Riparian Buffers*.

6.1.7 High-Density Development Option

Developers wishing to exceed the built-upon limitations for low-density development within either the Primary Watershed Protection District or the Secondary Watershed Protection District, as set forth in Sec. 6.1.6 (B) *Standards*, shall submit a development plan to the Board of Commissioners for their approval, which shall meet the following standards:

A) *Within the Primary Watershed Protection District*

- 1) *Built-Upon Area*
Within the Primary Watershed Protection District, all development shall comply with the built-upon area limitations for the underlying district found in Sec. 5.1 *Table of Intensity and Dimensional Standards*.
- 2) *Engineered Storm Water Control Structures*
Within the Primary Watershed Protection District, engineered storm water control structures shall be used to collect and hold the runoff from the first one-inch of rainfall. These storm water control structures shall meet the requirements in Sec. 6.1.12 *Engineered Storm Water Controls*.
- 3) *Riparian Buffers for Perennial Streams*
Within the Primary Watershed Protection District, a vegetative buffer of not less than 100 feet shall be maintained along each side of a perennial stream. All buffers shall meet the requirements in Sec. 6.1.11 *Riparian Buffers*.
- 4) *Riparian Buffers For Intermittent Streams*
Within the Primary Watershed Protection District, a vegetative buffer with a width of not less than 50 feet shall be maintained

along each side of an intermittent stream. All buffers shall meet the requirements in Sec. 6.1.11 *Riparian Buffers*.

- 5) *Riparian Buffers For Lakes and Ponds*
Within the Primary Watershed Protection District a vegetative buffer with a width of not less than 50 feet shall be maintained around any lake or pond, provided, however, that any lake or pond that joins with a perennial stream shall have a vegetative buffer width of not less than 100 feet around the lake or pond. All buffers shall meet the requirements of Sec. 6.1.11 *Riparian Buffers*.

B) *Within the Secondary Watershed Protection District*

- 1) *Built-Upon Area*
Within the Secondary Watershed Protection District, all development shall comply with the built-upon area limitations for the underlying district found in Sec. 5.1 *Table of Intensity and Dimensional Standards*.
- 2) *Engineered Storm Water Control Structures*
Within the Secondary Watershed Protection District, engineered storm water control structures shall be used to collect and hold the runoff from the first one-inch of rainfall. These storm water control structures shall meet the requirements in Sec. 6.1.12 *Engineered Storm Water Controls*.
- 3) *Riparian Buffers for Perennial Streams*
Within the Secondary Watershed Protection District, a vegetative buffer with an average width of not less than 100 feet shall be maintained along each side of a perennial stream. At no point shall the buffer width along each side of a perennial stream be less than 60 feet. All variable width buffers must be delineated with monuments. All buffers shall meet the requirements in Sec. 6.1.11 *Riparian Buffers*.
- 4) *Riparian Buffers For Intermittent Streams*
Within the Secondary Watershed Protection District, a vegetative buffer with a width of not less than 50 feet shall be maintained along each side of an intermittent stream. All buffers shall meet the requirements in Sec. 6.1.11 *Riparian Buffers*.
- 5) *Riparian Buffers for Lakes and Ponds*
Within the Secondary Watershed Protection District, a vegetative buffer with a width of not less than 50 feet shall be maintained around any lake or pond, provided, however, that any lake or pond that joins with a perennial stream shall have a vegetative buffer with an average width of not less than 100 feet maintained along each side of the lake or pond. At no point shall the buffer width around the lake or pond be less than 60 feet. All variable

width buffers must be delineated with monuments. All buffers shall meet the requirements of Sec. 6.1.11 *Riparian Buffers*.

6.1.8 Clustered Development Option

Clustering of development is allowed under either the low-density development option or the high-density development option under Sec. 2.3.4 *Planned Development Districts*, if the development complies with the following additional standards:

A) ***Density***

The overall density of the development shall not exceed the density allowed in the underlying base zone district found in Sec. 5.1 *Table of Intensity and Dimensional Standards* (for the high-density development option) or the density limitation of the low-density development option for the Primary or Secondary Watershed Protection District;

B) ***Built-Upon Areas***

Built-upon areas shall be designed and sited to minimize storm water runoff volume and velocity and the overall impact of storm water runoff on receiving streams; and

C) ***Plat Certificate***

No plat shall be approved until the developer has caused the final plat to be certified as follows:

“This is a clustered development pursuant to the *Town of Apex Unified Development Ordinance* and may not be further subdivided or developed.”

6.1.9 Definition of Built-Upon Area

For the purposes of complying with the standards and requirements of the Watershed Protection Overlay Districts, calculation of the built-upon area within the proposed development shall include, but not be limited to, all proposed public and private streets, sidewalks, driveways, rooftops, parking lots, patios, and all other impervious and partially impervious surfaces, including CABC and gravel within the development. Swimming pools and wooden decks shall not be included in the calculation of the built-upon area.

6.1.10 Calculation of Built-Upon Area

For the purposes of complying with the standards and requirements of the Watershed Protection Overlay Districts, built-upon area calculations shall be made based on the total acreage of built-upon area within a proposed development, divided by the total acreage of the lot area. Density calculations for expansions shall be based on the total acreage of built-upon area proposed for expansion, divided by the total acreage of lot area proposed for expansion. A certificate of occupancy shall not be granted, nor shall any final plat be recorded until a developer has caused all information pertaining to the percentage of the built-upon area on a property to be shown on the final plat for the property.

6.1.11 Riparian Buffers

- A) ***Relationship to Resource Conservation Areas***
The area of land on a property that is located within the riparian buffer may be counted by the developer, with the approval of the Planning Director, in accordance with Sec. 8.1.2 *Resource Conservation Area*, when calculating the amount of RCA that is required on that property by said Section.
- B) ***Measurement of Riparian Buffers***
The buffer width at a particular point along a stream shall be measured by the perpendicular distance from the point along the stream bank to the landward edge of the buffer or herbaceous vegetation line.
- C) ***Classification of Surface Waters on Property***
Riparian buffers shall be maintained for all perennial and intermittent streams, lakes, and ponds as set forth in Sec. 6.1.6 *Low-Density Development Option*, and Sec. 6.1.7 *High-Density Development Option* of this ordinance. Classifications of surface waters as perennial or intermittent streams, as ephemeral streams (a classification requiring no buffer under the requirements of Sec. 6.1 *Watershed Protection Overlay Districts*), or as a lake or pond shall be as indicated on the most recent version of either the U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps, or the soil survey map prepared by the Natural Resources Conservation Service of the United States Department of Agriculture. In the event that there exists a discrepancy between these two maps that would affect a required buffer, the classification requiring the most stringent buffer shall be applied.
- D) ***Appeals***
As the Neuse River is protected by a state-wide buffer program, which is managed by the Division of Water Quality of the Department of Environment and Natural Resources, the authority to hear appeals of stream classifications for that portion of the Town of Apex and its ETJ that lies within the Neuse River Basin, which shall be indicated on the Town of Apex's "Watershed Protection Overlay District Map," rests within the sole jurisdiction of said agency unless the Town of Apex is delegated the authority to maintain its Neuse Buffer Program locally. Therefore, appeals of stream classifications shall be handled in the following manner:
- 1) ***Within the Neuse River Basin***
When any affected party within the Neuse River Basin believes that the maps have inaccurately depicted surface waters, he or she shall consult the Division of Water Quality of the State of North Carolina Department of Environment and Natural Resources as set forth in the North Carolina Administrative Code Sec.15A 02B.0233(3).

In the event that the Town of Apex is delegated the authority to maintain Neuse buffers locally, the Town of Apex Environmental Coordinator shall make decisions and interpretations regarding stream classifications in accordance

with all applicable state criteria and the best available scientific information. Any person aggrieved by a decision of the Town of Apex Environmental Coordinator may appeal such decision to the Town of Apex Board of Adjustment.

2) *In All Remaining Areas Within Both the Primary Watershed Protection District and the Secondary Watershed Protection District*

In all remaining areas, the Town of Apex Environmental Coordinator shall make decisions and interpretations regarding stream classifications in accordance with all applicable state criteria and the best available scientific information. Any person aggrieved by a decision of the Town of Apex Environmental Coordinator may appeal such decision to the Town of Apex Board of Adjustment.

E) *Uses Permitted Within the Riparian Buffer*

1) *Within the Neuse River Basin*

Within the Neuse River Basin, only the following specific uses and activities are permitted within the required riparian buffers:

- a) Archaeological activities, scientific studies and stream gauging, and historic preservation;
- b) Existing drainage ditches, roadside ditches, and storm water outfalls provided that they are managed to minimize the sediment, nutrients and other pollution that they convey to water bodies;
- c) Driveway crossings on single-family residential lots that disturb equal to or less than 25 linear feet or 2,500 square feet of riparian buffer;
- d) Fences installed by the Town in order to protect utilities, provided that disturbance is minimized and installation does not result in removal of forest vegetation;
- e) One-time fertilizer application to establish replanted vegetation;
- f) Grading and re-vegetation outside of the inner 30 feet of the buffer, subject to the requirements of Sec. 2.3.15 *Tree Removal and Non-Structural Development Plan*, provided that diffuse flow (defined for purposes of this Section in Article 12, *Definitions*) and the health of the existing vegetation within the inner 30 feet of the buffer is not compromised, and disturbed areas are stabilized;
- g) Perpendicular crossings that disturb equal to or less than 40 linear feet of riparian buffer, provided that the area

disturbed does not count toward Resource Conservation Area;

- h) Overhead utility lines that minimize their impact on the buffer and that disturb no more than 150 linear feet of the riparian buffer, provided that the area disturbed does not count toward Resource Conservation Area;
- i) Playground equipment on single family lots provided that installation and use does not result in the removal of vegetation;
- j) Removal of previous fill or debris provided that diffuse flow is maintained and any vegetation removed is restored;
- k) Stream restoration;
- l) Temporary roads, which have been approved by the Planning Director or designee, and which disturb less than or equal to 2,500 square feet, provided that vegetation is restored within six months;
- m) Temporary sediment and erosion control devices outside of the inner 30 feet of the buffer, provided that the vegetation within the inner 30 feet of the buffer is not compromised, and that discharge is released as diffuse flow (defined for purposes of this Section in Article 12, *Definitions*) that does not disturb the inner 30 feet of the buffer;
- n) In-stream temporary erosion and sediment control measures for work within a stream channel;
- o) Necessary underground electric utility lines that disturb no greater than 40 linear feet of riparian buffer, provided that their impact on the buffer is minimized;
- p) Emergency fire control measures, provided that topography and vegetation is restored;
- q) Planting vegetation to enhance the riparian buffer, pruning forest vegetation, provided that the health and function of the forest vegetation is not compromised, the removal of individual trees that are in danger of causing damage to dwellings, other structures, or human life, and the removal of poison ivy or other noxious weeds, subject to the requirements of Sec. 2.3.15 *Tree Removal and Non-Structural Development Plan*;
- r) Water wells; and

- s) Wetland restoration.
- 2) *Within the Remaining Areas of Both the Primary Watershed Protection District and the Secondary Watershed Protection District*

Within all remaining areas, only the following land disturbing activities and uses shall be allowed within any required riparian buffer:

- a) Those activities and uses that are specifically listed as permitted within buffers in Sec. 6.1.11 (E)(1) *Within the Neuse River Basin*;
 - b) Required streets and associated facilities, public utilities and easements, and all activities necessary for the maintenance and construction of public utilities and easements, greenways and pedestrian paths, necessary stream bank stabilization; and
 - c) Those uses specifically exempted by the state from regulation within buffered areas for the Neuse Buffer Program and water supply watershed protection.
- F) ***Minimization of Impact***
All uses and activities that are permitted within any required riparian buffer shall be designed to minimize impact on water quality.
- G) ***Notification on Site Plan and Subdivision Plan and Recording of Information***
Where required, stream buffers shall be shown on all site plans and subdivision plans approved pursuant to Sec. 6.1.4 of this Ordinance. A certificate in the form established in the *Town of Apex Design and Development Manual* shall be lettered on the face of the site plan or the recorded subdivision map. Prior to approval of a final plat (with respect to a subdivision), issuance of a certificate of occupancy (with respect to a site plan), or commencement of a use, a developer shall first cause all information pertaining to required riparian buffers to be shown on the final plat for the property.

6.1.12 Engineered Storm Water Controls

- A) ***Professional Design***
All engineered storm water control structures and any alterations thereof shall be designed by a North Carolina registered professional with qualifications appropriate for the type of system required; these registered professionals are defined as professional engineers, landscape architects (to the extent that N.C.G.S. Sec. 89A allows), and land surveyors (to the extent that the design represents incidental drainage within a subdivision, as provided in N.C.G.S. Sec. 89 (C)-3(7)).

B) ***Wet Detention Ponds***

All development under the high-density development option shall use wet detention ponds or approved equivalent structures as a primary treatment system. Specific requirements for these systems shall be in accordance with the current Town standard specifications and construction details. Wet detention ponds shall be designed for specific pollutant removal according to modeling techniques approved by the North Carolina Division of Water Quality.

C) ***Design, Location, and Landscaping of Detention and Retention Basins***

The following specific design criteria shall be met by these systems:

- 1) Wet detention ponds shall be designed to remove 85% of total suspended solids in the permanent pool and store runoff from a one-inch rainfall from the site above the permanent pool;
- 2) The designed runoff storage volume shall be above the permanent pool;
- 3) The discharge rate from these systems following the one-inch rainfall design storm shall be such that the runoff does not draw down to the permanent pool level in less than two days and that the pond is drawn down to the permanent pool level within at least five days;
- 4) The mean permanent pool depth shall be a minimum of three feet;
- 5) The inlet structures shall be designed to minimize turbulence using baffles or other appropriate design features;
- 6) Retention basins, detention basins, headwalls, outlet structures, concrete flow channels, rip rap channels, and other drainage improvements shall be screened with plant material and/or berms and situated in the least visible location or, if visible, incorporated into the natural curves of the land;
- 7) Detention and retention basin embankments and the detention or retention basin itself shall be extensively landscaped with wet tolerant plant materials with the intention of re-creating a seasonal high water wet eco-structure; a list of guidelines for preferred plant materials can be found in the *Town of Apex Design and Development Manual*;
- 8) Detention or retention facilities shall be sized to accommodate the future growth of vegetation planted in the basin; and
- 9) In lieu of peripheral fencing, detention and retention basin edges shall be contoured and shaped to form low angles at primary water line thereby ensuring greater pedestrian safety.

D) ***Identification on Site Plan/Subdivision Plan/Final Plat of Storm Water Control Structure***

A legal description of the area containing the storm water control structure shall be delineated on the site plan (major or minor), subdivision plan, and recorded final plat along with any easements necessary for access to the storm water control structure. The described area shall include sufficient area to perform inspections. The described area shall include, but is not limited to, the detention pond, vegetative filters, all pipes and water control structures, berms and dikes. Prior to approval of a final plat (with respect to a subdivision), issuance of a certificate of occupancy (with respect to a site plan), or commencement of a use, a developer shall first cause all information pertaining to required storm water control structures to be shown and certified by the Town of Apex Environmental Coordinator on the final plat for the property.

E) ***Operation and Maintenance Plan***

The owner shall have an operation and maintenance plan for the engineered storm water control structure approved by the Soil and Erosion Control Officer and/or Town Engineer for all engineered storm water control structures prior to approval of a final plat (with respect to a subdivision) or issuance of a certificate of occupancy (with respect to a site plan) for development upon which an engineered storm water control structure is required. The operation and maintenance plan shall indicate what operation and maintenance actions are needed and what specific quantitative standards will be used for determining when those actions need to be taken. The operation and maintenance plan shall clearly indicate the steps that will be taken for restoring a storm water control structure if a failure occurs. Prior to approval of a final plat (with respect to a subdivision), issuance of a certificate of occupancy (with respect to a site plan), or commencement of a use, a developer shall first cause all information pertaining to a required operation and maintenance plan to be recorded and said document is cross referenced on the final plat and recorded concurrently with the final plat.

F) ***Changes or Amendments to Plans and Specifications and/or Operation and Maintenance Plan***

Any changes or amendments to the plans and specifications of a storm water control structure, or the operation and maintenance plan for a storm water control structure shall meet all of the requirements of this rule regarding design and approval.

G) ***Compliance Prior to Receiving Plat Approval or Certificate of Occupancy***

Prior to approval of a final plat (with respect to a subdivision), issuance of a certificate of occupancy (with respect to a site plan), or commencement of a use for any development upon which an engineered storm water control structure is required, the landowner/developer shall demonstrate that the required structure is in place, that it is operational,

and that it complies with all relevant portions of Sec. 6.1.12 *Engineered Storm Water Controls*.

H) ***Maintenance***

- 1) *Maintenance and defects guarantee.* Prior to approval of a final plat (with respect to a subdivision) or issuance of a certificate of occupancy (with respect to a site plan), a maintenance and defects guarantee shall be provided by the landowner/developer in the amount equal to 25 percent of the total construction cost of the storm water control structure to ensure proper maintenance.
- 2) *Duration of maintenance and defects guarantee for site plan.*
For site plans, the maintenance and defects guarantee shall be in effect for one year from the date of the issuance of the last certificate of occupancy. Temporary or conditional certificates of occupancy shall not suffice to commence tolling of the one-year period for release of the guarantee.
- 3) *Duration of maintenance and defects guarantee for subdivision.*
For subdivisions, the maintenance and defects guarantee shall be in effect for one year after certificates of occupancy have been granted for 90 percent of the lots within the subdivision. If the subdivision is to be phased, the Construction Management Department shall release a maintenance and defects guarantee for any structure required for a phase when that phase is complete. Subsequent phases shall be required to post new guarantees.
- 4) *Default.* Upon failure of the landowner/developer to maintain the engineered storm water control structure as required, the Town may obtain and use all or any portion of the maintenance and defects guarantee necessary to continue maintenance of the structure.

I) ***Inspection***

- 1) *Inspect once a year.* After completion, all engineered storm water control structures shall be inspected at least once a year. Each landowner shall complete a form approved by the North Carolina Division of Water Quality documenting the inspection. These forms shall be filed with the Town of Apex, and records of inspections shall be maintained on forms approved by the North Carolina Division of Water Quality. All property within both the Primary Watershed Protection District and the Secondary Watershed Protection District shall also be subject to inspection by the Soil and Erosion Control Officer and/or Town Engineer.

- 2) *Corrective action.* If at the time of the annual inspection corrective actions or improvements are required, the Town of Apex shall notify the landowner/developer of the needed corrections and of the date by which the work is to be completed. All corrective work shall be consistent with the approved operation and maintenance plan.
- 3) *Authorization prior to repair or reconstruction of structure.* With the exception of general landscaping and grounds maintenance, the owner of the engineered storm water structure shall obtain authorization from the Town prior to any repair or reconstruction of the structure. All improvements and repairs shall be consistent with the approved maintenance and operation plan. In a bona fide emergency, necessary measures may be taken immediately in order to minimize damage to the structure and ensure its continued operation. Such measures must be reported to the Soil and Erosion Control Officer and/or Town Engineer.

6.1.13 Modifications By Variance

- A) *General*
All requests for variances from the standards of the Watershed Protection Overlay Districts shall be made to the Board of Adjustment.
- B) *Minor Variances*
 - 1) *General.* Applications for minor variances shall be reviewed by the Planning Director or designee, who shall make a recommendation on the minor variance. The application shall then be reviewed by the Board of Adjustment, who shall approve, approve with conditions, or disapprove the variance after a public hearing noticed pursuant to Sec. 2.2.11, *Public Notification*, and conducted pursuant to Sec. 2.2.18, *Public Hearing Procedures*, based on the standards in Sec. 6.1.13(B)(3), *Standards*.
 - 2) *A variation shall be considered minor when:*
 - a) It results in a total built-upon area of less than 26.4 percent (which represents a 10 percent variation from the numerical standard of 24 percent, the state-wide minimum), in a development that is under the low-density option; or
 - b) It results in a buffer with a width of fewer than 27 feet along either side of a perennial or intermittent stream, or around any lake or pond (which represents a variation of 10 percent from the numerical standard of 30 feet, the state-wide minimum), for a development that is under the low-density option outside of the Neuse River Basin

within either the Primary or Secondary Watershed Protection District; or

- c) It results in a buffer with a width of fewer than 50 feet along either side of a perennial or intermittent stream, or around a lake or pond, in a development that is under the low-density option within the Neuse River Basin.

- 3) *Standards.* Minor variances shall be granted by the Board of Adjustment if the applicant demonstrates extreme hardship from the application of the requirement in a manner that is in accordance with state law requirements for the granting of variances.

C) ***Major Variances***

- 1) *General.* The Board of Adjustment, at a public hearing noticed pursuant to Sec. 2.2.11, *Public Notification*, and conducted pursuant to Sec. 2.2.18, *Public Hearing Procedures*, shall review all applications for major variances. Within the Primary Watershed District, and within any area that lies within the Neuse River Basin, applications for major variances shall be forwarded to the North Carolina Environmental Management Commission following this review, with recommendations made by the Board of Adjustment. The Environmental Management Commission shall then review and approve, approve with conditions, or disapprove such applications. In the remaining areas the Board of Adjustment shall approve, approve with conditions, or disapprove such applications.

- 2) *A request for a variance shall be considered major when:*

- a) It consists of any variation from a high-density development option;
- b) It results in a total built-upon area of greater than 26.4 percent (which represents a variation of 10 percent from the numerical standard of 24 percent, the state-wide minimum), in a development exercising a low-density option;
- c) It results in a buffer of fewer than 27 feet along either side of a perennial or intermittent stream, or around any lake or pond (which represents a variation of 10 percent from the numerical standard of 30 feet, the state-wide minimum), for a development exercising a low-density option outside of the Neuse River Basin within either the Primary or Secondary Watershed Protection District; or

- d) It results in a buffer of fewer than 50 feet along either side of a perennial or intermittent stream, or around any lake or pond, for a development exercising a low-density option within the Neuse River Basin.
- 3) *Forward to Environmental Management Commission.* After the Board of Adjustment reviews and recommends approval of the application for the major variance, the Planning Director shall prepare and forward to the Environmental Management Commission for consideration the following materials relevant to the application:
- a) The application for major variance;
 - b) The public hearing notice;
 - c) The transcript of the public hearing on the application for major variance prepared by or certified by the town clerk; and
 - d) Recommendation of the Board of Adjustment on the application, including all proposed conditions.
- 4) *Environmental Management Commission Review.* After receipt of the recommendation on the application for major variance from the Board of Adjustment, the Environmental Management Commission shall review the application pursuant to the rules and regulations governing the Commission and approve, approve with conditions, or disapprove the application based on the standards in Sec. 6.1.13(C)(5), *Standards*. The Environmental Management Commission shall forward its decision to the Board of Adjustment who shall prepare a final decision on the application for major variance in accordance with the decision of the Environmental Management Commission.
- 5) *Standards.* Major variances shall be granted pursuant to State Law requirements.
- D) *Annual Report*
The Town shall make an annual report to the Environmental Management Commission, as required by the state, of all variances that have been granted with the state identified watershed protected areas including the type of variance and the reasons for granting the variance.

6.1.14 Civil Penalties

- A) *Notification of Violation*
When any subdivision, development, and/or land use is found to be in violation of any provision of Sec. 6.1 *Watershed Protection Overlay Districts*, the person responsible for the violation shall be notified by the

Soil and Erosion Control Officer and/or Town Engineer. Such notification shall take the following form:

- 1) It shall be made in writing.
- 2) It shall indicate the nature of the violation.
- 3) It shall order:
 - a) The discontinuance of the illegal use of land, buildings or structures,
 - b) The removal of illegal buildings or structures,
 - c) The removal of additions, alterations, or structural changes to illegal buildings or structures, or
 - d) The discontinuance of any illegal work being done.
- 4) It shall order any action that is deemed necessary at that time to correct the violation.

B) *Civil Penalties*

Following notification of a violation of Sec. 6.1 *Watershed Protection Overlay Districts*, civil penalties may be imposed by the Town on the person responsible for the violation. Civil penalties will be imposed in accordance with Sec. 11.4.4 *Civil Penalties*.

6.1.15 Criminal Penalties

Violation of Sec. 6.1 *Watershed Protection Overlay Districts* shall be considered a misdemeanor as authorized by N.C.G.S. Sec. 14-4, and any conviction resulting from a violation shall be punished in accordance with Sec. 11.4.5 *Criminal Penalty*.

6.1.16 Remedies

In addition to the imposition of civil and criminal penalties, the Town may take action in accordance with Sec. 11.4.1 *Permit Revocation*, Sec. 11.4.2 *Disapproval of Subsequent Permits and Development Approvals*, and/or Sec. 11.4.3 *Injunction and Abatement Order* in order to prevent, stop, penalize, restrain, correct, or abate any violation of Sec. 6.1 *Watershed Protection Overlay Districts*.

Section 8.

Section 8.1.2(C)(4) "Resource Conservation Area" "Maximum Site Coverage Limits" is hereby amended as follows:

- 4) *Maximum Built-Up Area*
In no case shall the area outside the RCA, including, but not be limited to, parking areas, accessory buildings, and structures, exceed the applicable maximum built-upon area limitations set

forth in Sec. 5.1 *Table of Intensity and Dimensional Standards* and Sec. 6.1 *Watershed Protection Overlay Districts*.

Section 9. Section 8.1.2(G)(1)(a)(iii) “Resource Conservation Area” “Standards for Protection During Construction” “Streams” is hereby amended as follows:

- iii) *Streams:* Fencing shall be placed at the outside edge of the required riparian buffer in accordance with Sec. 6.1 *Watershed Protection Overlay Districts*.

Section 10. Section 8.2.4 (A)(1) “General Landscaping Requirements” “Applicability” “Multi-Family and Non-Residential Uses” is hereby amended as follows:

A) *Applicability*

All multi-family and non-residential land uses and all residential subdivisions shall install landscaping pursuant to the requirements of this section. This landscaping shall be in addition to any other landscaping required by Article 8 and Sec. 7.5.6.

1) *Multi-Family and Non-Residential Uses*

All multi-family and non-residential land uses shall install at least 1 tree and 3 shrubs for every 1,000 square feet of built-upon area, excluding vehicle use areas and sidewalks.

Section 11. Section 8.2.6(B)(5)(e) “Landscape Buffers Between Land Uses” “Types of Buffers” “Type E: Streetscape Buffers Along Thoroughfares” is hereby amended as follows:

- (e) *Type E: Streetscape Buffers Along Thoroughfares*
Streetscape buffers are required on all thoroughfares as shown on the adopted thoroughfare map. Streetscape buffers are to remain undisturbed to the maximum extent practicable except where no existing vegetation is present.

All uses that require site plan approval or subdivision plan approval shall preserve, install, and maintain a planted streetscape along each thoroughfare it abuts which protects the existing vegetation and abuts the perimeter of the property. All streetscape plantings, including the installation of all plant materials, shall perform in accordance with specifications of this section.

The width of the streetscape buffer shall be at least 30 feet if it remains undisturbed. If the buffer will require encroachment in order to install street improvements, the buffer must be at least 50 feet wide. Up to 25 feet of the 50-foot buffer may be disturbed provided that the disturbed section is re-planted according to the requirements in subsection (iii) below.

If any part of the buffer is disturbed or non-vegetated, the owner shall plant one large tree and two small trees for every 1,000 square feet of disturbed or non-vegetated buffer. Where existing overhead utility lines interfere with part of the buffer, the large tree requirement may be substituted by installing all small trees (4 small trees for every 1,000 square feet).

Trees shall be installed on the thoroughfare side of any berm or screen planting no less than 10 feet from the right-of-way of the thoroughfare. Street trees may be installed in a linear fashion or in clusters or groupings of larger and/or small trees in combination with associated plantings so as to enhance the visual appearance of the streetscape and views from adjacent properties.

Each large canopy tree in the streetscape shall be provided with at least 350 square feet of pervious ground area for root growth. Any planting area bounded by a built-upon area shall be at least 10 feet wide.

All slopes steeper than two to one (2:1) shall be stabilized with permanent slope retention devices or a suitable combination of plantings and retention devices (see Sec. 8.1.4 *Slope Protection Standards*).

Where there is a vehicular use area between the right-of-way of the thoroughfare and a permanent building, the streetscape shall provide a semi-opaque screen or barrier between the right-of-way and the vehicular use area. The screen or barrier may consist of existing vegetation, plants, earthen berms, decorative entry fences (not privacy), walls, or any combination thereof that meets the following requirements:

The screen shall occupy the entire 100 percent length of the vehicular use area except for sidewalks and driveways. All vehicular use areas must be screened from off-site view. Plant material shall be at least 2 feet tall above the ground at the time of installation and must reach a height of 3 feet within 3 years.

Fences, walls, and berms may be installed in addition to plantings (see Sec. 8.2.7 *Fences, Walls, and Berms*). Plant materials shall be installed that meet these performance standards. Berms may be installed if there is no existing vegetation. The installation of additional plant materials is required so as to enhance the visual and aesthetic qualities of the streetscape.

Section 12. Section 8.2.6(C)(4) “General Buffering Requirements” “No Development Within the Required Buffer” is hereby amended as follows:

- 4) The required buffer shall not contain any development, built-upon area, or site features that do not function to meet the standards of this section or that require removal of existing vegetation. No grading, development or land-disturbing activities shall occur within the buffer unless approved by the Board of Commissioners or Planning Department at the time of site plan or subdivision plan review.

Section 13. Section 12.2 “Definitions” is hereby amended by adding the following definitions:

Built-upon area

For the purposes of complying with the standards and requirements of the Watershed Protection Overlay Districts, calculation of the built-upon area within the proposed development shall include, but not be limited to, all proposed public and private streets, sidewalks, driveways, rooftops, parking lots, patios, and all other impervious and partially impervious surfaces, including CABC and gravel within the development. Swimming pools and wooden decks shall not be included in the calculation of the built-upon area.

Diffuse flow

To run smoothly with unbroken continuity in a widely spread or scattered manner.

Stream, Ephemeral

A stream that flows briefly and only in direct response to local precipitation, and whose channel is always above the water table. Ephemeral streams are not indicated on the most recent version of either the U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps, or the soil survey map prepared by the Natural Resources Conservation Service of the United States Department of Agriculture. This classification requires no buffer under the requirements of Sec. 6.1 *Watershed Protection Overlay Districts*.

Stream, Intermittent

A stream, or reach of a stream, that does not flow year-round. Intermittent streams are indicated as “intermittent” on the most recent version of either the U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps, or the soil survey map prepared by the Natural Resources Conservation Service of the United States Department of Agriculture. In the event that there exists a discrepancy between these two maps that would affect a required buffer under Sec. 6.1 *Watershed Protection Overlay Districts*, the classification requiring the most stringent buffer shall be applied.

Stream, Perennial

A stream that flows continuously throughout the year. Perennial streams are indicated as “perennial” on the most recent version of either the U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps, or the soil survey map prepared by the Natural Resources Conservation Service of the United States Department

of Agriculture. In the event that there exists a discrepancy between these two maps that would affect a required buffer under Sec. 6.1 *Watershed Protection Overlay Districts*, the classification requiring the most stringent buffer shall be applied.

Section 14. Section 12.2 "Definitions" is hereby amended as follows:

High-density development option

Development where the percentage of built-upon area exceeds that allowed without engineered storm water control measures (i.e. greater than 12% of the total site area.)

Impervious surface

Materials that allow little or no infiltration of precipitation into the soil. Impervious surfaces include, but are not limited to, public and private streets, sidewalks, driveways, rooftops, parking lots, patios, and all other impervious and partially impervious surfaces, including CABC and gravel within the development. Swimming pools and wooden decks shall not be considered impervious surfaces and shall not be included in the calculation of the built-upon area.

Low-density development option

Development where the percentage of built-upon area falls below the level that requires engineered storm water control measures (i.e. equal to or less than 12% of the total site area).

Vehicular use area

An off-street ground level area used for temporary storage of motor vehicles or parking. Also includes drive entries, loading areas and/or other built-upon areas used for transportation.

Section 15. All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed. If any section, paragraph, subdivision, clause or provision of this ordinance shall be adjudged invalid, such adjudication shall apply only to such section, paragraph, subdivision, clause or provision so adjudged and the remainder of the ordinance shall be deemed valid and effective.

Section 16. The ordinance shall be effective on the 16th day of October 2001.

Introduced by Commissioner Jensen

Seconded by Commissioner Jones

Attest
Georgia A Parker
Georgia Parker, Town Clerk

TOWN OF APEX
Keith H. Weatherly
Keith H. Weatherly, Mayor

Approved As To Form:
Jason J. Kaus
Jason J. Kaus, Town Attorney

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Morrisville Zoning Ordinance

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Appendix J

Wake County Stormwater Ordinance and Development Plan for RTP South

WAKE COUNTY, NORTH CAROLINA

STORMWATER CONTROL, MANAGEMENT

AND

WATERCOURSE BUFFER REGULATIONS

D2
001511

ARTICLE III

STORMWATER CONTROL, MANAGEMENT AND WATERCOURSE BUFFER REGULATIONS

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- (a) Requirements in the Rule
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- (a) New Development Review/Approval
- (b) Illegal Discharges
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All inspections report *shall* be on forms supplied by the County. An original inspection report *shall* be given to the Department of Environmental Services - Erosion, Flood & Stormwater Division of the County beginning 1 year from the date of as-built certification and each year thereafter. Inspection reports are due on the date they were as-built certified.

Secs. 2-10-46 – 2-10-56
RESERVED.

Division 2. Riparian Buffers

Sec. 2-10-57
PRESERVATION AND PROTECTION OF RIPARIAN BUFFERS

(a) Establishment of Riparian Buffers.

All riparian surface waters in Wake County’s Planning Jurisdiction (as defined in Sec. 2-10-18) shall have a fifty (50) foot wide riparian buffer directly adjacent to such surface waters, excluding wetlands. Surface waters shall be considered to be present if the feature is shown on the most recent version of the Soil Survey of Wake County, North Carolina or the most recent version of the 1:24,000 scale (7.5 minutes) quadrangle topographic maps prepared by the United States Geological Survey (USGS). Where obvious conflicts between actual field conditions and USGS and Wake County Soil Survey maps exist, appeals may be made to the North Carolina Division of Water Quality if the site is in the Neuse River Basin, or directly to the Wake County Department of Environmental Services - Erosion, Flood & Stormwater Division for sites in the Cape Fear River Basin.

(b) Delineation of Buffer Zones.

There are hereby established two zones of the riparian buffer as follows:

- (1) Zone 1 (30’ landward adjacent to stream bank, severe development restrictions).
- (2) Zone 2 (20’ landward adjacent to Zone 1, strict development restrictions).

The width of the riparian buffer zone *shall* be measured perpendicularly to the flow of the watercourse and horizontally from the edge of the watercourse banks except when no watercourse banks exist, in which case, the centerline of the watercourse *shall* be used.

(c) Activities Allowed Within Riparian Buffer Zones.

Activities may take place within riparian buffer zones as defined by 15A NCAC 2B.0233 provided that:

- 1) The applicant obtains an authorization certificate that document that the NC Division of Water Quality has approved the activity as an allowable use.
- 2) The applicant obtains an opinion from the NC Division of Water Quality that vested rights have been established for that activity.
- 3) The applicant obtains a letter from the NC Division of Water Quality documenting that a variance has been granted for the proposed activity.

(d) Description of Riparian Buffers on Development Plans.

Riparian buffers shall be shown and adequately labeled on all approved site plans, preliminary subdivision plans, sedimentation and erosion control plans, construction plans and subdivision plats.

(e) Enforcement

For violations of this Section refer to Sec. 2-10-23.

(f) Conflicts with Other Wake County Buffer Requirements.

Where the Riparian Buffer widths and allowed activities in this Section conflict with Sections 1-1-37, 1-1-48 through 1-1-53 of the Wake County Zoning Ordinance (Watershed and Drainage-way Buffers), the more restrictive width and allowed activities shall apply.

Sec. 2-10-58
RESERVED.

Sec. 2-10-59
DIFFUSE STORMWATER FLOW REQUIRED.

After application of this regulation*, all stormwater runoff from new man-made *stormwater control facilities*, including new ditches or canals, which flow into a watercourse natural resource buffer or into *riparian surface water* buffer shall be diffused flow. Diffuse flow *shall be maintained*. The land -owner or *person* in possession or control of the land *shall* be responsible for dispersing concentrated flow of stormwater runoff. The land -owner *shall* take corrective action to prevent the formation of erosion gullies, and the landowner *shall* take corrective action to restore diffuse flow.

When diffuse flow is impractical to achieve, *stormwater control facilities*, which attenuate the flow of stormwater runoff, and control nitrogen *may* be approved by the County as an alternative means of compliance.

Sec. 2-10-60.

WATERSHED BUFFER PERMIT.

(a) No *person shall* initiate, proceed, or *undertake* one or more of the following:

- (1) any *land-disturbing activity*
- (2) any development or expansion thereof
- (3) any placement of *impervious* surfaces,
- (4) new use, construction, or encroachment

on any lot containing a watershed buffer, a drainage way buffer or riparian surface water buffers without first being issued a written watercourse buffer permit from the Wake County Department of Environmental Services - Erosion, Flood & Stormwater Division. All watercourse buffer permits *shall* be obtained from the Erosion, Flood & Stormwater Division in accordance with Article II, Sec. 2-10 of this article. No permit will be issued except in strict conformity with Article III of this article, and the **City of Raleigh and Wake County Stormwater Control, Management and Watercourse Buffer Manual**.

(b) No watercourse buffer permit *shall* be issued until the boundaries of any watershed buffers, drainage-way buffers or *riparian surface water* buffers, and open space areas, which are adjacent to or encompass a work site are clearly and accurately demarcated by a protective fence in the field.

(c) No Watercourse buffer permit shall be issued for work in a *riparian surface water* buffer regulated by the State pursuant to Title 15A of the North Carolina Administrative Code subchapter 2B, section .0233 unless:

- (1) The applicant provides sufficient documentation to demonstrate that the requested work is exempt under the rule;
- (2) The North Carolina Division of Water Quality has determined that surface waters are not present;
- (3) The North Carolina Division of Water Quality has determined that the requested work is allowable under the Rule;
- (4) The North Carolina Division of Water Quality has determined that the requested work is allowable with mitigation under the Rule;
- (5) The North Carolina Environmental Management Commission has issued a variance under the Rule.

The applicant *shall* present to the Wake County Department of Environmental Services - Erosion, Flood & Stormwater Division a written copy of the applicable

determination of the North Carolina Division of Water Quality or a copy of the issued variance from the North Carolina Environmental Management Commission before receiving any watercourse buffer permit pursuant to this subsection.”.

Sec. 2-10-61. JURISDICTION–WIDE, INTER-LOCAL APPROACH.

The Neuse Stormwater Rule allows local government to implement jurisdiction wide or inter-local approaches to achieving nitrogen reduction. The Stormwater Control, Management and Water Course Buffer Regulations of Wake County will incorporate a jurisdiction wide approach. This approach will allow and promote where practical “ Land Banking and or Cluster development within the County’s jurisdiction. This approach will be augmented by crediting future developments with nitrogen removal that will occur as part of required retention pond construction.

The “ Land Banking and or Cluster development approach will allow developments to use undeveloped land within the existing tract, or the use of off site lands adjacent to the project, that would have a low nitrogen export value to be combined with the development in order to reduce the nitrogen export value per acre for the combined project. Example, a project may consist of **10** acres with a computed nitrogen export value of **9** pounds per acre/ per year. To lower the export value a **5** acre tract of forest land located adjacent to the project with an existing nitrogen export value of **0.6**. [**5 acres x 0.6 lbs per acre/ per year plus 10 acres x 9 lbs. per acre per year**] divided by **15 = 6.2 lbs./acre/year**. To use this approach the development must meet the following conditions:

- Must be recombined prior to issuance of building permit
- Must be secured in a permanent conservation easement, which prohibits development of any kind.
- The site plan for this type development will clearly state that a “ Land Banking “ parcel is part of the development project. A map of the Land Banked parcel along with the deed book and page number of the recorded conservation easement will be included as a part of the site plan package.