Appendix B – Wake County Mitigation

1. **Summary of Programs**
2. **Southwest Land Use Area Plan**
    - Excerpt, Maps, Land Class Description
3. **CAMPO 2040 Metropolitan Transportation Plan**
    - Executive Summary
4. **UDO**
    - Open Space
    - Density Bonuses
    - Stormwater
    - Erosion & Sediment Control
    - Buffers
    - Tree Protection
    - Flood Hazard
    - Zoning Overlay District

1. Summary of Programs

APPENDIX B

Wake County Programs to Mitigate Secondary and Cumulative Impacts

Wake County (County) lies in central North Carolina and includes 12 municipalities.

The County is consistently ranked as one of the best places in the United States in which to live, work, and raise a family. This area offers business and industry, higher education, historic attractions, arts and culture, and recreation and leisure services, all of which provide a quality lifestyle for many County residents, whether they prefer rural or urban settings. The size of the County is 860 square miles. From east to west, it measures 46 miles; from north to south, it measures 39 miles. The Neuse River and its tributaries drain about 80 percent of the County, and the southwestern part is drained by tributaries of the Cape Fear River.

To ensure the quality of life for its residents and continue to make it an attractive place to live and raise a family, the County is managing its growth using innovative planning approaches and techniques. The County has a series of planning documents to ensure that growth occurs in a manner that will protect environmental resources and meet the needs of its residents. These documents include the Unified Development Ordinance (UDO), Comprehensive Watershed Management Plan, Land Use Plan, Consolidated Open Space Plan, Growth Management Strategy, Transportation Plan, Comprehensive Groundwater Investigation, Agriculture Economic Development Plan, Stormwater Management Task Force Reports, and a Sustainability Task Force Report. Additionally, there is the Swift Creek Land Management Plan that is established by state law and administered by the Wake County and the Towns of Apex, Cary, Garner and the City of Raleigh.

The County has developed and improved programs to implement these management plan recommendations. For example, the County has implemented programs to preserve open space, protect floodplain and riparian buffers, and maintain water quality through aggressive erosion, flood and sediment control and stormwater programs.

This appendix identifies and discusses these County programs. Because federal and State of North Carolina (State) programs were described in Section 6 of the Town of Morrisville's (Town's) Secondary and Cumulative Impacts Master Management Plan (SCIMMP), these descriptions have been omitted here. While Wake County does not develop infrastructure, it has jurisdiction over land that is outside municipal limits and their extra territorial jurisdictions (ETJs) but within municipal urban service areas (USAs). It is intended that these USAs —at some point in the future—will be served by urban facilities and services, developed at urban intensities, and eventually absorbed into an adjacent municipality. Thus, the County's programs are important components of a program to protect the environment against secondary and cumulative impacts (SCI) related to growth. The programs described below contribute toward the mitigation

of the potential SCI discussed in Section 5 of the Town's SCIMMP. Only programs affecting to the Planning Area are discussed not all portions of Wake County.

B.1 Local Regulations and Programs

Environmental protection is a cornerstone value in the County. The County has developed several programs to meet its internal goals for providing a high-quality life for its residents. To meet those goals, the County established a Consolidated Open Space Plan that includes protection of important habitat areas, growth management strategy to protect water quality, and land use plans that encourage growth in certain areas and discourage growth in other areas. The County also revised its ordinances to modify its cluster and open space development provisions to encourage the preservation of more open space around environmentally sensitive areas within new residential developments. These regulations don't allow for higher densities than that allowed by the zoning district—instead they allow for lot sizes to be reduced below the standard requirement with the land "saved" by the reduced lot size being preserved as open space—for example in R-40W instead of creating 40,000 square-foot lots, the developer can create 20,000 square-foot lots with the 20,000 square-foot difference being preserved as open space. In addition, the County developed a riparian protection program, floodplain program, erosion and sediment control program, and stormwater program to protect water quality and in-stream habitat. Table B-1 summarizes the programs that impact development procedures. Table B-2 illustrates the environmental resources that the various programs protect.

TABLE B-1
Summary of Selected Wake County UDO Protection Measures

Program	Summary
Erosion and Sediment Control (UDO Article 10)	An erosion and sediment control permit is required for land disturbing activity over 1 acre. Silt fences and construction entrances are required on all sites, even those that are less than 1 acre. Sediment basins (sized according to drainage area), silt fencing, perimeter ditches, and/or other approved measures are required to control sediment from development activity. Soil stabilization by establishing a grass cover or mulching and tacking must occur within the current NCDENR stabilization timeframes. Plans to identify areas subject to severe erosion, limit time of exposure, and limit exposed area are required. Land disturbance in proximity to a lake or natural water course requires an undisturbed 50-foot-wide buffer, provided that the undisturbed zone is of sufficient width to confine visible siltation within the first 20 feet. Encourages contractor education and training related to erosion and sediment control.
Stormwater and Impervious Surface Limits (UDO Article 9 and Article 5)	Post-development site runoff curve number for residential development may not exceed target curve numbers contained in Article 9, Part 2 of the UDO based on precipitation depth of 3 inches over a 24-hour period. Stored water must be drained over a period of not less than 2 days or more than 5 days. Stormwater credit system provides incentives for better site design and locating new development that causes less impact to aquatic resources. Approved methods include: disconnected impervious surfaces, reforestation, and cluster and open space subdivisions. Practices reduce generation of stormwater as well as size and cost of stormwater storage, and provide partial removal of pollutants. Impervious surface limits in water supply watersheds range from 6 to 30percent for residential areas and up to 30 percent for non-residential areas. Stormwater best

TABLE B-1
Summary of Selected Wake County UDO Protection Measures

Program	Summary
	management practices (BMPs) are required to mitigate for target curve number exceeedances, peak flow, and sometimes nitrogen. Stormwater permits are required for all regular subdivisions and for non-residential projects that cumulatively disturb more than 0.5 acre. Compliance with Neuse River basin and Jordan Lake watershed nutrient sensitive waters (NSW) nutrient management strategies is required.
Riparian Buffers (UDO, Article 11)	In Water Supply Watersheds: (Swift Creek and Jordan Lake) • Buffer requirements: – 100 feet from the flood pool elevation of the water supply impoundment (measured perpendicular to the shoreline) – 50 feet from the normal pool elevation of any non-water supply impoundment with a drainage area of 25 acres or more – 100 feet along perennial streams on the most recent edition of U.S. Geological Survey (USGS) topographic maps; inner 50 feet (Zone 1) is undisturbed vegetated; outer 50 feet (Zone 2) is stable vegetated – 50 feet along non-perennial watercourse, channel, ditch, or similar physiographic feature with a drainage area of 25 acres or more – 30 feet from the normal pool elevation of a non-water supply impoundment with a drainage area of at least 5 acres but less than 25 acres – 30 feet along each side of a water course, channel, ditch, or similar physiographic feature with a drainage area of at least 5 acres but less than 25 acres • Minimum building setback from all buffers is 20 feet, except in the 100-foot-wide perennial stream buffer, which has no required setback • The inner 50 feet (Zone 1) of the 100-foot buffer required along perennial streams must either be platted as part of a development lot and included within a conservation easement, or set aside as a reserved conservation parcel. In Resource Conservation Overlay (Bass Lake): • Buffer requirements: – 100 feet required around special water impoundment (Special watershed: a watershed area in Wake County zoning jurisdiction that contains a special water impoundment[s] that provide[s] significant wildlife habitat, characteristics unique to Wake County, public recreation, or potential for future recreation) – 50 feet along each side of a stream or impoundment draining 25 or more acres of land – 25 feet along each side of a stream or impoundment which drains between 5 and 25 acres • Vegetation within buffers will be undisturbed except for specific uses (such as boat docks, greenways, and drainage facilities or utilities). • Minimum building setback from buffer is 20 feet. All riparian surface waters in the County's jurisdiction are required to have a 50-foot-wide buffer if the feature is present on either the most recent version of the USDA Soils Map or 7.5-minute quadrangle topographic map prepared by the USGS. The first 30 feet of buffer (Zone 1) must remain essentially undisturbed, while the other 20 feet (Zone 2) are to be covered with vegetation but certain uses would be allowed in this zone.
Floodplain Protection (UDO Article 14)	In floodways and the 100-year floodplain: • No new structures shall be constructed. • No fill shall be placed in floodway unless a no-rise certification is approved. • Encroachments in floodway are limited to roads, bridges, culverts, or water-dependent structures, and no-rise certification is required. In special flood hazard areas (non-Federal Emergency Management Agency [FEMA]

TABLE B-1
Summary of Selected Wake County UDO Protection Measures

Program	Summary
	potential flood areas based on the location of flood hazard soils), areas that drain 4 acres or more usually require a flood study if there is an encroachment into the flood hazard soils.
Open Space Protection	Article 5 establishes building set-backs from property line, buffers around parcels, and other site development restrictions.
(UDO Articles 5 & 8)	Subdivision development rules include options for cluster and open space developments to encourage the preservation of more environmentally sensitive areas within proposed residential development

TABLE B-2
Summary of Existing Wake County Programs and the Environmental Resources They Protect /Address

Program	Terrestrial Habitat Protection	Aquatic Habitat Protection	Water Quality and/or Quantity Protection	Air Quality Protection	Noise Limitations
Growth Management Strategy	X	X	X	X	X
Land Use Planning	X	X	X	X	X
UDO and Zoning Process	X	X	X	X	X
Consolidated Open Space Plan	X	X	X	X	X
Riparian Buffers and Floodplain Protection	X	X	X	X	X
Water Supply Watershed Protection	X	X	X		
Erosion and Sediment Control Program	X	X	X		
Stormwater Program and Impervious Surface Limitations	X	X	X		
Air Pollution Prevention and Transportation Planning				X	X

B.2 Wake County Growth Management Strategy

The County has a strategic location in the Research Triangle area, an excellent quality of life that consistently ranks high in national surveys, and an exciting mix of urban, small town, and rural lifestyles. The Research Triangle Park (RTP) and the Raleigh-Durham International Airport (RDU) act as major growth engines not only for the County, but also for the surrounding region. The County had grown to over 900,000 residents in 2010 (U.S. Census Bureau, 2010).

By early 2000, the County and the 12 municipalities were facing significant challenges as a result of rapid growth. These challenges included traffic jams, overcrowded schools, and loss of open space and natural areas. Communities grew closer to their neighbors as sprawling development extended across the County. Increasingly, County and municipal officials saw the need for a more comprehensive effort to address growth concerns in the County. The Wake County Growth Management Task Force was created

at the initiative of the Wake County Board of Commissioners to develop a county-wide consensus for growth management. Building on existing collaborative approaches, the task force sought to develop a new, comprehensive growth management strategy that recognized both the interdependence and uniqueness of each of the communities. Local officials realized that effective regional solutions would only occur through the cooperation of all the governments working together in an open and participatory process.

Wake County's Growth Management Strategy, which was drafted in 2002, laid the foundation for achieving many of the County's goals and objectives. The County periodically reconvenes the Growth Management Task Force, now the Growth Issues Task Force, to evaluate progress on the Strategy's goals. In 2008, the Growth Issues Task Force met and asked each participating entity to identify the most pressing growth and development issues facing the County. The top three issues were:

- A high-quality educational system
- Increased mass transit opportunities
- Local government joint planning and cooperation

Other goals identified included utility collaboration, economic stability, sustainable development and environmental protection, land use planning, and water supply security (Wake County, 2008).

The County developed a Land Use Plan, adopted in 1997and updated in 2003, which laid the groundwork for growth management (Wake County, 2003). This Plan called for comprehensive Area Land Use Plans that would provide further detailed land use classifications. The Southwest Wake County Area Land Use Plan, which occurs in the SCIMMP Planning Area, was developed in 2007. This Appendix includes excerpts from the 2007 Southwest Wake Land Use Plan and Land Use Map, which was amended in 2010 for updates in the Harris Lake Drainage Basin (Wake County, 2010a).

B.3 Open Space Preservation

In the County, open space protection can provide additional land around the municipalities that serves as wildlife corridors between important habitat areas within the municipal boundaries. The County has several mechanisms to preserve open space. These include open space plans and initiatives, land use plans, and UDO provisions. In addition, programs such as the Voluntary Agricultural Districts help preserve the County's rural character. Each of these initiatives is described in greater detail below.

B.3.1 Wake County Consolidated Open Space Plan

The purpose of the Wake County Consolidated Open Space Plan accepted by the Board of Commissioners on March 17, 2003, and revised in September 2006 is to protect and conserve County land and water for current residents and future generations. Open space is defined as protected lands and waters that are owned and managed by the County, its public-sector partners, the municipal governments of the County, State of North Carolina, the federal government, and the County's private-sector partners, including non-profit land trusts (CH2M HILL, 2006). Open space consists of any parcel or area of land and water that is devoted to:

- Preservation of natural resources
- Managed production of resources (forest and farm land)
- Outdoor recreation
- Preservation of historic and cultural property
- Protection of scenic landscapes

The Wake County Consolidated Open Space Plan sets forth a plan of action to identify and protect the County's natural resources, historic areas, and other special environmental and cultural features. The purpose of the Plan is to identify, evaluate, and prioritize resources; establish preservation goals; and guide the implementation of an open space program. One goal of the Plan is to eventually protect a minimum of 30 percent, or roughly 165,000 acres, of the County's land area. As of the 2006 revision of the plan, about 60,000 acres were protected, including federal lands around Falls and Jordan Lakes, Umstead State Park, County-owned parks, and open space and municipal parks (pers. comm. Christopher Snow, 2014). The County has partnered with each of its 12 municipalities to support open space planning. The County has awarded monetary grants and asked that each municipal government develop and adopt a local open space plan.

One of the main goals established for the open space plan prior to its development was the protection of water quality and important ecological features. The open space planning process was integrated with the watershed planning process at the inception of both plans. The Watershed Management Plan (CH2M HILL, 2002) used a geographic information system (GIS) model to identify and prioritize watershed areas for protection within the county, based on important human and ecological use perspectives. For example, stakeholders identified drinking water supplies as the most important watershed use. Other important uses included rare species habitats. This feedback from the stakeholders was used to prioritize small watershed areas that warranted additional protection.

Roughly 30,000 acres of land throughout the County have been identified for targeted acquisition; these targeted lands protect water supply, limit exposure to flooding, support water contact recreation, improve access to outdoor resources, and protect wetlands and unique plant and animal species native to the County. As the mix of strategies to protect open space evolves, this volume of acquisition may vary; for example, if the actual acreage protected by regulation increased, then not as much land needs to be acquired. The lands were targeted through GIS methodology. Prohibiting future development and building in flood-prone areas should preserve an estimated 60,000 acres of land. Innovative methods for subdividing and developing land could conserve as much as 22,000 acres of land in future years.

Final cost estimates to acquire the land to implement the open space plan were developed as part of the planning process. Open space program costs were estimated to vary as a function of the methods of preservation (such as outright purchase, conservation easements, and stream buffers). Outright acquisition of all parcels would cost hundreds of millions of dollars. The Wake County Open Space Bond allowed $15 million in fiscal year (FY) 2000, $26 million in FY2005, $50 million in FY2007, and $21 million in FY2013 to begin implementation of the Wake County Consolidated Open

Space Plan; the bond allows for additional implementation of the open space system priorities by providing the "matching" funds portion of grants. As of February 2014, there is approximately $23 million remaining to spend (pers. comm. Christopher Snow, 2014). Some of the primary purchases using bond funds in partnerships with others include:

1. Holly Springs – 9-acre addition to Bass Lake Park
2. Morrisville – RTP tract, 18 acres (in Jordan Lake Watershed)
3. Cary – White Oak Church Road, 116 acres (in Jordan Lake Watershed)
4. Apex – Holleman tract (to be used in connection with American Tobacco Trail)

Implementation of the County open space program has been occurring for years, but began in earnest in 1999 with the acquisition of key parcels of land. After the completion of the 2003 County Consolidated Open Space Plan, the County began to implement elements of the Plan by first focusing its efforts on nine key corridors and watersheds. As of February 2014, the County has made progress in conservation of open space, adding an estimated 5,460 acres to its open space program. Two partnerships with the Town of Apex have protected approximately 106 acres and a Wake County easement deal has protected 3.5 acres at a cost of $1.3 million from Wake County and the Town of Apex (pers. comm. Christopher Snow, 2014).

Open space will continue to be acquired through various means. Some examples of acquisition methods include:

- Outright purchase by the County
- Negotiation of a conservation easement or other agreement between the County and property owners
- Land dedication requirements, such as the County's stream buffer rules
- Donation or bargain sale by property owners for federal and State tax incentives
- Cooperative arrangements with other governmental agencies

Fee-simple acquisition is the most common method for open space preservation.

B.3.2 Voluntary Agricultural Districts

The Wake Soil and Water Conservation District Board of Supervisors provide oversight to Wake County's Voluntary Agricultural District Program. The Voluntary Agriculture District Ordinance was adopted by the Board of Commissioners in 2002. This ordinance promotes additional open space preservation within the County. The purpose of this program is to:

- Increase the visibility of farm communities in the county.
- Focus more attention on the importance of these communities to the County.
- Work with the County to make it easier for people to stay in farming if they want.
- Advise the county on issues affecting agriculture.
- Give farm owners a greater voice in local government decisions that affect their communities.
- Reduce conflicts between farm and non-farm land uses.

The guidelines for this program are covered by State Statute (NCGS 106-735 through 106-743, *Farmland Preservation Enabling Act*). Since these statutes were enacted, 86 county programs have been created. Key components of the Wake County Voluntary Agricultural program are:

- A seven-member Agricultural Advisory Board, appointed by the County Board of Commissioners, manages the program. Members include five farm owners, one agribusiness representative, and one Soil and Water Conservation District Supervisor.
- The Advisory Board considers applications from landowners to form agricultural districts, conduct hearings on public projects (such as roads and schools) that might negatively affect agriculture in a district, and advise the county on other issues affecting local agriculture.
- Farmers wishing to participate in the program sign a simple application indicating that they plan to remain in farming for the next 10 years. They may withdraw from the program at any time**.**
- Signs are erected along the roads in agricultural districts identifying the areas as such.
- Participants in the program are exempt from paying assessments for water/sewer lines that extend past their property.
- All purchasers of land near agricultural districts are notified that they should expect dust, machinery noise, animal waste/chemical odors, and other similar elements associated with living in a farming area.

B.3.3 Farmland Protection and Wake County Agricultural Economic Development Program

The Wake Soil and Water Conservation District Board of Supervisors works cooperatively with landowners to encourage farmland preservation and protection. A voluntary farmland program was established in 1998 and includes efforts to offer estate planning to farmers, and protect farms through the purchase or donation of easements and tax relief. The program received limited funding, but was successful where funding was available.

In 2012, Wake Soil and Water Conservation District received its first donated easement for 47 acres for permanent farmland protection.

In 2013, the Wake County Board of Commissioners endorsed their new farmland preservation plan, the Wake County Agriculture Economic Development Plan (WCAEDP) to replace the 1998 plan (Wake County, 2013). The recommendations of the WCAEDP are:

- Integrate economic development with farmland protection
- Expand County voluntary land preservation programs through conservation partnerships

- Promote understanding and appreciation of agriculture to the non-farm public
- Enhance business development programs to incorporate agriculture and forestry interest
- Promote opportunities for profitability of Wake County family farms and agribusinesses

In addition, under N.C.G.S. § 105-277.4, the County provides the "Present Use Value" tax exemption to qualifying farm owners. Typically, as an area develops, property values rise and agricultural use of the land becomes economically unfeasible. The present use value tax exemption program helps address this issue.

B.3.4 Wake County Land Use Plan

The Wake County Land Use Plan, and its component area land use plans, contain the County's official policy on the form and pattern of future development within its jurisdiction. These plans are used to direct growth by guiding County staff and official boards in the development of new standards and ordinances and in the evaluation of development proposal and land use and transportation policies.

The County's Land Use Plan was updated in 2003 (Wake County, 2003), and has been more recently supplemented by several area land use plans. The Southwest Area Plan was adopted in 2007 and revised in 2010 to include an analysis of the Harris Lake Drainage Basin Land Use Study (Wake County, 2010a). An open space plan for the Harris Lake area is now included in the Land Use Plan. Specific land use planning goals established by the County relate to managing growth to prevent urban sprawl, protecting natural resources, and preventing environmental degradation. These goals accomplish the following:

- Guide quality growth throughout the County in conjunction with affected local governments.
- Encourage growth close to municipalities to take advantage of existing and planned infrastructure, such as transportation, water, and sewer facilities.
- Encourage the development of communities that provide adequate land for anticipated demands, in a pattern that allows a mixture of uses.
- Encourage maintenance of open space, scenic aspects of rural areas, entranceways to urban areas, and transition areas between urban areas.
- Encourage the conservation of environmentally significant areas and important natural and cultural resources.
- Allow owners of significant farmlands and forest lands the opportunity to maintain the productivity of their land.
- Ensure that the land use plan and transportation plan mutually support each other.
- Ensure that the County always protects the property rights of landowners.

- Maintain the quality and develop the capacity of surface water resources, using them for recreation sites, when appropriate.
- Prevent the contamination and maintain the capacity of groundwater resources.
- Ensure that local governments provide adequate, properly located land for recreational and leisure opportunities.

To achieve these goals, the County developed its Land Use Plan to direct growth to growth corridors. Lower-density development is planned in water supply watersheds to protect the drinking water supply and important habitat areas. For example, portions of the Jordan Lake watershed are under the County's jurisdiction; the urban service areas for local governments largely do not extend into these watersheds. The policies help protect the drinking water supply and habitat, and also reduce air quality impacts by concentrating the population in areas near employment and commercial centers.

Generally, the Land Use Plan is implemented in the rezoning process to ensure that an area is rezoned in keeping with the plan. UDO Article 3, Zoning, sets forth two criteria for approving text amendments or rezoning:

- Is it consistent with the Wake County Land Use Plan?
- Would it otherwise advance the public health, safety, and general welfare?

B.3.5 Zoning

Wake County's UDO, consolidates development regulations into a single document that allows the County to respond uniformly and consistently to development proposals, while promoting the health, safety, and general welfare of its residents. This uniform application of policies and regulations can occur because a UDO combines into one document ordinances for subdivision development, zoning, groundwater protection, sediment and erosion control, and stormwater management. The County implements the UDO in two modules, zoning and subdivision, to provide an in-depth review and approval of substantive regulatory changes to each segment.

B.4 Comprehensive Watershed Management Plan

In May 2001, the Wake County Board of Commissioners appointed a Watershed Management Task Force to recommend immediate strategies to protect its sensitive watershed areas to ensure clean drinking water for the future; reduce flooding and erosion; preserve wildlife habitats; and improve and expand swimming, hiking, fishing and other recreational opportunities for the community. That task force included developers, environmental groups, elected officials, and other stakeholders. The group met monthly for 18 months to study protection strategies and recommend a plan that could be implemented county wide to protect and preserve sensitive stream and watershed areas.

The Board of Commissioners accepted the Watershed Management Plan on January 21, 2003. Wake County Watershed Management Plan implementation actions are presented in Table B-3.

TABLE B-3
Wake County Watershed Management Plan Implementation Actions and Status

Area	Implementation Action	Status/Notes
Riparian Buffers	Increase stream buffers to 100 feet on perennial streams in water supply watersheds as a first step, then in other priority watersheds as part of the UDO rewrite.	These have been implemented.
Floodplain Protection	Prohibit development and filling in the 100-year floodplain.	This has been implemented.
Stormwater Runoff	Limit imperviousness or control overall stormwater runoff volume in priority and healthy watersheds. Review all existing development ordinances to remove impediments to reducing impervious surfaces.	Impervious surface limits exist in water supply watersheds.
	Encourage use of low-impact development site planning principles.	UDO includes a credit system to provide incentives for better site design.
	Use offset fees if development exceeds impervious surface limits.	
Conservation Subdivisions	Review regulations to allow conservation subdivisions. Where there is municipal water and sewer, a minimum of 30 percent of open space should be preserved to qualify as a conservation subdivision.	UDO (Section 6-23) grants a 20 percent density bonus to subdivisions that preserve 65 percent or more as open space.
Open Space Preservation	Pursue the methods to preserve open space outlined in the Consolidated Open Space Plan.	The County developed a Conservation Subdivision Ordinance that grants a 20% density bonus to subdivisions that preserve 65% or more as open space.
		Voters passed bond referendums in 2000, 2004, and 2007, totaling $91 million which has been used to purchase additional open space, with roughly $23 million remaining to spend.
Erosion and Sediment Control	Cross-train inspectors from other divisions to identify erosion problems.	Watershed Managers perform ride-alongs in other territories to identify problems and ensure consistency.
	Update the erosion and sediment control manual to incorporate new technologies.	The website has been enhanced with design details, individual lot control, and other information. A new manual is also currently under construction.
	Provide education programs for contractors and residents.	Information on silt fences and entrance way requirements has been developed.
Septic Systems	Improve the data monitoring system for septic systems; creating a database for trend analysis.	
	Inform homeowners of locations of well and septic systems, and provide compact discs (CDs) or videos regarding well and septic system maintenance to people buying houses with septic systems.	These have been implemented.
	Require certification for septic system installers.	The state passed this legislation in 2012 and contractors are now

TABLE B-3
Wake County Watershed Management Plan Implementation Actions and Status

Area	Implementation Action	Status/Notes
		registering as required.
	Conduct a pilot study to obtain better information on the causes of septic system failure and failure rates. If the study indicates that a management entity would be appropriate to assist homeowners on maintenance and operation practices for their septic systems, formulate recommendations relative to such a management entity.	This study was completed and published in 2005. The study recommended a management program that has not yet been implemented.
Stream Restoration	Actively pursue stream restoration, enhancement, and preservation for healthy, impacted, and degraded streams and wetlands through collaboration and partnerships.	Partnering with other groups has occurred to obtain CWMTF funds to purchase stream corridors. The Soil and Water Conservation department partnered with environmental engineering firms to install BMPs on land connected to stream restoration projects. Along with state funds, EPA-319 funds are used to protect streams. Through the Soil and Water Conservation District, stream restoration plans were funded for Lower Williams, Higgins and White Oak creeks to the Town of Cary totaling over $672,000 from USDA NRCS.
	Develop a high-level funding program to implement the watershed management plan.	
	Develop an in-stream monitoring program to continue to characterize the quality and quantity of the County's water resources.	The County has performed targeted in-stream monitoring, and maintains a Recreational Beach Water Quality Monitoring Program.
	Work with Environmental Education and Environmental Information Providers to develop effective programs and services for a variety of audiences on watershed science, data, and trends; pollution sources and their environmental, economic, and societal impacts; and BMPs and stewardship actions that protect and sustain surface water resources.	The County provided environmental education programs that address surface water and watershed issues through its Soil and Water Conservation Department.

B.5 Riparian Buffers and Floodplain Protection

This section describes the County's riparian buffer and floodplain protection programs, including its 2010 Hazard Mitigation Plan (Wake County, 2010b).

B.5.1 Riparian Buffers

Wake County's Riparian Buffer Protection Program meets or exceeds the Neuse River Nutrient Sensitive Waters (NSW) rules and Jordan Lake Rules, discussed in Section 6 of

this SCIMMP. These rules require that existing riparian buffer areas be protected and maintained on both sides of intermittent and perennial surface waters.

Article 11 of the UDO requires that all riparian surface waters in the County's jurisdiction have a 50-foot-wide buffer if the feature is present on either the most recent version of the USDA Soils Map or 7.5-minute quadrangle topographic map prepared by the USGS. Wider riparian buffers are required in water supply watersheds (WSWs) and Resource Conservation Overlay Districts, as described below.

The Swift Creek Watershed falls within portions of the planning area for Wake County, the towns of Apex, Cary, Gardner and Holly Springs, and the City of Raleigh. Swift Creek is identified as a water supply watershed (WSW). According to Article 11 of the UDO, the following buffer requirements apply in WSWs:

- 100 feet from the flood pool elevation of a water supply impoundment that are 25 or more acres (measured perpendicular to the shoreline)
- 50 feet from the normal pool elevation of a non-water supply impoundment with a drainage area of 25 acres or more
- 100 feet along perennial streams on the most recent edition of USGS topographic maps; inner 50 feet (Zone 1) is undisturbed vegetated; outer 50 feet (Zone 2) is stable vegetated
- 50 feet along non-perennial watercourse, channel, ditch, or similar physiographic feature with a drainage area of 25 acres or more
- 30 feet from the normal pool elevation of the water supply impoundment with a drainage area of at least 5 acres but less than 25 acres
- 30 feet along each side of a watercourse, channel, ditch, or similar physiographic feature with a drainage area of at least 5 acres but less than 25 acres
- Minimum building setback from all buffers of 20 feet, except the 100-foot perennial stream buffer, which has no required setback
- Inner 50 feet (Zone 1) of the 100-foot-wide required buffer along perennial streams either platted as part of a development lot and included within a conservation easement, or set aside as a reserved conservation parcel

Bass Lake is located within the Town of Holly Springs Planning Area and within the County's Resource Conservation Overlay districts. According to Article 11 of the UDO, the following buffers apply in a Resource Conservation Overlay district:

- 100 feet required around special water impoundment (special watershed: a watershed area in Wake County zoning jurisdiction that contains [a] special water impoundment[s] that provide[s] significant wildlife habitat, characteristics unique to Wake County, public recreation, or potential for future recreation)
- 50 feet along each side of a stream or impoundment draining 25 or more acres of land

- 25 feet along each side of a stream or impoundment that drains between 5 and 25 acres
- Vegetation within buffers that is undisturbed except for under specific uses (such as boat docks, greenways, drainage facilities, or utilities)
- Minimum building setback from buffer of 20 feet

B.5.2 Floodplain Development Regulations

The County's UDO Article 14 limits development in the floodplain. In recognition that flood hazard areas are subject to periodic inundation (flooding), which may result in the loss of life or damage to property as well as other adverse effects, these areas are subject to regulations designed to:

- Restrict or prohibit uses dangerous to public health, safety, and property when flooded.
- Require that uses vulnerable to floods be protected against flood damages at the time of initial construction.
- Preserve the flood-carrying capacity of floodplains.
- Control filling, grading, dredging and other obstructions that may increase flood damages.
- Prevent or regulate the construction of flood barriers that will divert floodwaters and/or increase flood hazards elsewhere.
- Protect individuals from purchasing lands that are unsuitable for their intended purposes because of flood hazards.
- In floodways and the floodway fringe, which are the two elements that compose the 100-year floodplain, ensure the following:
  - No new structures shall be constructed or placed in the 100-year floodplain, with few exceptions (such as water-dependent structures).
  - No fill shall be placed in the 100-year floodplain, with few exceptions (such as onsite cut and fill balance), and no-rise certification is required.
  - Encroachments in floodway shall be limited (including roads, bridges, culverts or water-dependent structures), must be flood-proofed, and cannot raise the base flood elevation above the elevation with floodway as established by the floodway data tables.

The County regulates additional areas outside the 100-year floodplain that still have potential for flooding. Special Flood Hazard Areas, identified on Flood Insurance Rate Maps (FIRMs), which are provided by the National Flood Insurance Program arm of FEMA, as well as Flood Hazard Soils Areas, which are identified on Wake County GIS, are regulated by the County. Encroachments (such as fill material, roads, and buildings) in these areas are discouraged and, when allowed, must meet rigorous design standards.

In addition the encroachment must be proven (usually through a flood study) to not adversely affect existing or proposed onsite structures or offsite properties.

In FEMA-identified Special Flood Hazard Areas, where a detailed flood study has already been performed, 100-year flood limits and elevations, as well as the floodway have been delineated; therefore, an additional flood study is not needed. Where FEMA has not performed a detailed flood study, the entire floodplain area is considered to be a floodway until a flood study is performed at the applicant's expense.

In new, detailed study areas and limited, detailed study areas (which are unnumbered "A" Zones), FEMA mapping will illustrate the 100-year floodplain under existing and future (buildout) conditions throughout Wake County. As a result, more than half of the river miles and associated floodplains in the Wake County jurisdiction will be mapped with future conditions (100-year floodplain noted). After completion of this process, a change to the UDO will occur that will restrict uses (including solid water disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities) in the future floodplain areas and require structures to be elevated above future floodplain elevations.

B.5.3 Hazard Mitigation Plan

The County's 2004 Hazard Mitigation Plan and its 2009 update were developed in an effort to be eligible to receive federal and State disaster relief funds if a natural disaster occurred. The plan includes hazard mitigation strategies, including for flooding-related natural disasters. An implementation schedule is also included and the County is working through the implementation activities (Wake County, 2010b). An update to the county's Hazard Mitigation Plan is currently under way which will result in the creation of a consolidated, multi-jurisdictional Hazard Mitigation Plan for the county and all twelve municipalities.

B.6 Water Supply Watershed Protection Regulations

A large portion of the County is within Water Supply Watersheds (WSWs), a majority of which is zoned as residential. The County has established limitations on impervious surface areas and densities within the WSWs primarily through zoning districts R-40w and R-80W for residential development, presented in Article 5 of the UDO. The County also has zoning overlay districts for the few areas in WSWs that are non-residential, presented in Articles 3 and 11 of the UDO. If there is a conflict between provisions within these two articles, then the most strict limitations apply. Special buffer requirements for Water Supply Watersheds are discussed in section B.5.

All residential development in the county is limited to 30 percent impervious surface coverage regardless of the watershed. Zoning districts R-80W and R-40W have impervious surface limitation include for non-residential development of 6 and 12 percent respectively, with allowance of up to 24 percent if the first 0.5 inch of rainfall is retained on site. Additionally, in these zoning districts, densities are limited to 0.5 units per acre for R-80W and 1.0 unit per acre for R-40W.

WSW Overlay District WS-III, which in the Swift Creek Watershed, has an impervious surface limitation of 12 percent are applied, but these impervious surface limits are not

applied to cluster and open-space subdivisions, if overall density does not exceed one lot per acre. WSW Overlay District WS-IV, which is in the Jordan Lake Watershed, impervious surface limitations of 24 percent are applied, but these impervious surface limits are not applied to cluster and open-space subdivisions if the development is served by curb-and-gutter residential lots of at least 20,000 square feet in area, and cluster subdivisions with an overall lot density of no more than 2 lots per acre. These policies ensures that low-impact development and conservation subdivisions, which help maintain the predevelopment hydrograph, are not discouraged.

B.7 Erosion and Sediment Control

Erosion and sediment control requirements are presented in Article 10 of the County's UDO. Erosion and sediment control plans must be submitted for activities that disturb more than 1 acre. The Erosion and Sediment Control Program has eliminated a substantial amount of sediment transport to local streams.

Wake County has six objectives for the Erosion and Sediment Control Program:

- Identify critical areas that are subject to severe erosion and ensure they receive special attention.
- Limit time of exposure to shortest feasible time.
- Limit exposed area – plan and conduct activities to minimize the size of the area to be exposed at any one time.
- Control surface water originating upgrade of exposed areas to reduce erosion and sediment loss during the exposure period.
- Control sedimentation to prevent offsite damage from sedimentation.
- Manage stormwater runoff -control the velocity at the point of discharge to minimize erosion of the site and increased sedimentation of the stream.

Wake County's sediment and erosion control practices support an overall stream protection plan by limiting in-stream suspended sediment and sediment deposition. Erosion and sediment control strategies are discussed at pre-construction conferences through the permit and plan approval processes. These processes also allow for the review of stormwater controls. A pre-construction conference provides the County with an opportunity to educate developers about the requirements for effective erosion and sediment control.

The County requires the use of the proven latest technology related to erosion and sediment control practices in sediment and erosion control plans. The sediment and erosion control plans usually will include a sediment basin, which is sized according to the drainage area. Silt fences and construction entrances are required on all sites, even those that fall under the 1-acre threshold for requiring an erosion and sediment control plan.

As part of its erosion and sediment control program, the County does not allow land-disturbing activity near a lake or natural watercourse within the 50-foot-wide undisturbed buffer. In addition, all sediment and erosion control measures must be within the limits of disturbance, remaining outside the undisturbed buffer.

The possibilities for phased construction are reviewed in the sediment and erosion control plan submittal process on a site-specific basis. Site conditions, topography, soils, and type of construction determine the size of the phases. Wake County requires land-disturbing activities to be planned and conducted to limit exposure consistent with the most up to date NCDENR stabilization timeframes. Soils are stabilized as rapidly as possible by establishing a grass cover or mulching and tacking.

The County requires the identification of especially vulnerable areas in the development plan, and these areas receive special attention in the permit, plan approval, and inspection processes. Those projects deemed high risk for sediment and erosion control concerns, such as projects with steep slopes or water courses, receive more frequent inspections. Steep slope areas are discussed in a pre-construction conference and avoided to the maximum extent possible. The County allows steep slopes to be used as conservation areas or to meet buffer requirements.

The County also encourages contractor education and training related to erosion and sediment control. The purpose of this educational program is to ensure that contractors understand the erosion and sediment control requirements and work to minimize the potential for sedimentation.

B.8 Stormwater Programs and Impervious Surface Limitations

Wake County is unique in that it has its own volume control SW ordinance and is subject to three state nutrient management strategies in addition to the Swift Creek Land Management Plan.

Wake County administers its own stormwater ordinance for unincorporated areas of Wake County in addition to a different urban stormwater ordinance for three municipalities in eastern Wake County. For the unincorporated areas, Wake County uses a volume-control stormwater ordinance with Target Curve Number (TCN) runoff volume limits for residential development. Both residential and commercial developments adhere to *The Neuse Rules* stormwater requirements for peak flow, nutrient management, and riparian buffer rules. Wake County also adopted the Neuse regulations countywide (including within the Cape Fear Basin). In 2012, Article 9, Part 2 of their UDO was amended to incorporate, by reference, the State mandated stormwater rules for new development for the Falls Lake and Jordan Lake Nutrient Management Strategies.

The County has developed stormwater management programs that address the adverse effects of stormwater runoff associated with new development as well as limit nutrient enrichment in the Jordan Lake and the Neuse River Nutrient Sensitive Waters (NSW) rules.

The County created a Stormwater Management Section within its Environmental Services Department, whose goal is to minimize the impacts of stormwater runoff. The department staff is charged with upholding the local, state, and federal regulations related to stormwater, including:

- Floodplain management
- Sediment and erosion control
- WSW protection
- Neuse River Basin NSW stormwater rules
- National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Regulations

Stormwater management permits are also required. The County requires the use of the Wake County Stormwater Hybrid Design Tool for all stormwater management submittals. Its purpose is to streamline the many different stormwater requirements and facilitate a more timely review and approval of stormwater management plans.

Complete stormwater requirements can be found in the 2014 Wake County Stormwater Manual: Submittal and Design Guidance. The purpose of this document is to provide guidance for the management of stormwater runoff resulting from development in the County's jurisdiction. It provides support to Article 9 of the UDO and applicable State regulations, which establish minimum requirements to address impacts of stormwater runoff associated with new development and expansions.

The County requires that the pre-development peak runoff rate be maintained. If the difference between pre- and post- runoff exceeds 10 percent for the 1-year, 24-hour storm then the developer must mitigate peak flow within the drainage area. Nitrogen export must not exceed of 3.6 pounds per acre per year (lbs/acre/year) in the Neuse River. The County additionally requires that residential post-development curve number not exceed target curve numbers. Article 9, Part 2 of the UDO requires volume management for target curve number matching.

The County has established a stormwater credit system that provides incentives for better site design and the locating of new development in areas that cause less impact to aquatic resources. Approved methods to receive credit include: disconnected impervious surfaces, reforestation, and cluster and open space subdivisions. These stormwater practices reduce generation of stormwater, reduce size and cost of stormwater storage, and provide partial removal of pollutants.

The County has impervious surface limitations in its WSWs. The impervious surface limitations range from 6 to 30 percent for residential areas, and up to 30 percent for non-residential areas. Under NPDES Phase II rules, development that exceeds 24 percent is required to implement stormwater best management practices (BMPs). Stormwater permits are required for non-residential projects that cumulatively disturb more than 0.5 acre.

Wake County is required to implement the Neuse River and Jordan Lake NSW stormwater rules, as previously described, and stormwater program submittals are required for developments to ensure compliance with the rules. These rules supersede the Neuse Rules within the Jordan Lake watershed portion of the Cape Fear River Basin.

Nitrogen and phosphorus limits have been set, with a nitrogen export limit of 2.2 pounds per acre per year (lbs/acre/year) in the Neuse River (Falls Lake) area and 2.2 and 4.4 lbs/acre/year for the Upper and Lower New Hope Creek watersheds respectively of the Jordan Lake watershed. Phosphorus exports limits are 0.33 lb/acre/year in the Neuse River watershed and 0.82 and 0.78 lb/acre/year in the Upper and Lower New Hope Creek watersheds.

Stormwater Management Task Force

In 2004, the County established a stormwater management task force as part of an inter-local agreement to evaluate, develop, and possibly implement a county-wide collaborative stormwater management program.

The Wake County Collective Stormwater Management Evaluation was completed in August 2005 and focused on defining the need for a new, more coordinated approach to county-wide stormwater management. It included a facilitated focus group composed of staff-level representatives from the County and each of the 12 municipalities. Individual needs assessments were performed for each jurisdiction for existing and future stormwater management programs. The assessments identified the existing levels of service provided in the three major stormwater program areas: operations and maintenance, program management, and capital improvements. The evaluation focused on water quality protection and flood prevention through stormwater management and compliance with regulatory mandates, and identified how these programs should respond to future growth. Deficiencies identified in the current levels of service include:

- Lack of adequate staffing and program funding exists to enforce current policies.
- Operation and maintenance of drainage systems is mostly reactive.
- Planning for stormwater impacts resulting from future growth has yet to be considered in many cases.
- Unfunded federal mandates, such as NPDES Phase II stormwater regulations, will further strain local organizational resources used to manage stormwater.
- Rapid and inevitable growth should be considered when projecting future expenditures for stormwater management because the same service must be provided over a larger and more developed area.

The Wake County Collective Stormwater Management Evaluation report recommended the creation of a representative residents' Task Force. The County and 12 municipalities appointed a 20-member Task Force, which met from February 2006 through August 2007 and was charged with the following activities:

- Review and assess current and future required stormwater levels of service.
- Identify citizen expectations for stormwater levels of service.
- Develop recommendations for a county-wide collaborative stormwater program.
- Develop program funding recommendations, where appropriate.
- Develop an implementation plan.

The Task Force gauged public support for improvements in stormwater management and determined whether a collaborative approach and/or program was a logical and cost-effective way to provide these improvements. The final report was produced in November 2007 and contains an implementation plan that clearly defines nine recommendations. Using the plan developed by the Task Force, the County and the participating municipalities, if desired, will implement the selected collaborative stormwater management programs.

The following implementation activities have occurred to date:

- Developed a model municipal stormwater ordinance adopted by Wendell, Rolesville, and Zebulon and administered Wake County under an inter-local agreements with those municipalities
- Identified and inspected construction sites where erosion is most likely ongoing
- Met with potential partners to establish interlocal agreements for a common stormwater ordinance
- Developed extensive stormwater education programming targeting residents, businesses, and government partners

B.9 Wastewater System and Well Programs

To help ensure water quality in rural areas, the County administers programs for septic systems, discharging and non-discharging wastewater systems permitted by North Carolina Division of Water Resources (NCDWR), and private (individual) and semi-public (community) wells. The County conducts evaluations, inspects, and issues permits for septic systems. The County also conducts periodic operation and maintenance inspections on wastewater systems using more complex technologies. Additionally, the County provides a technical resource to residents on wastewater disposal technologies. Finally, the County enforces a local mobile home park ordinance and investigates all sanitation complaints related to mobile home parks. The County's regulations are more stringent than those of the State.

The County recognized that many homeowners do not understand proper maintenance procedures for septic systems, and have even had calls from homeowners who did not understand that they were served by a septic system. Thus, the County teamed with the Raleigh Regional Realtors Association to develop an educational program. The County developed educational materials and CDs that realtors provide to buyers purchasing homes on septic systems. The County currently has a project to scan existing septic system permits. The permits will be available to the public through the County's iMaps application.

The County also issues well permits, performs site inspections on wells, and collects water samples for analysis as required by the State since 2008. The County investigates complaints related to private water supplies (individual wells) and works cooperatively with the State Public Water Supply Section to mediate problems with community well supplies. The County also regulates irrigation wells and open loop geothermal wells where well water is used.

The County completed a comprehensive groundwater investigation to assess the quality and quantity of groundwater in the county (CDM, 2003). This study assessed future conditions and recommended development of a monitoring well network as well as groundwater management strategies. In July 2003, the Groundwater Study Advisory Committee completed its recommendations, which include the following:

- Lead planning and development of an Environmental Monitoring Program involving local, State, and federal governments, departments, and agencies.
- Implement a long-term monitoring well network, including monitoring wells and stream gauging stations, throughout the County.
- Implement a community-based process to develop principles and policies for groundwater resource sustainability.
- Conduct a study to assess the water quality and quantity impacts to both surface and groundwater from development activities.
- Develop and implement a public education program to provide basic information about groundwater, wells, and the risk and responsibilities of well ownership.
- Conduct additional investigation of radionuclides in groundwater throughout the County.
- Sample and analyze groundwater for constituents likely to be associated with agricultural practices (such as pesticides and herbicides) in the County.
- Sample and analyze groundwater for constituents likely to be associated with industrial or land disposal practices (such as underground fuel storage, wood treating operations, and landfills) in the County.
- Collect data on new wells that contain constituents that threaten public health or do not yield sufficient water.
- Work with environmental education and environmental information providers to develop effective programs and services for a variety of County audiences on groundwater science, data, and trends; pollution sources and their environmental, economic, and societal impacts; and BMPs and stewardship actions that protect and sustain groundwater resources.

A comprehensive groundwater study has not occurred since 2003, but the County has made targeted efforts (2008 ordinance) to address lost capacity in wells during drought conditions.

B.10 Air Quality Protection

B.10.1 Wake County Efforts

In September 2012, the County released an updated draft of the Wake County Transit Plan, which is pending action from the Wake County Board of Commissioners. The Plan was developed in cooperation with several partners, including Capital Area Metropolitan Planning Organization (CAMPO), Triangle Transit, the Regional

Transportation Alliance, and the City of Raleigh's Capital Area Transit. The Plan provides a dual approach to meeting expanding transit demands as the County continues to grow: (1) a core transit plan that broadens local and commuter bus service and includes a rush-hour commuter rail service from the Town of Garner to the City of Durham; and (2) an enhanced transit plan that involves building a regional light rail service from downtown Cary through downtown Raleigh, up to Millbrook Road (Wake County, 2012). Many of the projects identified in the Wake County Draft Transit Plan are included in the CAMPO 2040 Metropolitan Transportation Plan (MTP), discussed in the following section.

The Environmental Impact Statement (EIS) prepared for the regional light rail project indicates that affiliated parking areas will not impact levels of carbon monoxide. The document also indicates that the light rail system will result in lower levels of vehicle pollutant emissions (USDOT, 2002).

In 2009, the County appointed a sustainability task force to address conservation and reduction goals related to solid waste, water, and energy related to air quality within the region. The 2011 sustainability task force report identified several strategies and performance measures for each of those goals related to air quality (Wake County, 2011).

Open space, trees, and vegetation are integral to the improvement of air quality. Voters in Wake County passed bond referendums in 2000, 2004, and 2007, totaling $91 million to provide funds for parks and open space. The County continues to use these funds to purchase and preserve significant tracts of open space.

B.10.2 Regional Efforts

Triangle Transit, formerly Triangle Transit Authority, is expanding bus and shuttle services that link the Cities of Chapel Hill, Durham, and Raleigh with RTP and RDU. Triangle Transit is working to develop plans to expand the system to include rail transit operations. Triangle Transit and also coordinates a ride-sharing program for regional commuters and is exploring the possibility of running some of its van-pool vehicles on compressed natural gas.

CAMPO and the Durham –Chapel Hill-Carrboro MPO coordinated with the Triangle J Council of Governments (TJCOG) to develop a 2040 MTP, which involved an air quality conformity analysis for 2012 to 2018. The 2040 MTP incorporates the recommendations of the 2035 Long Range Transit Plan released by CAMPO, including proposed bus service expansion and enhancement as well as a light rail system, linking the Cities of Raleigh and Durham with RTP and the Towns of Cary and Morrisville. The project explored and analyzed regional growth scenarios for associated trade-offs and impacts on the transportation network. The recommendations in these plans for appropriate sizing of roads are incorporated into North Carolina Department of Transportation's (NCDOT's) Transportation Improvement Program (TJCOG, 2013).

In 2006/2007, Triangle Transit brought together the Triangle organizations that were working on and/or funding Transportation Demand Management (TDM) projects with the goal of creating a long-term plan for improving TDM efforts. The result was the Triangle Region 7-Year Long Range Travel Demand Management Plan. The purpose of the Triangle TDM Program is to reduce regional growth in vehicle miles traveled (VMT)

by 25 percent between 2007 and 2015 through a moderate package of TDM strategies that encourage alternative modes of transportation. TJCOG is now coordinating the marketing and evaluation of this effort through a grant program and promoting commute alternatives, such as mass transit, carpooling, biking, teleworking, and vanpooling (TJCOG, 2014).

In 1999, the Greater Raleigh Chamber of Commerce organized the Regional Transportation Alliance, a group of government and business leaders, to consider ways to address the region's traffic problems. Today the RTA counts as members more than 100 businesses, along with two metropolitan planning organizations (MPOs) for transportation, Triangle Transit, and RDU. The group serves as a regional business voice for transportation initiatives and continues to focus on advancing multimodal solutions needed to sustain prosperity and enhance quality of life (RTA, 2013). The Triangle Clean Cities Coalition was also founded in 1999, and brings together fleet managers, local and state government officials, fuel and vehicle providers, and interested citizen groups, to reduce dependence on petroleum by promoting alternative transportation fuels (TCCC, 2010).

NCDOT is also in the process of planning for a southeast high-speed rail service that will connect Washington, D.C., to Charlotte, NC. The project will be developed incrementally based on available funding, upgrading existing rail rights-of-way. NCDOT has used federal stimulus funding to add commuter routes between the cities of Charlotte and Raleigh (Southeast High Speed Rail, 2012). Improved alternative transportation options have the potential to improve air quality by reducing traffic congestion.

The southern section of NC 540, referred to as the Triangle Expressway is the State's first modern toll road, beginning at I-40 in Durham County and currently ending at NC 55 in the Town of Holly Springs. A key proposed project is the "Complete 540" project, which will extend the Triangle expressway to the U.S. 64/U.S. 264 Bypass in the Town of Knightdale, completing the NC 540 Outer Loop around the greater Raleigh area, linking the Towns of Apex, Cary, Clayton, Garner, Fuquay Varina, Holly Springs, and the City of Raleigh. NCDOT is currently in the process of performing a detailed study of alternatives for the extension, to be followed by an EIS (NCDOT, 2013).

B.11 Historic Preservation

The County has a Historic Preservation Commission, which has jurisdiction in several towns including the Towns of Apex, Cary, Holly Springs, and Morrisville and the unincorporated areas of the County. The Wake County Historic Preservation Commission is staffed by Capital Area Preservation (CAP), a non-profit organization that focuses on the security of historic resources.

The goals of the Wake County Historic Preservation Commission are to:

- Safeguard the heritage of the County by preserving districts and landmarks that embody important elements of its culture, history, architectural history, or prehistory.

- Promote the use and conservation of such districts and landmarks for the education, pleasure, and enrichment of the residents of the County and State.
- Promote preservation concepts in the County and participation in municipal planning programs.

The Commission's primary responsibilities are to:

- Initiate and recommend properties for designation as historic landmarks.
- Review Certificates of Appropriateness.
- Keep the historic architecture survey up-to-date and maintain the historic resources database.
- Initiate National Register listing and comment on National Register nominations.
- Develop a historic preservation plan and ensure that historic resources are recognized in County and municipal plans.
- Provide information to the public about the County's preservation program and historic resources.

B.12 References

CDM. 2003. *Wake County Comprehensive Groundwater Investigation Final Report.* Prepared for Wake County, North Carolina. June.

CH2M HILL. 2006. *Wake County Consolidated Open Space Plan.* Revised September 2006. http://www.wakegov.com/parks/openspace/pages/plan.aspx

CH2M HILL. 2002. Wake County Watershed Assessment – Biological, Habitat, and Geomorphologic Evaluations, Technical Memorandum No. 6. Raleigh, North Carolina.

North Carolina Department of Transportation (NCDOT). 2013. Complete 540 Southeast Extension. http://www.ncdot.gov/projects/complete540/. Accessed January 2014.

Regional Transportation Alliance (RTA). 2013. http://www.letsgetmoving.org/about/. Accessed January 2014.

Snow, Christopher. 2014. Director of Wake County Parks, Recreation & Open Space. February 7th, 2014.

Southeast High Speed Rail (SEHSR). 2012. SEHSR Corridor from Washington, D.C. to Charlotte, NC. Project History. http://www.sehsr.org/history.html. Accessed January, 2014.

Triangle J Council of Governments (TJCOGG). 2014. Triangle Transportation Demand Management Program Description. http://www.tjcog.org/triangle-transportation-demand-management-program.aspx . Accessed January 31, 2014.

TJCOG. 2013. Research Triangle Region Conformity Determination Report. 2040 Metropolitan Transportation Plan. 2012-2018 Transportation Improvement Program. May 8, 2013.

Triangle Clean Cities Coalition (TCCC). 2010. http://www.trianglecleancities.org/general-information.aspx. Accessed January 2014.

United States Census Bureau. 2010. Census 2010 Population Finder. http://www.census.gov/2010census/. Accessed January 2014.

United States Department of Transportation (USDOT), Federal Transit Administration, and Triangle Transit Authority. 2002. Phase I Regional Rail System, Durham and Wake Counties, North Carolina, Final Environmental Impact Statement and Section 4(F) Evaluation.

Wake County. 2013. Wake county Agriculture Economic Development Plan. Endorsed by the Wake County Board of Commissioners August 5, 2013.

Wake County. September 2012. Wake County Draft Transit Plan. http://www.wakegov.com/planning/transport/Pages/transitplan.aspx. Accessed January, 2014.

Wake County Sustainability Quality Task Force. 2011. Environmental Stewardship Agenda. August

Wake County. 2010a. 2010 Updated Southwest Wake Area Land Use Plan Classifications Map. http://www.wakegov.com/planning/growth/Documents/SouthwestALUP_DSize.pdf .

Wake County. 2010b. 2010 Wake County Hazard Mitigation Plan. Adopted June 7, 2010.

Wake County. 2008. Growth Issues Task Force Issues. http://www.wakegov.com/planning/growth/Documents/WakeGrowthIssuesSorted3.pdf.

Wake County. 2003. Wake County Land Use Plan. Prepared by the Wake County Planning Department. http://www.wakegov.com/planning/growth/pages/lup.aspx.

Wake County. 2007. Southwest Wake Area Land Use Plan. http://www.wakegov.com/planning/growth/Documents/SWALUPFinalWithCoverPage.pdf.

2. Southwest Land Use Area Plan

- Excerpt, Maps, Land Class Description

Area Land Use Plans

Area land use plans augment the Wake County Land Use Classifications Map. Reflecting more defined, smaller geographic planning regions, the area land use plans revise and expand upon adopted joint municipal plans, the land use aspects of the water-supply watershed protection plan, and create new plans where no joint plans have been adopted with municipalities or in non-urban areas. Area plans' USA boundaries are re-evaluated to determine where municipal sewer and water utilities will be extended. The new delineations revise Short-Range and Long-Range USA boundaries.

Area plans have a long-term timeframe [20-25 years] and incorporate the following objectives:

- Emphasize the development of communities;
- Encourage development in and around municipalities;
- Maintain resources including natural areas, historic sites, major wildlife corridors, potential parks and greenways; and
- Coordinate with transportation plans.

These area plans also address open space, scenic and transitional areas along highways and recreation and leisure resources.

Main Uses of the Plan

A plan filled in with greenways, parks, residential densities, and other future uses, can help the Wake County Commissioners (and municipalities that grow into the area) do at least the following three things.

1. **Decide on Landowners' Development Application Petitions**
   The plan does not rezone land, but is a source of advice to the Commissioners when they have to decide on a landowner's rezoning petition. Other sources of advice include neighbors' comments at the public hearing and other information each Commissioner considers relevant.

2. **Decide Timing, Direction and Scale of Growth**
   The plan's goals guide growth into the municipal Short-Range Urban Service Areas. Multi-use activity centers are the preferred locations for more dense and intense land uses.

3. **Plan Services and Infrastructure**
   Because the plan, in a very general way, projects land use it may help in the long-term planning of services, community buildings, and other infrastructure

Southwest Wake Area Land Use Plan (SWALUP)

The Phase One of the Wake County Land Use Plan, adopted in 1997, included a vision, goals, strategies, and a map. The map showed ultimate urban service boundaries for each municipality in Wake County. Urban services area designation applies to lands within the Wake County Planning jurisdiction that are expected to become part of a municipality in the future. These areas are located outside a city's or a town's corporate and extraterritorial jurisdiction. The previous Wake County Land Use Plan map did not show activity centers, future greenways, parks, residential densities, and other future uses.

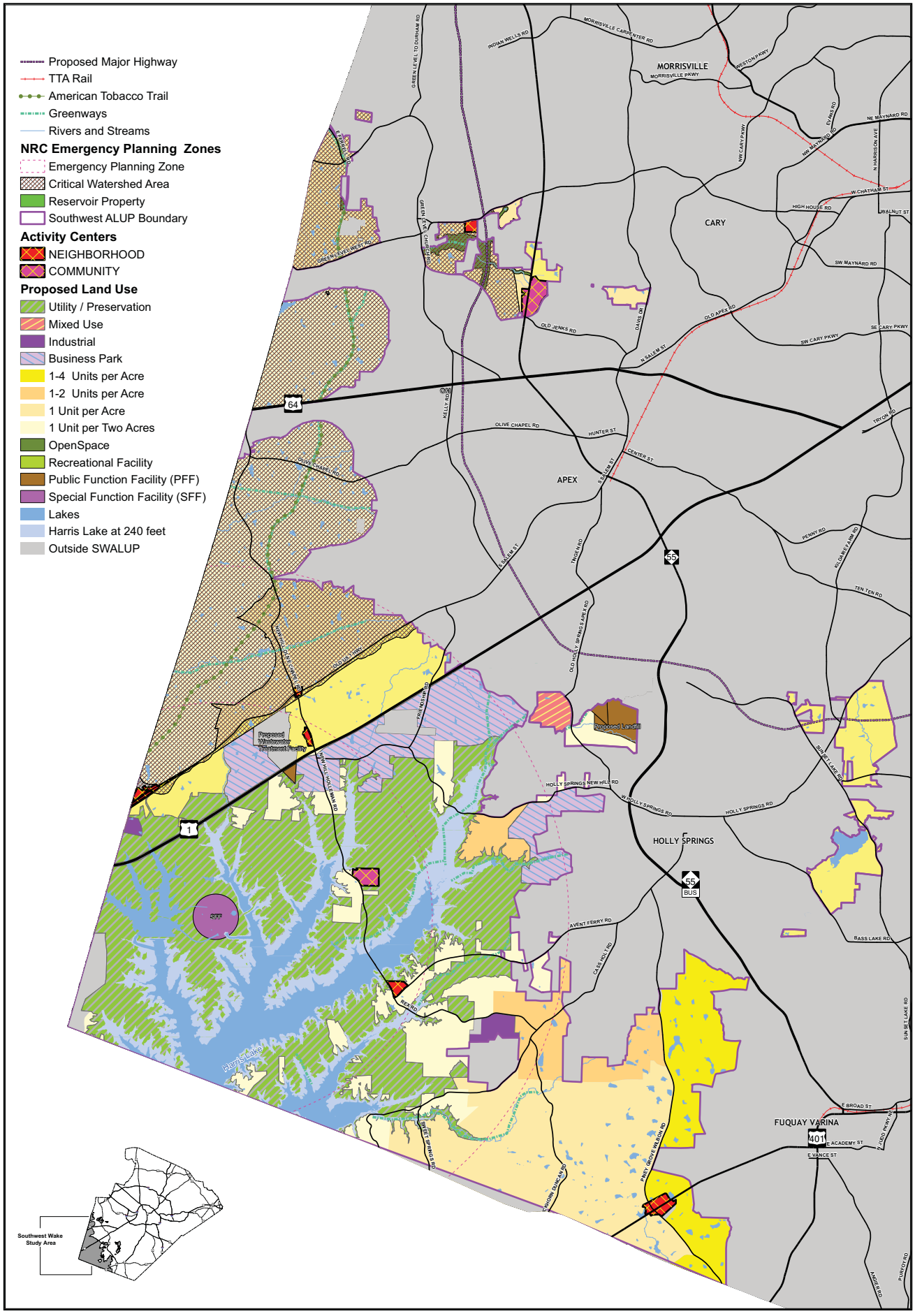
On May 19, 1999 the County Commissioners adopted **the Southwest Wake County Area Land Use Plan** that included activity centers, greenways, parks, residential densities and other future uses, generally missing from the Phase One Plan. The 1999 Wake County Southwest Area Land Use Plan encouraged growth close to the municipalities to take advantage of existing and planned infrastructure, such as transportation, water and sewer facilities. Also, the Plan encouraged higher densities and a wider range of land uses where existing and planned short-range community facilities and infrastructure could support them.

SWALUP Land Use Classifications

The following table describes the Land Use Classifications that are applicable to both the Urban Services Areas and Non-Urban Areas in the Southwest Wake County Area Land Use Plan (see Proposed Southwest ALUP Update Map). The description and policies associated with these Land Use Classifications applied to Urban Services Areas represent the County's vision for how areas so classified will be developed in conjunction with the provision of urban facilities and services that make urban uses and intensities possible.

Land Use Classification	Description
Critical Watershed Area	Land in a water supply watershed that is adjacent and draining to the water source, where it is most important to filter out potential pollutants.
Neighborhood Activity Center	Land uses include shopping, services, recreation, and small-scale office and institutional uses needed to meet the day-to-day needs of the neighborhood. Examples are grocery or convenience store, pharmacy, video rental, dry cleaning or laundry, restaurant, service station, medical or dental practice, insurance agency, law firm, small neighborhood business office, school, daycare, church, park, and civic club.
Community Activity Center	Land uses include those uses permitted in neighborhood activity centers, plus uses that provide goods and services needed less frequently than on a daily basis. Examples are commercial, civic or office and institutional, and medium and low density residential.
Residential Area Densities	***Water Supply Watershed Critical Area (Jordan Lake)***: Residential use – cluster and other subdivisions - **up to 0.5 dwelling units per acre**. The current recommended density for the water supply watershed critical area, which is shown on the Southwest Wake Area Land Use Plan Map (see pocket fold-out map), is proposed to be changed from a density of 1.75 dwelling units per acre to a recommended density of 0.5 dwelling units per acre. ***Water Supply Watershed Non-Critical Area***: The recommended density for this area is **up to 1 dwelling unit per acre**. ***Non-Water Supply Watershed Area (Harris Lake-Cape Fear Watersheds)***: The recommended density for this area is **up to 0.5 dwelling units per acre**. ***Non-Water Supply Watershed Area***: The recommended density for this area is **up to 1.5 dwelling units per acre**.
Main Stream or Lake Buffer	Main stream or lake buffers provide strips of natural vegetation that remove pollutants from stormwater runoff before they reach a water supply source or a watercourse that drains to a water supply source.
Forestry / Light Industry (FLI)	Land uses include mostly forestry or possibly the making of electricity (non-nuclear) where at least 75% of site stays in its natural state. Includes lake / stream buffers.

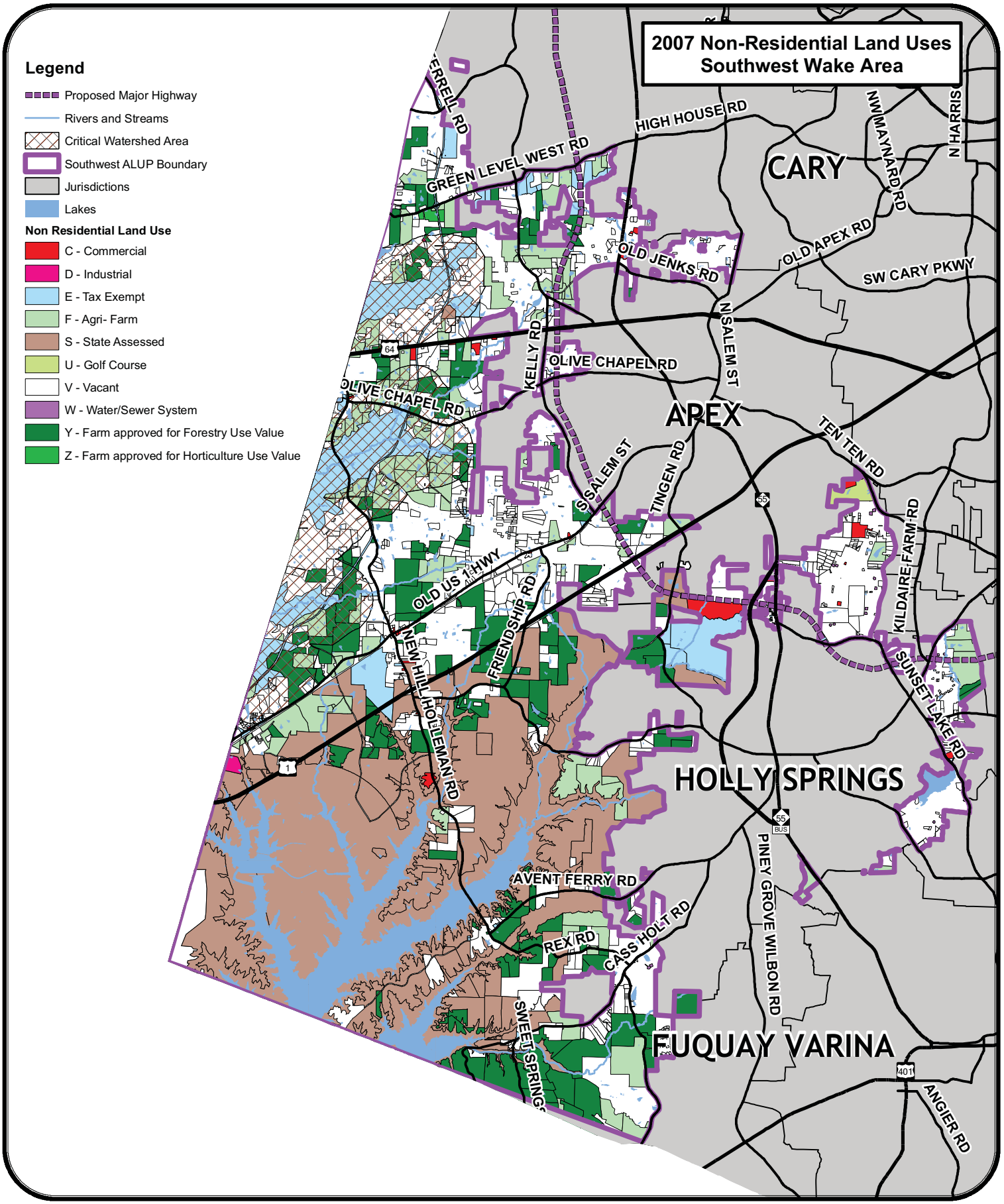
Office / Research Park (ORP)	Land uses include mostly offices, labs, research facilities, maintenance facilities, and lake / stream buffers.
Industrial	Land uses include manufacturing, warehousing, freight handling, wholesaling, research and development activities with office support services.
Office & Institutional (O&I)	Land uses include institutional, office, and limited commercial activities that are less intensive than other commercial districts.
Open Space	Areas of publicly or privately owned natural area that is protected for natural and cultural resources.
Recreational Facility	A facility or site that consists of land dedicated for public recreational use.
Public Function Facility (PFF): • **Existing Feltonville Sanitary Solid Waste Facility** • **Proposed South Wake Sanitary Solid Waste Facility** • **Proposed Western Regional Wastewater Treatment Facility**	A facility or site which functions to serve public, including existing or proposed sanitary landfills, regional wastewater treatment facility, and fire and emergency management stations. ▪ The Feltonville Sanitary Solid Waste Landfill, is located on the north side of the terminus of Old Smithfield Road (west of NC 55 Bypass). ▪ The proposed South Wake Sanitary Solid Waste Landfill, is to be located on the south side of the terminus of Old Smithfield Road (west of NC 55 Bypass). Planned to begin operations in 2008. ▪ The proposed Western Regional Water Reclamation Facility, is to be located southwest of the New Hill Community between US Hwy 1 and Old US Hwy 1. Planned to begin operations in 2011.
Special Function Facility (SFF)	A facility or site designated for a special function that could make typical urban development costly or hazardous to public health and safety. Surrounding land uses should be developed with an awareness of the special function and any particular needs, such as emergency evacuation, that may arise from it.



Southwest Wake ALUP Update
Adopted July 9, 2007
(Amended 4/5/10, LUPA 03-09)

0 1 2 Miles

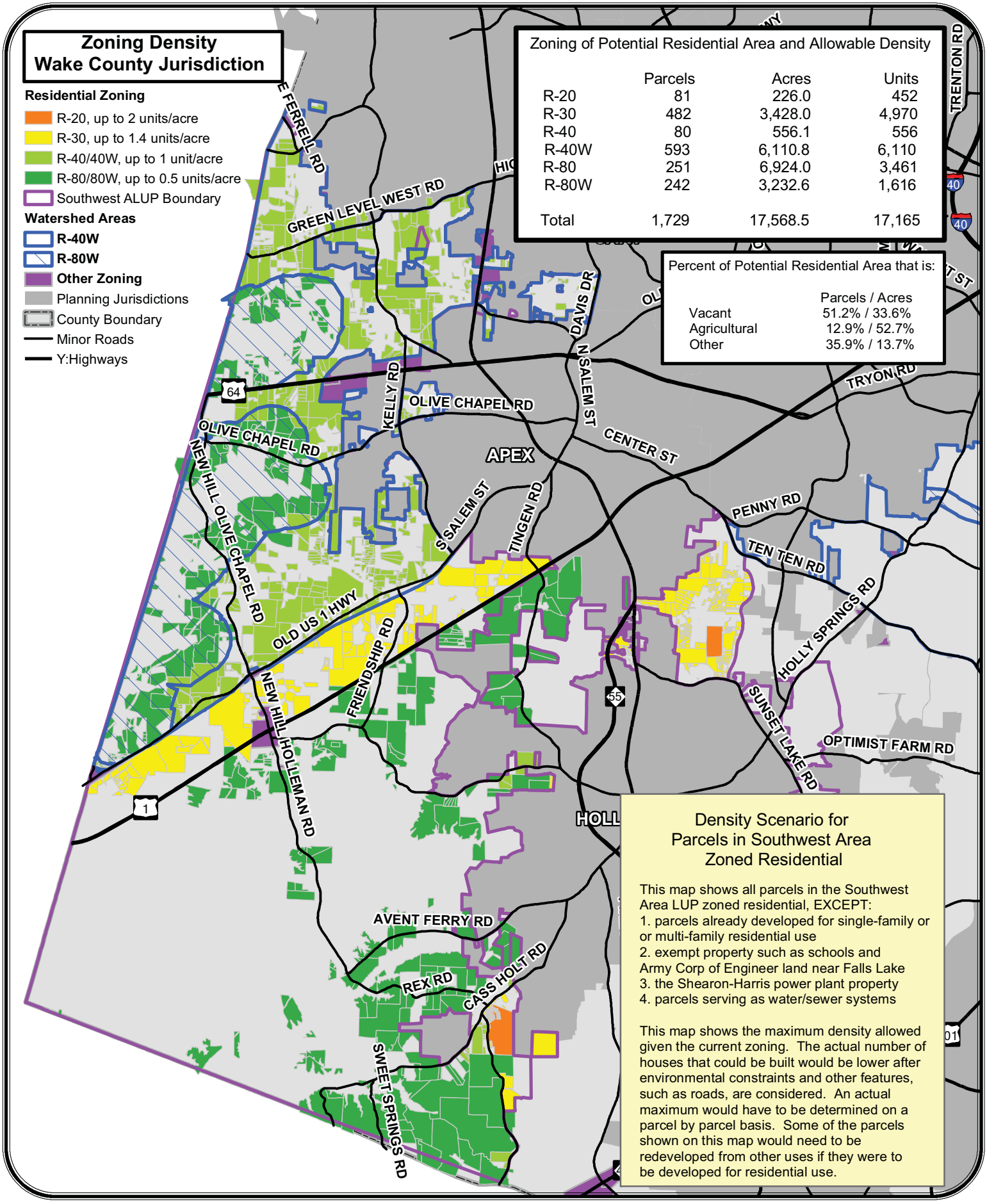
This Map: S:\GIS\LandUse\SouthWest\LUPA_09\SouthwestALUP_D-Size.mxd
Created by Wake County
Wake County Planning Department
Mar 23, 2011



Southwest Wake ALUP Update

0 1 2 Miles

This Map: S:\GIS\LandUse\SouthWest\Document_Maps\SWALUP_Current.mxd
Created by Wake County
Wake County Planning Department
Printed at 03:21:06 PM on May 11, 2007



Southwest Wake ALUP Update

0 1 2 Miles

This Map: S:\GIS\LandUse\SouthWest\Document_Maps\zoningdensityforswalup2.mxd
Created by Wake County
Wake County Planning Department
Printed at 04:44:51 PM on May 05, 2007

PLANNING JURISDICTION	
AP	APEX
AN	ANGIER
CA	CARY
CL	CLAYTON
DU	DURHAM
FD	FIRE DISTRICT
FV	FUQUAY VARINA
GA	GARNER
HS	HOLLY SPRINGS
KN	KNIGHTDALE
MO	MORRISVILLE
RA	RALEIGH
RD	RDU AIRPORT
RO	ROLESVILLE
WC	WAKE COUNTY
WE	WENDELL
WF	WAKE FOREST
ZB	ZEBULON
TOWNSHIPS	
01	RALEIGH
02	BARTON'S CREEK
03	BUCKHORN
04	CARY
05	CEDAR FORK
06	HOLLY SPRINGS
07	HOUSE CREEK
08	LEESVILLE
09	LITTLE RIVER
10	MARK'S CREEK
11	MEREDITH
12	MIDDLE CREEK
13	NEUSE
14	NEW LIGHT
15	PANTHER BRANCH
16	ST MARY'S
17	ST MATTHEW'S
18	SWIFT CREEK
19	WAKE FOREST
20	WHITE OAK
FIRE DISTRICTS	
1	BAYLEAF
2	DURHAM HIGHWAY
3	STONEY HILL
4	ROLESVILLE
5	CARY
6	RALEIGH
7	WAKE-NEW HOPE
8	SIX FORKS
9	WAKE FOREST
10	ZEBULON
11	MORRISVILLE
12	SWIFT CREEK
13	KNIGHTDALE
14	FAIRVIEW
15	FALLS
16	FUQUAY VARINA
17	HOLLY SPRINGS
18	WENDELL
19	FAIRGROUNDS
20	HOPKINS
21	APEX
22	GARNER
23	FIRE TAX DISTRICT
ZONING	
WWW.WAKEGOV.COM/COUNTY/ PLANNING/ZONING/DISTRICTS	
SPECIAL DISTRICTS	
AMD	APEX MUNICIPAL
BKR	ANGIER BLACKRVR
FMD	FUQUAY MUNICIPAL
HMD	HILLSBOROUGH STREET
RMD	RALEIGH MUNICIPAL
RML	RALEIGH MUNICIPAL I
RMS	RALEIGH MUNICIPAL II
RTP	RESEARCH TRIANGLE
WMD	WAKE FOREST
BILLING CLASS	
1	CORPORATIONS
2	INDIVIDUALS
3	EXEMPT
4	PUBLIC SERVICE
5	LIFE ESTATE
6	HOA

LAND CLASS	
A	AC-W/IMP
B	AC> 10-HS
C	COMMERCIAL
D	INDUSTRIAL
E	EXEMPT
F	AGRI-FARM
G	APARTMENT
H	HISTORIC
I	HOA
J	CEMETERY
K	RET HOME
L	LEASED
M	MFG HOME
N	CONDO
O	MA+CONDO
P	PART EXEMPT
R	R<10-HS
S	ST ASSESS
T	MOBILE HOME PK
U	GOLF COURSE
V	VACANT
W	WATER/SEWER
Y	FOR-FARM
Z	HOR-FARM
U	GOLF COURSE
UTILITIES	
A	ALL
E	ELECTRIC
G	GAS
W	WATER
S	SEWER
TOPOPGRAPHY	
	Code no longer used
STORY HEIGHT	
A	ONE STORY
B	1 ½ STORY
C	TWO STORY
D	2 ½ STORY
E	THREE STORY
F	3 ½ STORY
G	FOUR STORY
H	MULTI STORY
I	1 ¾ STORY
J	1.4 STORY
K	1.63 STORY
L	1.88 STORY
M	2.4 STORY
N	2.63 STORY
R	2.75 STORY
DESIGN STYLE	
A	CONVENTIONAL
B	DUPLEX
C	TOWNHOUSE
D	CONDO
E	CONVERSION
F	COLONIAL
G	RANCH
H	CAPE
I	SPLIT LEVEL
J	SPLIT FOYER
K	CONTEMPORARY
L	LOG
M	MANUF SNGL
N	MANUF MULTI
O	MODULAR
FD OR BASEMENT	
A	FULL BASEMENT
B	% BASEMENT
C	PIER FOUNDATION
D	NO BASEMENT
EXTERIOR WALL	
A	FRAME
B	BRICK
C	C-BLOCK
D	BRICK & FRAME
E	BRICK & C-BLOCK
F	C-BLOCK & FRAME
V	C-BLOCK & METAL
G	STUCCO
H	STUCCO MASONARY
I	STONE
J	STONE & FRAME
K	STONE & BRICK
L	SGL FR SIDING
M	REINF CONCRETE

EXTERIOR WALL CONTINUED	
N	ENAMELED STEEL
O	METAL
R	BRICK & METAL
P	INSULATED PANEL
S	PRECAST CONCRETE
T	SOLAR GLASS
U	GLASS ALUMINUM
W	SIMULATED BRICK
X	SIMULATED STONE
Y	FACTORY SASH
Z	ALUM VINYL SIDING
Q	LOG
COMMON WALLS	
	Code no longer used
ROOF TYPE	
	Code no longer used
ROOF FLOOR	
A	WOOD JOIST
B	TIMBER
C	EXPOSED STEEL
D	FIREPROOF STEEL
E	REINF CONCRETE
F	CELLULAR STEEL
FLOOR FINISH	
G	CARPET
D	MIXED
A	HARDWOOD
C	PINE
J	CEMENT/CONCRETE
H	GLAZED TILE
P	ASPHALT TILE
I	PART TERRAZZO
B	EARTH FLOOR
K	BRICK FLOOR
Q	VINYL FLOOR
O	VARIOUS MTLS
E	SINGLE
R	RUBBER COVERING
INTERIOR FINISH	
	Code no longer used
INTERIOR FINISH 1 & 2	
A	% FINISHED
B	% SEMI-FINISHED
C	FULLY FINISHED
S	FULLY SEMI-FINISHED
MEZZANINE	
D	% FLOOR ONLY
E	% FINISHED
F	% SEMI-FINISHED
UNFINISHED INTERIOR	
G	% UNFINISHED
H	% SEMI-FINISHED
I	FULLY UNFINISHED
T	FULLY SEMI-FINISHED
ATTIC FINISH	
J	FULLY FINISHED
K	% FINISHED
L	FULLY SEMIFINISHED
M	% SEMI-FINISHED
BASEMENT FINISH	
N	FULLY FINISHED
O	% FINISHED
P	% REC ROOM
Q	FULLY SEMI-FINISHED
R	% SEMI-FINISHED
HEATING	
A	FORCED AIR
K	HEAT PUMP
C	STEAM
D	ELECTRIC
E	NO AUTOM-BURNER
F	% FORCED AIR
G	UNIT HEATERS
H	CENTRAL SYST-UNITS
I	LIMITED/PARTIAL
J	NO HEATING
B	HOT WATER
L	SOLAR
GRADE FACTOR	
AA	HIGHEST
A	HIGH
B	ABOVE AVERAGE
C	AVERAGE
D	BELOW AVERAGE
E	LOW

AIR	
A	SEPARATE
B	COMBINED
C	UNIT AIR COND
D	% SEP
E	% COMB
F	% UNIT
G	LIMITED/PARTIAL
H	NO AIR COND
I	% CLIMATE CONTROL
BATH	
A	ONE BATH
B	1 ½ BATH
C	TWO BATH
D	½ BATH
E	THREE BATH
F	3 ½ BATH
G	LIMITED PLBG
H	NO PLUMBING
I	ADEQUATE
J	NO OF FIXTURES
BUILT INS	
1	ONE FIREPLACE
2	2 OR MORE FIREPL
3	RANGE DISHWASHER
4	RNGE /DISHWR/ DISPOS
5	OVEN
6	RANGE
7	DISHWASHER
8	DISPOSAL
OTHER BUILT-INS	
14	SPRINKLER SYS
15	PASS ELEVATOR
16	FREIGHT ELEV
18	ESCALATOR
CITY	
ANG	ANGIER
APE	APEX
CAR	CARY
FUQ	FUQUAY VARINA
GAR	GARNER
HOL	HOLLY SPRINGS
KNI	KNIGHTDALE
MOR	MORRISVILLE
OUT	OUTSIDE CITY LIMIT
RAL	RALEIGH
ROL	ROLESVILLE
WEN	WENDELL
WAK	WAKE FOREST
ZEB	ZEBULON
TYPE & USE	
RESIDENTIAL	
1	ONE FAMILY
2	TWO FAMILY
3	THREE FAMILY
4	FOUR FAMILY
5	MULTI-FAMILY
6	RES. W/BUSI USE
APARTMENTS	
7	GARDEN
8	TOWNHOUSE
9	ELEVATOR
10	ROOMING HOUSE
BANKS	
11	BANK BUILDING
12	DRIVE-IN ONLY
BOWLING ALLEY	
	BOWLING ALLEY
SPECIALTY BLDGS	
16	DAY CARE
17	CLUB HOUSE
18	BATH HOUSE
GARAGE BLDGS	
19	SALES & SERVICE
20	SERVICE GARAGE
21	PARKING DECK
22	OIL & LUBE
23	CAR WASH
24	WAND CAR WASH
GASOLINE STATIONS	
25	SERVICE STATION
27	OTHER/BOOTH
HOTELS/MOTELS	
28	HOTEL/MOTEL-FULL
29	HOTEL/MOTEL-LTD
30	MOTEL EXT STAY
31	HOTEL HIGH-RISE

TYPE & USE CONTINUED	
32	HOTEL/MOTEL-IND
OFFICE BLDGS	
34	TYPICAL OFFICE
35	OFC/RTL/RES CONV
36	MEDICAL TYPE
37	OFFICE/APARTMENT
38	OFFICE BLDG-H.R.
RESTAURANTS	
39	RESTAURANT
40	FAST FOOD
41	PLAIN DRIVE
42	STORE TYPE BLDG
43	BAR/CLUB
44	CAFETERIA
RETAIL TYPE BLDGS	
46	FOOD MART
47	SINGLE TENANT
48	MULTI TENANT
49	SUPERMARKET
50	DISCOUNT STORE
51	DEPARTMENT STORE
52	BULK RETAIL
53	MALL
54	COMMUNITY CTR
55	NHBD CENTER
56	JUNIOR ANCHOR
57	STORES W/APTS
58	STORES W/OFCS
59	STORES W/ OFC & APT
60	JUNIOR DEPT STORE
OTHER FINISHED BLDGS	
62	AIRPORT TERMINAL
63	VET CLINIC
64	CLINIC
65	CLUB
66	CHURCH
67	DORMITORY
68	FIRE STATION
69	GYMNASIUM
70	HOSPITAL
71	LIBRARY
72	MOBILE HOME
73	MUNICIPAL BLDG
74	NURSING HOME
75	FUNERAL HOME
76	RETIREMENT HOME
77	SCHOOL
78	THEATER
INDUSTRIAL TYPE BLDGS	
79	LIGHT MANUF
80	MANUFACTURING
81	PHARM PLANT
82	PREFAB WHSE
83	WAREHOUSE
84	BULK/DIST WHSE
85	FLEX WAREHOUSE
86	MINI WAREHOUSE
87	BOTTLING PLANT
88	CHEMICAL PLANT
89	BIOLOGICAL PLANT
90	R & D
91	HANGAR
92	POWER HOUSE
94	TELEPHONE FIX
95	TRUCK TERMINAL
96	LABORATORY
98	LAUNDRY
99	SPECIAL WRITE-INS
100	STUDENT APTS
101	LUXURY APTS
102	MUSEUM
103	CAR SALES
104	FRATERNITY
105	SORORITY
106	POST OFFICE
107	ARMORY
108	GROUP HOME
109	RESTROOM BUILDING
110	GUARD HOUSE
111	PRISON/JAIL
113	SPORTS ARENA
114	ROOMING HSE CONV
210	PARKING DECK (PUB)
340	TYPICAL OFFICE (NET)
360	MEDICAL OFFICE (GROSS)

QUALIFYING SALE FLAGS	
A	QUALIFIED SINGLE PROPERTY SALE
C	QUALIFIED MULTI PROPERTY SALE
DISQUALIFIYING SALE FLAGS	
D	THE INSTRUMENT RECORDED IS NOT A WARRANTY DEED (SUCH AS A DEED OF TRUST, RELEASE DEED, QUIT-CLAIM DEED, SHERIFF'S DEED, ETC.).
E	THE TRANSACTION IS BETWEEN PARTIES OF THE SAME FAMILY NAME, RELATIVES, OR WHERE CONSIDERATION STATES "FOR LOVE AND AFFECTION."
F	THE DEED CONVEYS AN UNSPECIFIED, UNDIVIDED, OR FRACTIONAL INTEREST IN PROPERTY.
G	THE DEED RESERVES UNTO THE GRANTOR A LIFE ESTATE, OR SOME OTHER INTEREST.
H	THE DEED RESERVES UNTO THE GRANTOR THE POSSESSION OF, OR LEASE OF, THE PROPERTY FOR A SPECIFIED PERIOD FOLLOWING THE SALE.
I	ONE OR BOTH OF THE PARTIES INVOLVED IN THE TRANSACTION IS GOVERNMENTAL, A PUBLIC UTILITY, OR A LENDING INSTITUTION.
J	THE DEED CONVEYS A CEMETERY LOT OR OTHER TAX EXEMPT PROPERTY.
K	ONE OR BOTH OF THE PARTIES INVOLVED IN THE TRANSACTION IS A CHURCH, SCHOOL, LODGE, OR SOME OTHER BENEVOLENT, EDUCATIONAL OR FRATERNAL ORGANIZATION.
L	THE TRANSACTION IS BETWEEN KNOWN AFFILIATED COMPANIES OR CORPORATIONS, SUCH AS A PARENT COMPANY AND A SUBSIDIARY, OR BETWEEN THE COMPANY AND ITS OFFICERS, PRINCIPLES, ETC.
N	THE TRANSACTION IS FOR MINERALS, TIMBER, ETC., OR THE RIGHTS TO MINE OR CUT SAME.
O	THE TRANSACTION INCLUDES THE CONVEYANCE OF PERSONAL PROPERTY, AND THE VALUE OF SUCH NOT SPECIFIED, SEPARATE FROM THE REAL PROPERTY VALUE IN THE DEED.
P	THE TRANSACTION IS THE RESULT OF A FORCED SALE.
R	THE TRANSACTION INVOLVES THE TRADE OR EXCHANGE OF REAL PROPERTY, OR A LOAN ASSUMPTION.
S	SALES FOR WHICH THE IMPROVEMENTS SOLD ARE NOT INCLUDED IN THE TAX ASSESSMENT OR THE ASSESSMENT INCLUDED IMPROVEMENTS BUILT AFTER THE SALE.
T	OTHER
U	A REVOCABLE TRUST (IN WHICH THE GRANTOR RESERVES THE RIGHT TO REVOKE THE TRUST AT ANY TIME) OR AN IRREVOCABLE TRUST (IN WHICH THE TRUST MAY NOT BE REVOKED AFTER ITS CREATION) – BOTH ARE ENCUMBERED.
V	LAND SPLIT OCCURRING AFTER SALE.

3. CAMPO 2040 Metropolitan Transportation Plan

- Executive Summary

1. Executive Summary

Transportation investments link people to the places where they work, learn, shop and play, and provide critical connections between businesses and their labor markets, suppliers and customers.

This document contains the 2040 Metropolitan Transportation Plans (MTPs) for the two organizations charged with transportation decision-making in the Research Triangle Region: the Capital Area Metropolitan Planning Organization (CAMPO) and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). These organizations, and the areas for which they are responsible, are commonly called "MPOs."

The Metropolitan Transportation Plans are the guiding documents for future investments in roads, transit services, bicycle and pedestrian facilities and related transportation activities and services to match the growth expected in the Research Triangle Region.

The areas covered by this plan are part of a larger economic region. Transportation investments should consider the mobility needs of this larger region and links to the other large metro regions of North Carolina and throughout the Southeast. The Triangle Region is expected to accommodate a phenomenal amount of future growth; we need to plan for the region we will become, not just the region we are today.

Estimated 2010 and Forecast 2040 Population and Jobs	2010		2040		2010 to 2040 Growth	
	Population	Jobs	Population	Jobs	Population	Jobs
Capital Area MPO	1,060,000	530,000	1,990,000	840,000	930,000	310,000
Durham-Chapel Hill-Carrboro MPO	400,000	260,000	630,000	430,000	230,000	170,000
Areas outside MPO boundaries	160,000	60,000	310,000	100,000	150,000	40,000
Total for area covered by the region's transportation model	1,620,000	850,000	2,930,000	1,370,000	1,310,000	520,000

The Triangle has historically been one of the nation's most sprawling regions and current forecasts project both continued outward growth and infill development in selected locations, most notably in the central parts of Raleigh, Durham and Chapel Hill and at community-defined activity centers like the planned mixed use center within the Research Triangle Park. A key challenge for our transportation plans is to match our vision for how our communities should grow with the transportation investments to support this growth.

No region has been able to "build its way" out of congestion; an important challenge for our transportation plans is to provide travel choices that allow people to avoid congestion where we can not prevent it.

Our population is changing. The population is aging, more households will be composed of single-person and two-person households without children, the number of households without cars is increasing, and more people are interested in living in more compact neighborhoods with a mix of activities. Our plans must provide mobility choices for our changing needs.

Our MPOs are tied together by very strong travel patterns between them; our largest commute pattern and heaviest travel volumes occur at the intersection of the MPO boundaries. Our MPO plans should recognize the mobility needs of residents and businesses that transcend our MPO borders.

The region has a common vision of what it wants its transportation system to be:

a seamless integration of transportation services that offer a range of travel choices to support economic development and are compatible with the character and development of our communities, sensitive to the environment, improve quality of life and are safe and accessible for all.

Each MPO has adopted goals and objectives to accomplish this vision that reflect the unique characteristics and aspirations of the communities within the MPOs. The *2040 Transportation Plan* commits our region to transportation services and patterns of development that contribute to a more sustainable place where people can successfully pursue their daily activities.

To analyze our transportation investment choices we have, the MPOs followed a painstaking process involving significant public engagement. It began with an understanding of how our communities' plans envision guiding future growth. Community plans anticipate that five regional activity centers in Raleigh, Durham, Cary, Chapel Hill and the Research Triangle Park are expected to contain large concentrations of employment and/or intense mixes of homes, workplaces, shops, medical centers, higher education institutions, visitor destinations and entertainment venues. Linking these activity centers to one another, and connecting them with communities throughout the region by a variety of travel modes can afford expanded opportunities for people to have choices about where they live, work, learn and play.

Next, planners used sophisticated software to forecast the types, locations and amounts of future population and job growth based on market conditions and trends, factors that influence development and local plans.

Based on the forecasts, we looked at mobility trends and needs, and where our transportation system may become deficient in meeting these needs.

Working with a variety of partners and based on public input, we developed different transportation system alternatives and analyzed their performance, comparing the performance of system alternatives against one another and to performance targets derived from our goals and objectives.

The result of this analysis and extensive public engagement was a set of planned investments, along with recommended land use development to match the investments and additional studies to ensure that the investments are carefully designed and effectively implemented. The core of the plan is the set of transportation investments described in Section 7, including:

- New and expanded roads;
- Local and regional transit facilities and services, including bus and rail;
- Aviation and long-distance rail services;
- Bicycle and pedestrian facilities, both independent projects and in concert with road projects;
- Transportation Demand Management: marketing and outreach efforts that increase the use of alternatives to driving alone;
- Intelligent Transportation Services: the use of advanced technology to make transit and road investments more effective; and
- Transportation Systems Management: road projects that improve safety and traffic flow without adding new capacity.

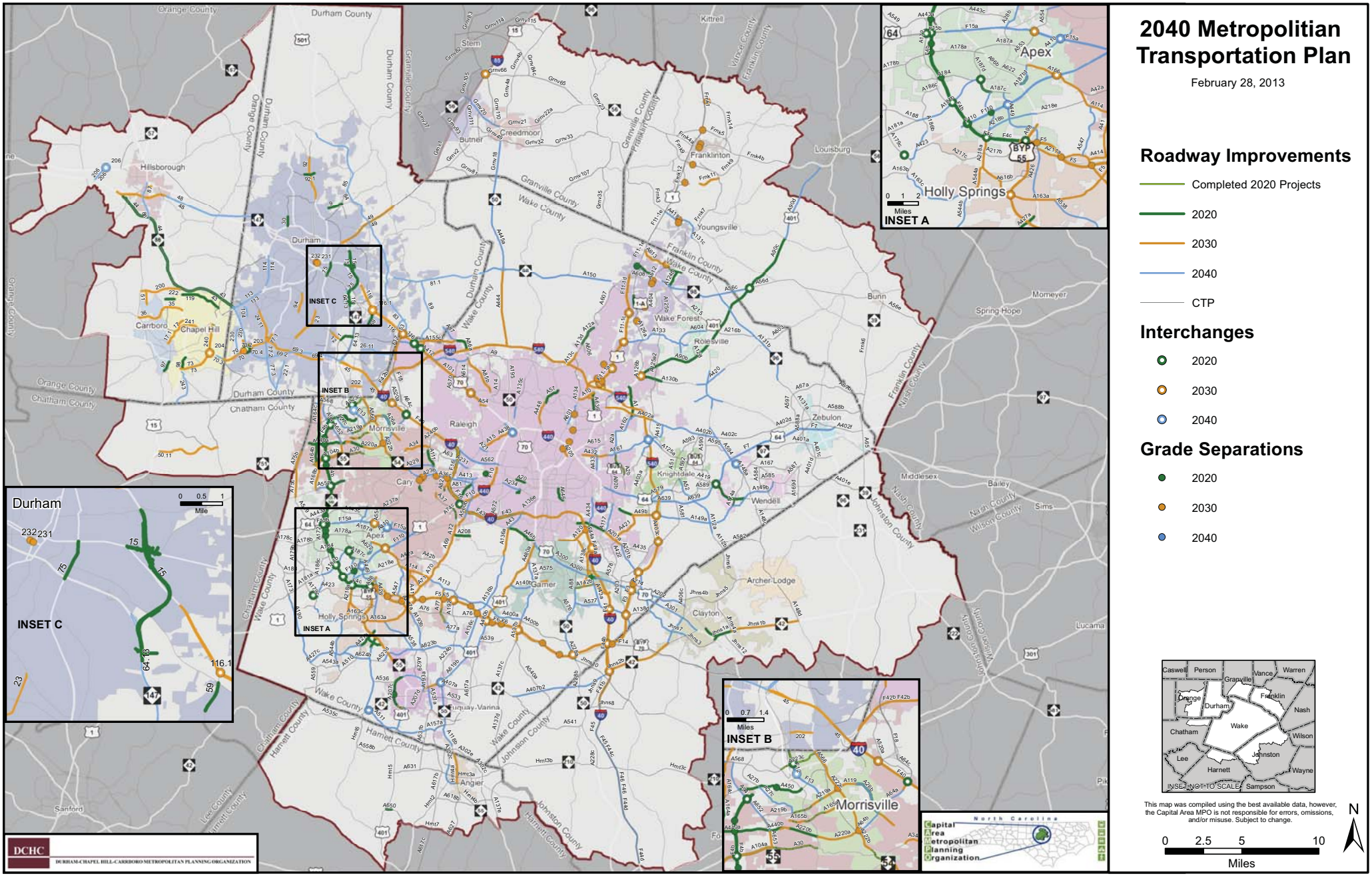
In addition to these investments, the plan includes a focus on three issues where the ties between development and our transportation investments are most critical: transit station area development, major roadway access management and "complete streets" whose designs are sensitive to the neighborhoods of which they are a part. The two MPOs will work with their member communities, the state and regional organizations on these three issues to match land use decisions with transportation investments.

The maps on the following pages show roadway and transit investments that are planned; Section 7 of the Plan provides greater detail. The plan anticipates that the region will match its historic focus on roads with a sustained commitment to high-quality transit service as well, emphasizing three critical components:

- Greatly expanded local and regional bus service to provide service in and between communities throughout the region;
- Rail transit service to link our regional centers to one another and to walkable, mixed-use neighborhoods along heavily-travelled corridors; and
- Frequent, high quality transit circulator service to extend the reach of regional bus and rail services within key centers.

Although the plan includes a new emphasis on transit investment, it envisions significant additional roadway investment as well; major road projects are shown below and all projects are listed in Appendix 1.

Durham Chapel Hill-Carrboro MPO		
2011-20	**2021-30**	**2031-40**
Triangle Expressway extension of the Durham Freeway (I-40 to NC 540)	Managed lanes added to I-40 from Wade Avenue (Wake County) to NC 147 (Durham Freeway)	Managed lanes added to I-40 from NC 147 (Durham Freeway) to US 15-501 (Durham County)
East End Connector completed linking US 70 to NC 147 (Durham Freeway)	I-85 widening (I-40 to Lawrence Rd)	I-85 widening (Lawrence Rd to Durham County)
I-40 widening (US 15-501 to I-85)	I-85 widening (US 70 to Red Mill Road)	US 15-501 freeway conversion (I-40 to US 15-501 bypass)
	US 70 freeway conversion (Lynn Road to Wake County line)	Northern Durham Parkway (Aviation Pkwy to US 501)
Capital Area MPO		
2011-20	**2021-30**	**2031-40**
I-40 widened from Wade Ave. to Lake Wheeler Road	I-40 widened from I-440 to NC 42 in Johnston County	NC 50 widened from I-540 to Dove Road
I-40 widening through Cary	US 1 upgrade to freeway from I-540 to NC 98	Managed lanes added to I-540 (Northern Wake Expressway) from I-40 to US 64 bypass
US 401 widened from I-540 to Louisburg with a Rolesville bypass	NC 540 completed as a toll road from Holly Springs to US 64 bypass	US 401 widened from Garner to Fuquay-Varina
NC 540 completed as a toll road from Apex to Holly Springs	I-440 widened from Wade Avenue to Crossroads	Managed lanes added to I-40 from MPO boundary in Johnston County to Cornwallis Road
Brier Creek & TW Alexander Drive Interchanges on US 70	NC 54 widened through Cary and Morrisville	US 1 widening south from US 64 to NC 540
NC 42 widening from US 70 to Rocky Branch Road	I-40 Managed lanes added from Durham County line to Cornwallis Rd.	



2040 Metropolitian Transportation Plan

February 28, 2013

Roadway Improvements

- Completed 2020 Projects
- 2020
- 2030
- 2040
- CTP

Interchanges

- 2020
- 2030
- 2040

Grade Separations

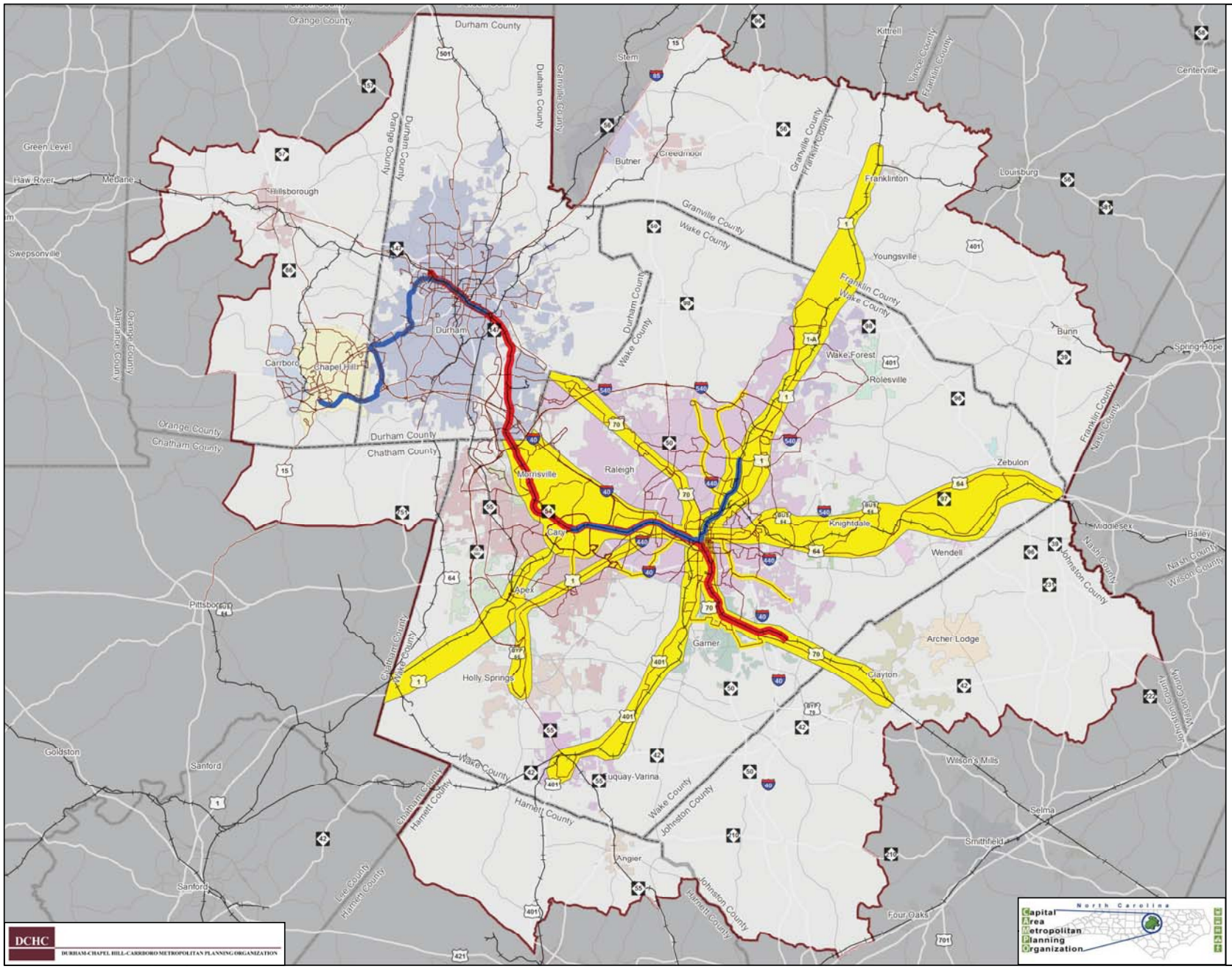
- 2020
- 2030
- 2040

This map was compiled using the best available data, however, the Capital Area MPO is not responsible for errors, omissions, and/or misuse. Subject to change.

0 2.5 5 10

Miles

N



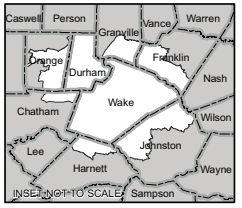
2040 Metropolitan Transportation Plan

February 20, 2013

Preliminary Preferred Alternative

- Light Rail
- Commuter Rail
- Premium Transit Study Corridors
- NC RailRoads
- Triangle Region Bus Routes

*Routes are subject to change based on further study for service optimization.



This map was compiled using the best available data, however, the Capital Area MPO is not responsible for errors, omissions, and/or misuse. Subject to change.

N

0 2.5 5 10

Miles

4. UDO

- Open Space
- Density Bonuses
- Stormwater
- Erosion & Sediment Control
- Buffers
- Tree Protection
- Flood Hazard
- Zoning Overlay District

Article 5. Lot and Building Standards

Part 1 Residential Districts

5-10 General

Residential development must comply with the conventional development standards of Sec. 5-11 or the cluster or open space development standards of 5-12.

5-11 Conventional Development

5-11-1 Residential Watershed Districts

The following standards apply in the residential watershed districts unless otherwise expressly stated. Special standards apply, for example, to approved cluster or open space developments, attached houses and lot line houses. See Part 3 of this article [p. 5-11] for rules governing measurement of and exceptions to these standards.

	R-80W	R-40W
Maximum Density (units/acre)	0.50	1.00
Minimum Lot Area per Dwelling Unit [1](square feet)	80,000	40,000
Minimum Lot Width (feet)	150	110
Minimum Lot Frontage (feet)	30	30
Minimum Required Setbacks (feet)		
Front and Corner	40	30
Side	20	15
Rear	30	30
Maximum Impervious Coverage (% of lot)		
Residential Development [1] [2] [3]	30	30
Nonresidential Development [1] [2] [3]	6	12 [4]
Maximum Building Height (feet)	35	35

[1] In some cases, more restrictive standards may apply to lots within the Swift Creek, Little River and Smith Creek Water Supply Watersheds. See Article 11.Part 3.
[2] Lots created after 7/01/2001 are subject to Wake County stormwater management regulations.
[3] Nitrogen export check required and is limited to 3.6 lbs./ac./yr. without best management practices or payments made to the N.C. Ecosystem Enhancement Program. Does not apply to nonresidential development in R-80W and R-40W districts.
[4] Limit may be increased to 24% provided that first ½" of rainfall runoff is retained.

[Amended on 6/4/2012 by OA 02-12.]

5-11-2 Non-Watershed Residential Districts

The following standards apply in the non-watershed residential watershed districts unless otherwise expressly stated. Special standards apply, for example, to approved cluster or open space developments, attached houses and lot line houses. See Part 3 of this article [p. 5-11] for rules governing measurement of and exceptions to these standards.

	R-80	R-40	R-30	R-20	R-15	R-10	R-5	HD	RHC
Minimum Lot Area per Dwelling Unit [1] (square feet)	80,000	40,000	30,000	20,000	15,000	10,000	5,000	30,000	30,000
Minimum Lot Width (feet)	150	110	95	75	65	55	55	95	95
Minimum Lot Frontage (feet)	30	30	30	30	30	30	30	30	30
Minimum Required Setbacks (feet)									
Front and Corner	40	30	30	30	20	20	20	30	30
Side	20	15	10	10	10	10	10	10	10

	R-80	R-40	R-30	R-20	R-15	R-10	R-5	HD	RHC
Rear	30	30	30	30	30	30	30	30	30
Maximum Impervious Coverage (% of lot)									
Residential Development [1] [2] [3]	30	30	30	30	30	30	30	30	30
Nonresidential Development [1] [2] [3] [5]	30	30	30	30	30	30	30	30	30
Maximum Building Height (feet)	35	35	35	35	35	35	[4]	35	35
Minimum Building Separation (feet)	NA	NA	NA	NA	NA	NA	20	NA	NA

[1] In some cases, more restrictive standards may apply to lots within the Swift Creek, Little River and Smith Creek Water Supply Watersheds. See Article 11.Part 3.
[2] Lots created after 7/01/2001 are subject to Wake County stormwater management regulations.
[3] Nitrogen export check required and is limited to 3.6 lbs./ac./yr. without best management practices or payments made to the N.C. Ecosystem Enhancement Program. Does not apply to nonresidential development in R-80W and R-40W districts.
[4] Maximum height in R-5 = 35 feet or 1 foot of building height for each 3 feet that the building is set back from front, side and rear property lines, whichever allows the greater height.
[5] Nonresidential Development in HD may exceed 30 percent maximum impervious. See 3-23-5(A)(2).

Commentary: At the time of subdivision plat review, Wake County's Department of Environmental Services will review subdivisions for compliance with impervious surface coverage limitation. This review will be based on the total impervious surface coverage of the subdivision as a whole, as opposed to the impervious cover on individual lots. Stormwater management devices will be required if the subdivision as a whole exceeds 15% impervious cover.

[Amended on 1/22/2008 by OA 04-07.]

5-12 Cluster and Open Space Development

5-12-1 Purpose

The regulations of this section are intended to encourage subdivision design that is more efficient and provides greater protection of open space and natural resources than conventional subdivision designs. Cluster and open space subdivision designs allow more compact and less costly networks of roads and utilities. They also help reduce stormwater run-off and non-point source pollutant loading rates and may help to preserve an area's rural character. Cluster and open space subdivisions are intended to encourage the provision of needed open space and recreational amenities for residents, while also helping to retain an area's character and preserve natural, environmentally sensitive and historic resources.

5-12-2 General Description

(A) The cluster and open space development standards of this section require that a specified portion of each subdivision be set aside and permanently preserved as open space. The primary difference between cluster developments and open space developments is the amount of open space that must be preserved. Cluster developments are required to set aside a modest amount of open space, while open space developments are required to set aside a far greater amount.

(B) The required open space area within cluster or open space developments can be used to provide recreational opportunities for the subdivision's residents, to conserve and protect significant natural resources, or to conserve productive farming and forestry uses.

5-12-3 Minimum Subdivision Site Size

(A) Cluster Development

The minimum required land area for a cluster development is 10 acres.

(B) Open Space Development

The minimum required land area for an open space development is 25 acres.

5-12-4 Minimum Open Space

(A) Cluster Development

(1) At least 10% of the land area within a cluster development must be set aside and permanently preserved as open space if the development is located within an Urban Services Area or Urban Services Area/Water Supply Watershed.

(2) Cluster developments located in a Non-Urban Area, and Non-Urban Area/Water Supply Watershed must set aside and permanently preserve at least 25% of the subdivision's total land area as open space.

(B) Open Space Development

(1) At least 30% of the land area within an open space development must be set aside and permanently preserved as open space if the development is located within an Urban Services Area or Urban Services Area/Water Supply Watershed.

(2) Open space developments located within Non-Urban Services Areas or Non-Urban Services Areas/Water Supply Watershed must set aside and permanently preserve at least 40% of the subdivision's total land area as open space.

[Amended on 8/1/2011 by OA 02-11.]

5-12-5 Density and Lot Size

(A) Cluster Development

The following density and lot size standards apply to all cluster developments. (See Part 3 of this article [p. 5-11] for rules governing measurement of and exceptions to these standards):

District	Cluster Development		
	Maximum Density (units/acre) [1]	Minimum Lot Size	
		Area (square feet) [1] [2] [3]	Width (feet)
R-80W	0.50	40,000	110
R-80	0.50	40,000	110
R-40W	1.00	20,000	75
R-40	1.00	20,000	75
R-30	1.45	12,000	60
R-20	2.17	6,000	50
R-15	2.90	5,000	45
R-10	4.35	3,000	40
R-5	8.70	3,000	40
RHC	1.45	12,000	60
HD	1.45	12,000	60
GB	2.17	6,000	50
O&I	1.45	12,000	60

[1] More restrictive standards may apply to lots within the Swift Creek, Little River and Smith Creek Water Supply Watersheds. See Article 11.Part 3.

[2] Minimum lot area per dwelling unit. For example, duplex in R-80 district requires minimum lot area of 80,000 square feet.

[3] Residential uses in the GB and O&I districts must comply with the requirements of the R-20 and the R-30 districts, respectively.

[Amended on 1/22/2008 by OA 04-07.]

(B) Open Space Development without Community Water and Wastewater Service

The following density and lot size standards apply to all open space developments that are not served by community water and sewer facilities. (See Part 3 of this article [p. 5-11] for rules governing measurement of and exceptions to these standards):

District	Open Space Development		
	Maximum Density (units/acre)	Minimum Lot Size	
		Area (square feet) [1] [2] [3]	Width (feet)
R-80W	0.50	30,000 if ≥40% open space	90
R-80	0.50	35,000 if ≥30% open space	90
		32,500 if ≥35% open space	
		30,000 if ≥40% open space	
R-40W	1.00	14,000 if ≥40% open space	60
R-40	1.00	16,000 if ≥30% open space	60
		15,000 if ≥35% open space	
		14,000 if ≥40% open space	
R-30	1.45	10,000 if ≥30% open space	50
		9,500 if ≥35% open space	
		9,000 if ≥40% open space	
R-20	2.17	6,000	50
R-15	2.90	5,000	45
R-10	4.35	3,000	40
R-5	8.70	3,000	40
RHC	1.45	10,000 if ≥30% open space	50
		9,500 if ≥35% open space	
		9,000 if ≥40% open space	
HD	1.45	10,000 if ≥ 30% open space	50
		9,500 if ≥ 35% open space	
		9,000 if ≥ 40% open space	
GB	2.17	6,000	50
O&I	1.45	10,000	50

[1] More restrictive standards may apply to lots within the Swift Creek, Little River and Smith Creek Water Supply Watersheds. See Article 11.Part 3.
[2] Minimum lot area per dwelling unit. For example, duplex in R-80W district requires minimum lot area of 60,000 square feet.
[3] Residential uses in the GB and O&I districts must comply with the requirements of the R-20 and the R-30 districts, respectively.

[Added a row for HD on 1/22/2008 by OA 04-07.]

(C) Open Space Development With Community Water and Wastewater Service

The following density and lot size standards apply to all open space developments that are served by community water and sewer facilities. (See Part 3 of this article [p. 5-11] for rules governing measurement of and exceptions to these standards):

District	Open Space Development		
	Maximum Density (units/acre)	Minimum Lot Size	
		Area (square feet) [1] [2] [3]	Width (feet)
R-80W	0.50	20,000	75
R-80	0.50	20,000	75

District	Open Space Development		
	Maximum Density (units/acre)	Minimum Lot Size	
		Area (square feet) [1] [2] [3]	Width (feet)
R-40W	1.00	10,000	60
R-40	1.00	10,000	60
R-30	1.45	6,000	50
R-20	2.17	6,000	45
R-15	2.90	5,000	45
R-10	4.35	3,000	40
R-5	8.70	3,000	40
RHC	1.45	6,000	50
HD	1.45	6,000	50
GB	2.17	6,000	45
O&I	1.45	6,000	50

[1] More restrictive standards may apply to lots within the Swift Creek, Little River and Smith Creek Water Supply Watersheds. See Article 11.Part 3.
[2] Minimum lot area per dwelling unit. For example, duplex in R-80 district requires minimum lot area of 40,000 square feet.
[3] Residential uses in the GB and O&I districts must comply with the requirements of the R-20 and the R-30 districts, respectively.

[Added a row for HD on 1/22/2008 by OA 04-07.]

5-12-6 Additional Lot and Building Standards

The following additional lot and building standards apply to cluster and open space developments. (See Part 3 of this article [p. 5-11] for rules governing measurement of and exceptions to these standards):

	R-80W R-80	R-40W R-40	R-30	R-20	R-15	R-10	R-5	RHC	HD	GB	O&I
Minimum Lot Frontage (feet)	30	30	30	30	30	30	30	30	30	30	30
Min. Perimeter Setback (feet)[1]	30	30	30	30	30	30	30	30	30	30	30
Minimum Required Setbacks (ft) Cluster Subdivisions [2]											
Front	20	15	15	15	10	10	10	15	15	10	10
Corner	20	15	15	15	10	10	10	15	15	10	10
Side	10	7.5	5	5	5	5	5	5	5	5	5
Rear	15	15	15	15	15	15	15	15	15	15	15
Minimum Required Setbacks (ft) Open Space Subdivisions [2]											
Front	20	15	15	15	10	10	10	15	15	10	10
Corner	20	15	15	15	10	10	10	15	15	10	10
Side	10	7.5	5	5	5	5	5	5	5	5	5
Rear	15	15	15	15	15	15	15	15	15	15	15

[1] Minimum perimeter setback applies only around the perimeter of the cluster or open space subdivision. Minimum perimeter setback standards apply to principal buildings. No additional perimeter setback is required for cluster or open space subdivisions abutting other cluster or open space subdivisions that have already provided the required perimeter setback.
[2] Minimum required front yard and corner yard setbacks on a corner lot cannot be reduced.

OA 04/11 January 18, 2005

[Amended on 1/22/2008 by OA 04-07.]

[Amended on 6/4/2012 by OA 02-12.]

5-12-7 General Requirements

(A) Maximum Density

(1) The maximum number of dwelling units allowed within a cluster or open space development is equal to the site's total land area (developable area + open space) multiplied by the maximum density standard shown in Sec. 5-12-5.

(2) If the cluster or open space development site (subdivision) is located in more than one zoning district, the maximum number of dwelling units allowed must be determined separately for each portion of the site lying within a different zoning district. Density may be transferred from one portion of the site to another, provided that such transfers do not result in an increase in the number of dwelling units allowed on the overall site.

(B) Lot Design

Each lot must be regularly shaped and meet or exceed the minimum lot area and lot width standards in this section. Side lot lines extending from a road must be approximately perpendicular or radial to the road's right-of-way boundary.

(C) Open Space

(1) Required Open Space

The amount of open space within a cluster or open space development must equal or exceed the minimum open space requirements of Sec. 5-12-4. Open space provided to meet minimum open space requirements must be in one or more parcels dedicated or otherwise protected as permanent, active or passive open space.

(2) Use, Location, and Design

(a) Open space must be dedicated or reserved for one or more of the following uses:

i. conservation of, and avoidance of development in, any readily identifiable natural hazard areas, i.e., areas that potentially pose a significant hazard to people or property (e.g., designated floodways, other perennially wetlands, and lands whose slope and/or soils make them particularly susceptible to erosion when disturbed by development activities);

ii. conservation and protection of any identified significant natural areas (e.g., rare plant communities, important wildlife habitat) or other environmentally sensitive areas where development might threaten water quality or ecosystems (e.g., watershed buffers, groundwater recharge areas);

iii. conservation and protection of any identified important historic resources (e.g., homesteads, mills, barns, archeological sites);

iv. provision of active and/or passive outdoor recreation opportunities (e.g., ballfields, playgrounds, tennis courts, swimming pools, basketball courts, golf courses, bikeways, walking trails, nature trails, and picnic areas), either for the general public or for the subdivision's residents or

employees and their guests (Note: this does not preclude a membership requirement or monetary charge for use of recreation facilities such as a golf, swim or tennis club, as long as subdivision residents or employees have an opportunity to join the club or pay to use club facilities; or

v. retention of productive farmland or forestland for continued agricultural and/or forestry use.

(b) Highest priority for the location, design, and use of open space must be given to conserving, and avoiding development in, any natural hazard areas on the subdivision site.

(c) Open space may contain only such buildings, structures, accessways, and parking facilities as are necessary and accessory to its principal uses (e.g., pedestrian path, recreational club house, utility lines, driveway, small parking area, barns and other farm storage and processing facilities). Open space areas may be utilized for irrigation of reclaimed water meeting the standards set forth in 15A NCAC 02H .0219(k) of the North Carolina Administrative Code. Open space areas may not contain sewage treatment ponds that are utilized as the primary means of wastewater treatment or be utilized for irrigation of wastewater that does not meet reclaimed water standards as specified above.

(d) Open space may contain individual water supply wells or subsurface sewage disposal fields serving dwelling units on adjacent lots, or community wells, provided they do not conflict with the principal uses of the open space. Open space areas may not contain sewage treatment ponds that are used as the primary means of treatment of wastewater and the spray application of wastewater that does not meet applicable water reuse standards.

(e) The location, size, character, and shape of required open space must be appropriate to its intended use(s). (e.g., open space proposed to be used for recreation, particularly active recreation, should be located and designed so that it can be accessed conveniently and safely by intended users, and open space to be used for ballfields, playing fields, or other active recreational facilities should be located on land that is relatively flat and dry.)

(D) Open Space Dedication or Reservation

(1) Subdivision occupants must be ensured direct access to and use of an amount of the subdivision's open space equal to a minimum of 10% of the area of the development site, by conveying that portion of open space to a property owners association or similar legal entity meeting the provisions of Sec. 8-23, or to a public agency or nonprofit organization that is organized for, capable of, and willing to accept responsibility for managing the open space for its intended purpose, and that will ensure subdivision occupants direct access to and use of the open space. Any other open space provided may be conveyed to such organizations as listed above or to any agency, organization, person, or other legal entity that is organized for, capable of, and willing to accept responsibility for managing the open space for its intended purpose, provided such conveyance is restricted to ensure continued maintenance and preservation of the open space.

(2) Each dedicated or reserved open space parcel must be shown on all subdivision plans and on a record plat recorded with the Wake County Register of Deeds, with a

notation of its area and its intended open space use (subparagraph 5-12-7(C)(2)). The owner of an open space parcel may re-dedicate or re-reserve the parcel for another open space use allowed under this subsection by recording a record plat showing the parcel and its new intended open space use.

(E) Maintenance

(1) The owner of the open space is responsible for maintaining the open space so that it continues to effectively function for its intended use, and any dedication or conveyance of an open space parcel must provide for such responsibility.

(2) Where the cluster or open space development is located within a R-40W, R-80W, WSO-2NC, WSO-3CA, WSO-3NC, or WSO-4P district, retention of undeveloped open space in a vegetated or natural state (as required in subsection 5-12-9) must be ensured by maintenance provisions filed with the Wake County Register of Deeds, either as part of recorded documentation providing for establishment of an appropriate legal entity (e.g. homeowners association, property owners association or land conservation organization) that is to be responsible for maintenance and control of open space (as provided for in Sec. 8-23), or in a maintenance agreement recorded with the property deeds.

5-12-8 Potential Future Development Sites

(A) When a cluster or open space development is located within an Urban Services Area or Urban Services Area/Water Supply Watershed and the maximum allowed density under the site's current zoning is less than the density called for in the Land Use Plan, the cluster or open space development may contain one or more parcels designated as reserved for potential future development. Such a parcel does not count as part of the development's required open space or in calculating allowed density or impervious surface coverage.

(B) A parcel reserved for potential future development may not be developed, other than for open space uses or as a community well or septic field site serving the cluster or open space development, until the development site, or part thereof, is rezoned to a classification allowing higher densities (so that the parcel's land area is no longer needed to maintain the subdivision's compliance with applicable density standards).

Commentary: The provisions of Sec. 5-12-8 support the Land Use Plan's Transitional Urban Development (TUD) policies by accommodating higher density urban development within short-range urban service areas.

5-12-9 Water Supply Watersheds

When a cluster or open space development is located within an R-40W, R-80W, WSO-2NC, WSO-3CA, WSO-3NC, or WSO-4P district, it must be designed so that:

(A) lots and development sites are concentrated in upland areas and to the maximum extent practicable away from surface waters and drainageways, and the remainder of the site, i.e., undeveloped open space dedicated or reserved for one of the natural area conservation purposes authorized in 5-12-7(C)(2), is retained in a vegetated or natural state; and;

(B) built-upon (impervious) areas are, to the maximum extent practicable, as approved by Wake County Environmental Services, sited and designed to minimize stormwater runoff impact to the watershed's receiving waters by minimizing concentrated stormwater flow, breaking up or disconnecting large areas of impervious surface into smaller areas, maximizing the use of sheet flow through vegetated areas, and maximizing the flow length

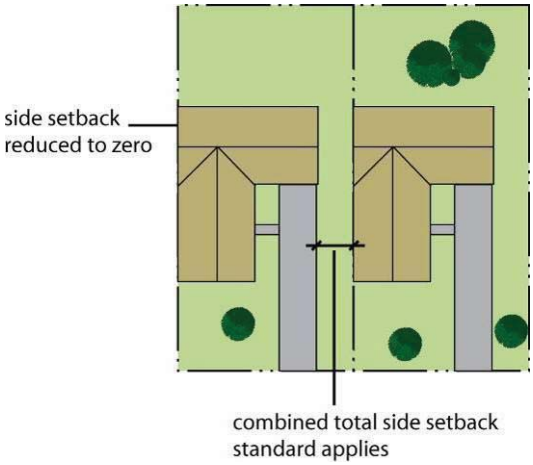
through vegetated areas. (See also Sec. 8-43 and subsection 8-32-18 for standards applicable in Water Supply Watersheds.)

5-13 Lot Line (single-family) Houses

5-13-1 Lot line houses are allowed in accordance with the use table of Sec. 4-11.

5-13-2 All lot line houses must comply with the lot and building standards that apply to the type of development (conventional, cluster or open space) in which such houses are located, except when those standards are expressly modified by the lot line house standards of this section.

5-13-3 The side setback on one side of a lot line house may be reduced to zero. The minimum setback on the other side of the lot must equal at least 2 times the side setback standard of Sec. 5-11.



5-13-4 Eaves and other building projections on the side of a house with a reduced setback may not project over the abutting lot line unless: (a) an easement for the projection is obtained from the abutting owner and recorded with the Wake County Register of Deeds and (b) such projections are located at least 9 feet above the ground.

5-13-5 When the exterior wall or eaves are set back less than 2 feet from the lot line, an easement must be obtained from the abutting owner and recorded with the Wake County Register of Deeds. The easement must ensure at least 2 feet of unobstructed space between the furthermost projection of the structure (including the eave) and the edge of the easement. This provision is intended to ensure the ability to conduct maintenance and upkeep activities on the lot line house.

5-13-6 Windows or other openings that allow for visibility into the side yard of the adjacent lot are allowed on lot line houses pursuant to compliance with the building code.

5-13-7 Lot line houses must be determined at the time of subdivision.

[Amended on 7/21/2008 by OA 02-08.]

5-14 Attached (single-family) Houses

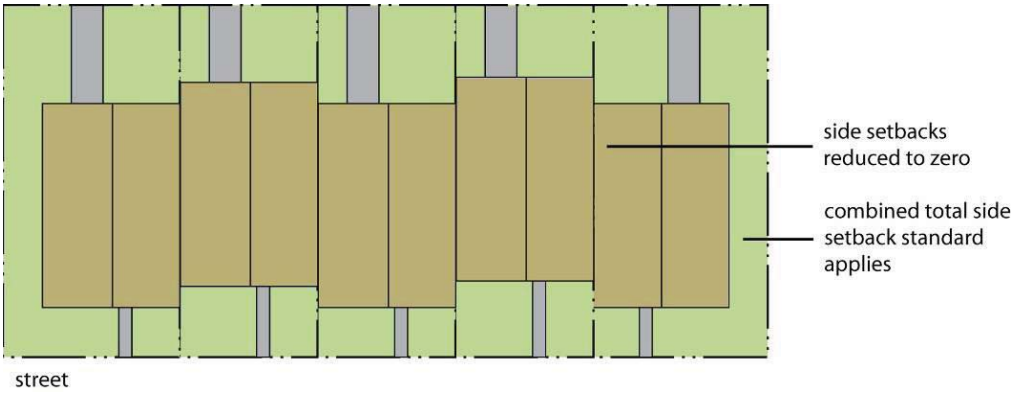
5-14-1 General

Attached (single-family) houses are allowed in accordance with the use table of Sec. 4-11.

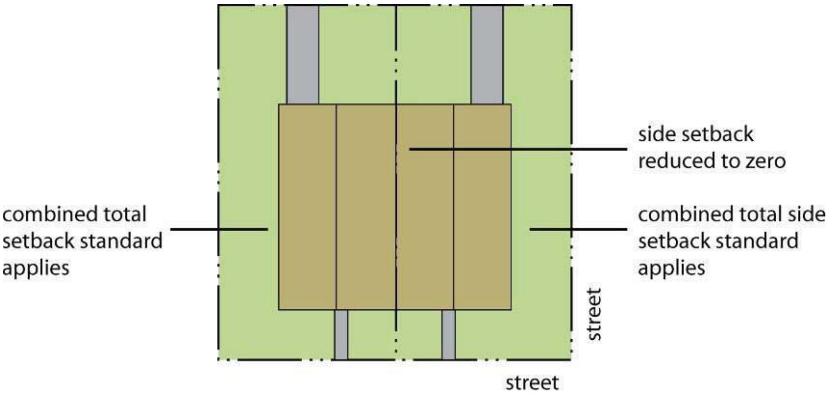
(A) All attached houses must comply with the lot and building standards that apply to the type of development (conventional, cluster or open space) in which such houses are located, except when those standards are expressly modified by the attached house standards of this section.

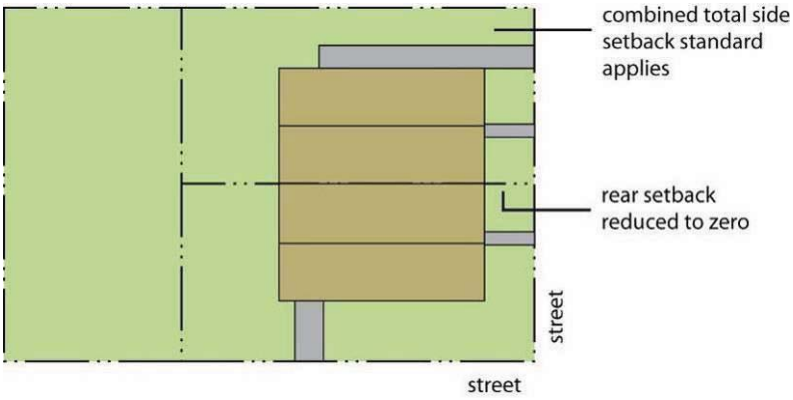
(B) The common or abutting wall between attached units must be shared for at least 50 percent of the length of each unit.

(C) No side setback is required for common or abutting walls.



(D) On corner lots, either the rear setback or side setback may be reduced to zero. However, the remaining side or rear setback must comply with the conventional development lot and building standards of Sec. 5-11.





(E) The minimum side setback standard of Sec. 5-11 applies along the sides of the building that do not have common or abutting walls.

5-14-2 Limitation on Number of Attached Units

When 3 or more units are attached, common access is required for access to rear-loaded parking area. Such access drives must be at least 12 feet wide if designed for one-way traffic and at least 20 feet wide if designed for two-way traffic.

Sections 5-15 through 5-19 are reserved for future use

Part 2 Nonresidential Districts

5-20 Conventional Development

The following standards apply to all lots other than those located in approved cluster or open space developments (See Part 3 of this article [p. 5-11] for rules governing measurement of and exceptions to these standards):

	O&I	GB	HC	I-1 and I-2
Minimum Lot Area (square feet) [1]	None			
Minimum Required Setbacks (feet)				
Front and Corner	40	50	50	50
Side	20	25; none when abutting railroad		25; none when abutting railroad
Rear	25	25; none when abutting railroad; 50 from right-of-way		25; none when abutting railroad; 50 from right-of-way
Maximum Impervious Coverage [1] [2] [3]	None			
Maximum Building Height (feet)	None			

[1] In some cases, more restrictive standards may apply to lots within the Swift Creek, Little River and Smith Creek Water Supply Watersheds. See Article 11.Part 3.
[2] Lots created after 7/01/2001 are subject to Wake County stormwater management regulations.
[3] Nitrogen export check required and is limited to 3.6 lbs./ac./yr. without best management practices or payments made to the N.C. Ecosystem Enhancement Program. Does not apply to nonresidential development in the R-80W and R-40W districts.

[Amended of 1/22/2008 by OA 04-07.]

Sections 5-21 through 5-29 are reserved for future use

Part 3 General Rules and Exceptions (in all districts)

5-30 Setbacks

The following setback standards and exceptions apply in all districts unless otherwise expressly stated.

5-30-1 General

Setbacks must be unobstructed from the ground to the sky except as expressly stated. Parking and driveways are allowed within required setbacks except where they conflict with required bufferyards or tree and vegetation protection zones. For definitions and illustrations of front, rear, side and corner setbacks, see Article 21.

5-30-2 Measurement from Ultimate Right-of-way

The minimum depth of a setback abutting a road must be measured from the edge of the ultimate right-of-way (as recommended in the *Transportation Plan*).

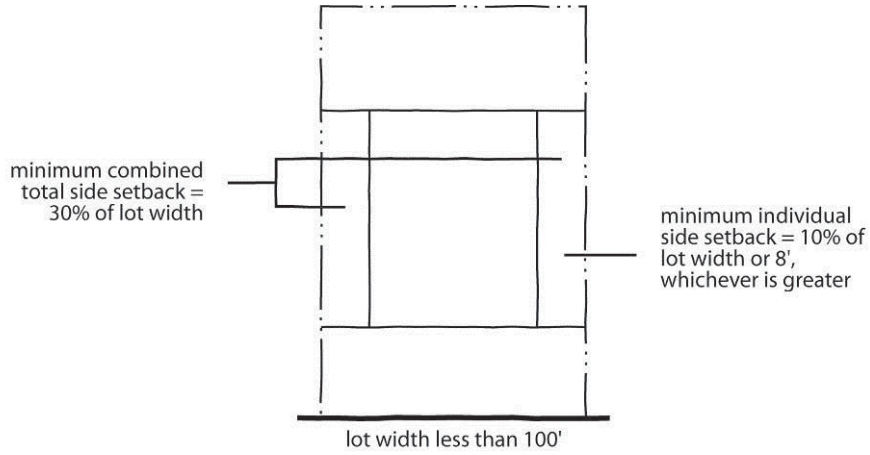
5-30-3 Features Allowed within Required Setbacks

In nonresidential districts, shelters such as canopies, awnings, and covered walkways, may be permitted in required setbacks up to half the width of the required setback, provided such structures in no way obstruct the line of sight along a thoroughfare. Features allowed within required setbacks are subject to applicable impervious surface limitations.

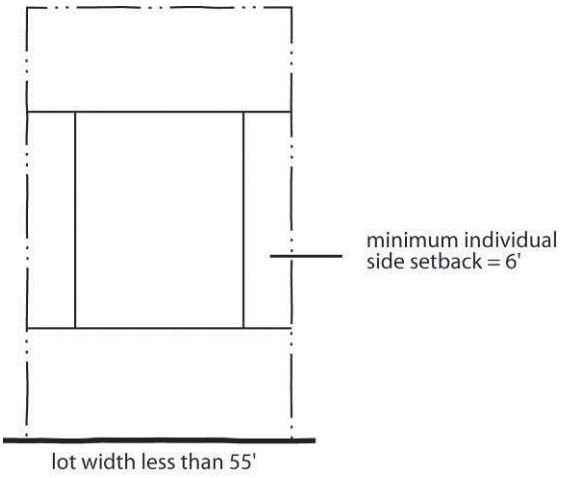
5-30-4 Side Setbacks on Narrow Lots

The following special side setback standards apply in residential districts to lots recorded in a plat or deed under one ownership on January 4, 1960:

(A) On lots having an average width of less than 100 feet the combined total width of both side setbacks may be reduced to 30% of the lot width, and individual side setbacks may be reduced to 10% of the lot width or 8 feet, whichever is greater.



(B) On lots having an average width of less than 55 feet, individual side setbacks may be reduced to 6 feet.



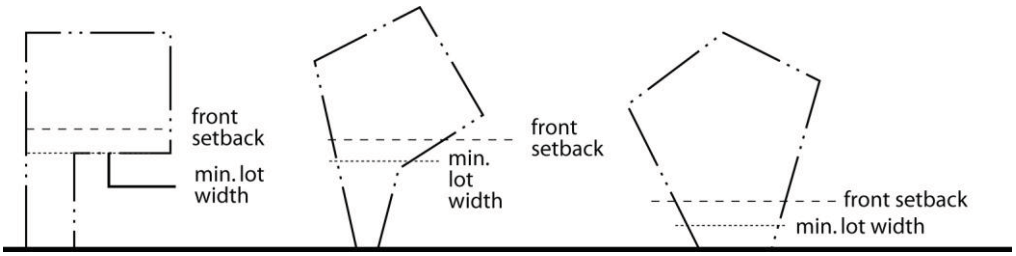
5-30-5 Setbacks on Irregularly Shaped Lots

(A) Purpose

Required setback distances are generally based on rectangular lots. Nonrectangular lots, lots with 3 sides or more than 4 sides and other irregularly shaped lots require special measurement techniques to ensure proper separation between structures and lot lines.

(B) Front Setbacks

Front setbacks must be measured from the front property line unless the front property line does not meet the minimum lot width standard (as is the case on a flag lot), in which case the front setback must be measured from a point on the lot, nearest the front line, that complies with the minimum lot width standard of the subject zoning district. The Planning Director is authorized to establish the front property line and/or the front setback line in cases of uncertainty.



(C) Rear Setbacks

(1) On irregularly shaped lots, the rear setback is measured from an imaginary line that:

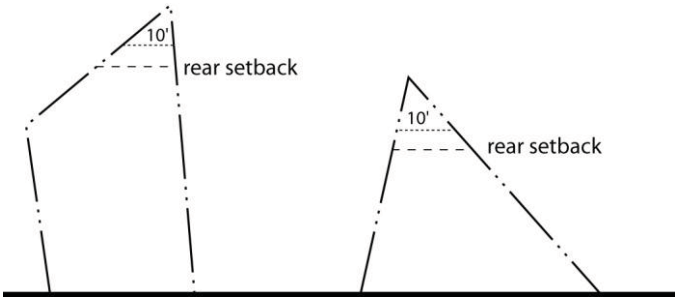
(a) is within the lot;

(b) is drawn at a point most distant from the front property line where the lot is 10 feet in width;

(c) is parallel to the front property line; and

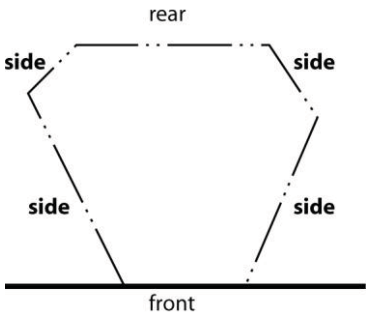
(d) extends across the entire width of the lot.

(2) The Planning Director is authorized to establish the rear setback line in cases of uncertainty.



(D) Side Setbacks

All property lines that are not front or rear property lines will be considered side property lines for purposes of measuring setbacks. The Planning Director is authorized to establish the rear setback line in cases of uncertainty.



Part 4 Thoroughfare and School Density Credits

5-40 Thoroughfare Density Credits

5-40-1 Intent

It is the intent of this section to encourage applicants for development approval to reserve or dedicate those undeveloped areas needed for proposed major thoroughfares by providing them density credits on those portions of their land or other properties that will not be needed for major thoroughfare construction.

5-40-2 Standards for Provision of Density Credits

(A) Scope

This section may apply to any parcel of land abutting or intersected by a proposed major thoroughfare which has been resolved by the Wake County Board of Commissioners as having county- or region-wide impact because of its traffic-carrying capacity and effect on the major thoroughfare system. Density credits may be provided for any residential use in any residential district.

(B) Calculation of Density Credits

(1) To the extent that an applicant for a density credit dedicates or reserves undeveloped land for a proposed major thoroughfare as designated by the Wake County Board of Commissioners, an applicant may apply for density credits. Density credits are to be determined by calculating twice the maximum number of residential units that could have been constructed in the reserved or dedicated area under the zoning regulations then in effect.

(2) In cases where the specific alignment of the major thoroughfare has not been determined, County staff must request such a determination from North Carolina Department of Transportation (NCDOT). Should NCDOT fail to make a determination in a timely manner, the Wake County Administration may determine the alignment.

(C) Reservation or Dedication

As a condition to applying for density credits, the owner of land must:

(1) Reserve land for the corridor which abuts or intersects the subject property and record in the office of the Wake County Register of Deeds sufficient legal documentation in the chain of title of the reserved land to evidence permanent alienation of development rights in that land; or

(2) Dedicate land for the corridor that abuts or intersects the subject property to Wake County or the State of North Carolina, without any restrictions on its use.

5-40-3 Application of Density Credits

This density credit may be applied to increase the allowed density of any other land as provided herein.

(A) Density credits may be applied to any tract of land located within the county's zoning jurisdiction, regardless of ownership, except land located within a water supply watershed.

(B) In order to apply density credits to the same or different tracts, the application must be approved as a special use in accordance with the special use procedures Sec. 19-23.

(C) By applying a density credit to a particular parcel, the owner or developer may increase the allowable density of uses by decreasing the size of the lot below that required in the district; however, in no case may density for the entire tract exceed 10,000 square feet per dwelling unit in all planning areas to which this subsection applies.

(D) The owner of the density credits must apply for a special exception within 5 years of the date the land is reserved or dedicated. After this period, density credits become null and void.

5-40-4 Required Yards

The depth and width of all required yards and minimum lot widths may be reduced to correspond with those requirements for the zoning district with which the reduced lot size most closely complies. Should the development have lots sized between the minimum lot sizes of 2 districts, the requirements of the higher density district apply.

5-40-5 Maximum Lot Coverage Allowed

The maximum amount of a lot which may be covered with impervious surfaces after application of density credits may not exceed 50%.

5-41 School Density Credits

5-41-1 Intent

It is the intent of this section to encourage applicants for development approval to dedicate those undeveloped areas needed for proposed public school sites by providing them density credits on those portions of their land or other properties that will not be needed for major public school site construction.

5-41-2 Standards for Provision of Density Credits

(A) Scope

This section may apply to any parcel of land which is the proposed site of a school within the Wake County Public School System, as resolved by the Wake County Board of Education with the concurrence of the Wake County Board of Commissioners. Density credits may be provided for any residential use in any residential district.

(B) Calculation of Density Credits

To the extent that an applicant for a density credit dedicates undeveloped land for a proposed public school site as designated by the Wake County Board of Education, with

the concurrence of the Wake County Board of Commissioners, an applicant may apply for density credits. Density credits are to be determined by calculating twice the maximum number of residential units that could have been constructed in the dedicated area under the zoning regulations then in effect.

(C) Reservation or Dedication

As a condition to applying for density credits, the owner of land must dedicate land for the school site to the Wake County Board of Education, without any restriction on its use.

5-41-3 Application of Density Credits

This density credit may be applied to increase the allowed density of any other land as provided herein.

(A) Density credits may be applied to any tract of land located within the County's zoning jurisdiction regardless of ownership, except land located within a water supply watershed.

(B) In order to apply density credits to the same or different tracts, the application must be approved in accordance with the special use procedures of Sec. 19-23.

(C) By applying density credits to a particular parcel, the owner or developer may increase the allowable density of uses by decreasing the size of the lot below that required in the district; however, in no case may density for the entire tract exceed 12,000 square feet per dwelling unit in all planning areas to which this section applies.

(D) The owner of the density credits must apply for a special exception within 5 years of the date the land is dedicated. After this period, density credits become null and void.

5-41-4 Required Yards

The depth and width of all required yards and minimum lot widths may be reduced to correspond with those requirements for the zoning district with which the reduced lot size most closely complies. Should the development have lots sized between the minimum lot sizes of 2 districts, the requirements of the higher density district shall apply.

5-41-5 Maximum Lot Coverage Allowed

The maximum amount of a lot which may be covered with impervious surfaces after application of density credits shall not exceed 50%.

Article 6. Density Bonuses

Part 1 General

6-10 Review and Approval Procedure

Projects requesting density bonuses will be reviewed as part of the subdivision plat, special use, conditional use rezoning process, as applicable.

6-11 General Bonus Limits

Unless otherwise expressly stated, the bonuses listed in this article may be combined, provided that the total cumulative density bonus may not exceed the maximum density allowed in the underlying zoning district by more than 35%. Bonuses that are in direct conflict with the density guidelines of the Land Use Plan are prohibited.

6-12 No Guarantee of Density

The provisions of this article are not to be construed as guarantees of achievable density. Developments using density bonus provisions \are subject to all other applicable regulations of this ordinance unless otherwise expressly stated. These other regulations or site-specific conditions may prevent full realization of a site's base or bonus density.

Commentary: The density bonus provisions of this article do not permit transfer of development rights. Density bonuses may only be used on the site that qualifies for bonus density. Density may not be transferred from the subject site to other sites.

6-13 No Transfer of Density

The density bonuses achieved under this article may be used only on the site for which the bonus was granted. Bonus density may not be transferred from the subject site to other sites.

Part 2 Available Bonuses

6-20 Joint Platting

In order to encourage integrated planning of adjoining subdivisions, a density bonus of 10% will be granted when subdivision applications are submitted jointly for two or more adjoining parcels. The following criteria must be met to qualify for this bonus:

6-20-1 the subdivisions must include an integrated circulation and access pattern covering all parcels;

6-20-2 each subdivision plat must cover a minimum land area of 25 acres; and

6-20-3 the parcels to be subdivided must have been in separate ownership for at least 24 consecutive months immediately prior to application filing.

6-21 Workforce Housing

6-21-1 Purpose

The density bonus for workforce housing is intended to encourage the provision of housing that serves the region's workforce.

6-21-2 Bonuses

The following density bonuses will be granted to developments in which the developer commits to restricting housing rental or sales prices to the following levels:

(A) One extra dwelling unit is allowed for each 4 rental units restricted to occupancy by households with incomes of less than 50% of the Wake County median income, as determined by the U.S. Department of Housing and Urban Development (HUD); and

(B) One extra dwelling unit is allowed for each 4 sales (ownership) units restricted to occupancy by households with incomes of less than 80% of the Wake County median income, as determined by the U.S. Department of Housing and Urban Development (HUD).

6-21-3 Combination with County Financial Incentives

Workforce housing density bonuses are not allowed for housing units that receive direct financial assistance or subsidies from Wake County.

6-21-4 Rental Contracts

Approval of any plans or plats that include bonus density for providing rental workforce housing units may not occur until there is a contract between the property owner and Wake County, which must be binding on future owners of the designated workforce housing lots. The contract must be administered by the Housing and Community Revitalization Division of the Wake County Human Services Department, and include at least the following provisions:

(A) All rentals must be approved by the Housing and Community Revitalization Division of the Wake County Human Services Department to ensure occupancy by qualifying households in accordance with the following eligibility criteria:

(1) Family income at the time of occupancy may not exceed the limits set forth in Sec. 6-21-2. Families whose income increases above the eligibility requirements may continue to occupy the rental unit, unless otherwise required through terms of the lease.

(2) At least one member of a qualifying household must have lived or worked in Wake County for the past 12 months.

(B) The contract must apply to each of the designated workforce housing units, and continue to affect a particular unit for a minimum period of 15 years after the initial rental of that unit.

(C) Every change in occupancy during the 15-year term of the contract must be approved by the Housing and Community Revitalization Division of the Wake County Human Services Department to assure continued compliance with eligibility criteria.

(D) The maximum rent allowed must be computed by multiplying the applicable percentage of median income by HUD's reported Wake County median income at the time of the transaction, then multiplying the resulting value by the maximum percentage of income spent for housing, as recommended by the mortgage banking industry. The value for median income used in calculating maximum allowable rent must be adjusted to reflect the maximum family size appropriate for the number of bedrooms, as determined by the Housing and Community Revitalization Division of the Wake County Human Services Department.

6-21-5 Sales Contracts

Approval of any plans or plats that include bonus density for providing "for-sale" workforce housing units may not occur until there is a contract between the property owner and Wake County, which must be binding on future owners of the designated workforce housing lots. The contract must be administered by the Housing and Community Revitalization Division of the Wake County Human Services Department, and include at least the following provisions:

(A) All sales and resales must be approved by the Housing and Community Revitalization Division of the Wake County Human Services Department to ensure ownership by qualifying buyers in accordance with the following eligibility criteria:

(1) Family income at the time of purchase may not exceed the limits set forth in Sec. 6-21-2.

(2) At least one member of a qualifying household must have lived or worked in Wake County for the past 12 months.

(B) The contract must apply to each of the designated workforce housing lots, and continue to affect a particular lot for a minimum period of 15 years after the initial sale of that lot.

(C) Designated workforce housing units may not be occupied prior to their sale to a qualifying buyer.

(D) The contract must include a schedule by which construction and sale of the reserved units will be accomplished.

(E) The resale price of any designated workforce housing unit may not, at any time during the life of the contract, exceed maximum sale or resale prices established by the Housing and Community Revitalization Division of the Wake County Human Services Department, in accordance with HUD income guidelines, which take into account interest rates, percentage of annual income allowed for housing, and amount of down payment among other factors.

(F) Designated workforce housing units must be identified on the record plat.

6-22 Activity Center Design

6-22-1 Mixed-use projects (developments that include residential and nonresidential land uses) within designated activity center locations are eligible for density bonuses of up to 20%, subject to compliance with the standards of this section.

6-22-2 Projects for which activity center design density bonuses are requested must be located with a mixed-use district and reviewed and approved as a mixed-use development, in accordance with Sec. 3-53.

6-22-3 In order to approve requested density bonuses, review and approval bodies must determine that the proposed project complies with the activity center guidelines from Chapter III of the Wake County Land Use Plan. This determination must be based on whether the project is in strict compliance with the following plan guidelines:

(A) Proper access to thoroughfares;

(B) Connectivity;

(C) Building architecture and materials;

(D) Signs; and

(E) Activity center size and spacing.

6-23 Open Space Preservation

Developments that set aside more than 65% of a subdivision's total land area as permanent open space will receive a 20% density bonus. In order to receive this density bonus, the subdivision must be more than 25 acres in area and all lots within the subdivision must be served by a community wastewater system or municipal sewer.

OA 05-01 June 6, 2005

Article 9. Stormwater Management

Part 1 General Provisions

9-10 Purpose

The stormwater management regulations of this article establish minimum requirements to address adverse effects of stormwater runoff associated with new development. Proper management of stormwater runoff will protect property, control stream channel erosion, reduce flooding, protect floodplains, wetlands, water resources, riparian and aquatic ecosystems, and otherwise provide for environmentally sound use of the county's natural resources.

9-11 Scope

Except as otherwise expressly stated, the stormwater management regulations of this article apply to all development within unincorporated Wake County outside the extraterritorial jurisdiction and incorporated boundaries of any municipality.

9-12 Exemptions

The stormwater management regulations of this article do not apply to any of the following development activities:

9-12-1 Agriculture, forestry, or mining.

9-12-2 Office, institutional, commercial, or industrial development that disturbs a land area of one-half acre or less.

9-12-3 Any development in which the owner has accrued a vested right. Wake County recognizes a vested right if either of the following occurred:

(A) A subdivision plan, site plan, or development permit was officially approved by Wake County or the State before August 13, 2006 and that plan or permit remains unexpired.

(B) The landowner otherwise demonstrates a vested right has accrued under North Carolina Law.

Part 2 Standards for Managing Stormwater Runoff

9-20 Maximum Curve Number after Development

Developers must manage residential runoff so that after development the site will not exceed the following curve numbers, in accordance with procedures specified in the United States Department of Agriculture, Natural Resource Conservation Service, Technical Release 55, Urban Hydrology for Small Watersheds.

Zoning District	Maximum Composite Curve Number, By Soil Group			
	A	B	C	D
R-80W and R-80	37	60	73	79
R-40W and R-40	41	62	75	80
R-30, R-20, R-15, R-10, R-5, Residential Highway, Highway District, General Business and Office and Institutional	43	63	76	81

[Amended on 1/22/2008 by OA 04-07.]

9-20-1 Precipitation Depth

Calculations must be based on a precipitation depth of 3 inches over a 24-hour period.

9-20-2 Draw-down Period

Stored water must be drained over a period of not less than 2 days or more than 5 days.

9-20-3 Option for Minor Subdivisions

Developers of residential minor subdivisions have the option of meeting the standards in Sec. 9-20 or limiting the proposed subdivision's impervious surfaces to a maximum of 15%.

9-20-4 Stormwater Credits

(A) Purpose

The purpose of establishing a stormwater credit system is to provide incentives to implement better site design and locate new development in a manner that causes less impact to aquatic resources. Certain development practices reduce the generation of stormwater from the site; thereby reducing the size and cost of stormwater storage. In addition these practices can provide partial removal of many pollutants. The credit system directly translates into cost savings and better protection of water resources.

(B) Disconnected Impervious Surfaces

Disconnected rooftops and other disconnected impervious surfaces are encouraged. Runoff from these disconnected surfaces must be spread over pervious areas as sheet flow. As a credit, these disconnected impervious surfaces will be assigned the lower curve number specified by procedures of the United States Department of Agriculture, Natural Resource Conservation Service, Technical Release 55, *Urban Hydrology for Small Watersheds*.

(C) Reforestation

The planting of trees/shrubs is encouraged as a means of reducing runoff. As credit for such practices, reforested areas will be assigned the curve number for woods in good condition per procedures in the United States Department of Agriculture, Natural Resource Conservation Service, Technical Release 55, *Urban Hydrology for Small Watersheds*. Areas planted with trees/shrubs must meet the following standards to qualify for the credit.

(1) Tree/shrub Density and Spacing

Planted trees or shrubs must meet the minimum density and spacing standards of the USDA, Natural Resources Conservation Service, as specified in the *Field Office Technical Guide for Tree/Shrub Establishment*. Existing trees or shrubs may be used towards meeting the planting standard.

(2) Mulching

An initial application of mulch is required for the area designated for reforestation. Mulching must meet applicable standards of the USDA, Natural Resources Conservation Service, as specified in the *Field Office Technical Guide for Mulching-Temporary Protection of Critical Areas without Seeding*. Existing groundcover may be used towards meeting the mulching standard.

(D) Cluster and Open Space Subdivisions

Cluster and open space subdivisions are encouraged. In applying curve number calculations to such developments, the county may not penalize such subdivisions. Calculations must take into account the lots' proportionate share of right-of-way and permanent open space.

9-21 State Nutrient Management Strategy Rules

9-21-1 State stormwater management rules that implement the Neuse River Basin Nutrient Sensitive Waters Management Strategy (15A NCAC 02B .0235) apply in both the Neuse and the Cape Fear River Basins and are hereby incorporated by reference.

9-21-2 State stormwater management rules for new development that implement the Falls Reservoir Water Supply Nutrient Strategy (15A NCAC 02B .0277) are hereby incorporated by reference.

9-21-3 State stormwater management rules for new development that implement the Jordan Water Supply Nutrient Management Strategy (15A NCAC 02B .0265) are hereby incorporated by reference. These rules shall supersede the Neuse Rules within the Jordan Lake watershed portion of the Cape Fear River Basin.

9-21-4 Copies of related codes, standards and guidelines are on file in the office of the Wake County Department of Environmental Services Water Quality Section.

[Amended by OA 03-12 on 7/2/2012.]

9-22 Stormwater Design Manual

The Wake County Department of Environmental Services may furnish additional guidance and standards for the proper implementation of the regulations of this article and may provide such information in the form of a *Stormwater Design Manual*. Stormwater management practices that are designed, constructed, or maintained in accord with the *Stormwater Design Manual* must be presumed to comply with these regulations.

9-23 Miscellaneous

9-23-1 Calculations Regarding Ponds, Lakes, and Streams

Surface water bodies may not be assigned a curve number for impervious surfaces. Instead such water bodies will be removed from calculations so that developments are not penalized for their presence.

Part 3 Completion and Maintenance of Improvements

9-30 Party Responsible for Completion of Improvements

The developer is responsible for completing all stormwater improvements in accordance with the requirements of this article and other applicable ordinances and laws.

9-31 Assurance that Improvements will be Completed

9-31-1 Performance Guarantee

The county may not approve a record plat, or in the case of single-lot development not requiring a record plat may not issue a building permit, until those stormwater improvements required of the developer have been completed or a performance guarantee has been provided. Such performance guarantees must comply with the performance guarantee provisions of Sec. 8-22.

9-31-2 As-Built Plans

Upon completion of required improvements, the developer or the developer's representative must submit as-built plans of required stormwater improvements to the Wake County Department of

Environmental Services. These plans must indicate whether stormwater improvements were constructed in accordance with the county approved stormwater plan.

9-32 Assurance that Improvements will be Maintained

9-32-1 Maintenance Required

All stormwater improvements must be maintained so they will continue to serve their intended functions.

9-32-2 Parties Responsible for Maintenance of Improvements

(A) The developer must maintain stormwater improvements until accepted by a property owners association or lot owner. The developer must disclose which party will be responsible for continued maintenance on the record plat and on the stormwater management plan.

(B) Before improvements are accepted for maintenance by the property owners association or lot owner, the developer or the developer's engineer or other representative, as authorized by Statute, must certify to the property owners association or lot owner and to the county that improvements are complete and functioning as designed.

9-32-3 Maintenance Plan

(A) The developer must record, and reference on the record plat, a maintenance plan that instructs the property owners association or lot owner about the annual maintenance tasks and associated costs for at least a 20-year period.

(B) It will be the responsibility of the property owners association or lot owner to update the maintenance plan at least every 10 years.

9-32-4 Maintenance Agreement

(A) The developer must record, and reference on the record plat, a maintenance agreement, or restrictive covenant that sets forth the property owners association's or lot owner's continuing responsibilities for maintenance, including specifying how cost will be apportioned among lot owners served.

(B) The maintenance agreement must provide that the association and its individual members are jointly and severably liable for maintenance.

9-32-5 Maintenance Easements

The developer must record easements for access, maintenance and inspections by any property owners association and by Wake County Government.

9-32-6 Documents Required Before Plat Approval or Building Permit

All maintenance documents required by this article must be submitted to the Subdivision Administrator or Stormwater Engineer before record plat approval, and such documents must be referenced on the record plat, or, in the case of single-lot developments not requiring record plats, documentation must be submitted to the Zoning Administrator or Stormwater Engineer before building permit issuance.

Part 4 Administration

9-40 Application Requirements

9-40-1 Stormwater Plan Required
For any development requiring stormwater improvements, no applicant may receive a grading, building or other permit required for land disturbance without first having a county approved stormwater management plan.

9-40-2 Submittal Procedures
Stormwater management plans must be submitted and reviewed in conjunction with subdivision plans, or, in the case of single-lot developments requiring stormwater management, in conjunction with site plans.

9-41 Modifications and Waivers
Requests for modifications or waivers of the stormwater management standards of this article must be processed in accordance with the procedures of 19-36.

9-42 Appeals

9-42-1 Authority

(A) Any person affected by any decision of the county that relates to interpretation or application of this ordinance may appeal to the hearing panel of the Wake County Human Services and Environmental Services Board.

(B) Any alleged error of the county in making or refusing to make a decision may be basis for an appeal.

9-42-2 Filing
The appeal must be filed in writing with the Wake County Stormwater Engineer within 30 days of the decision complained of and must specify the grounds for appeal.

9-42-3 Hearing

(A) The hearing panel of the Human Services and Environmental Services Board must fix a time and place for the hearing.

(B) At least 10 days prior to the hearing, the hearing panel must publish notice of the hearing in a newspaper of general circulation within the county.

(C) The hearing panel must render a decision in writing within 45 days of receiving the appeal.

9-42-4 Decision-Making Criteria
In acting on appeals the hearing panel of the Human Services and Environmental Services Board must determine, by simple majority vote, if the appellant has presented substantial evidence that the county erred and whether the county correctly interpreted the stormwater management regulations of Article 9.

9-42-5 Subsequent Appeals

The appellant may appeal the hearing panel's decision to the full Human Services and Environmental Services Board by filing an appeal within 10 days of the hearing panel's decision. Such appeals must follow the same procedure as the original hearing before the Board's hearing panel.

Part 5 Enforcement and Penalties

9-50 General

Failure to complete required improvements or failure to maintain improvements so they continue to function as required are violations and subject to a fine of up to $1,000 per day and other penalties, remedies, and enforcement powers specified in Article 20.

9-51 Inspection of Stormwater Improvements

Wake County agents and officials have the right to inspect sites to determine whether required stormwater improvements are being installed and maintained in compliance with this ordinance.

OA 05/05 May 15, 2006

Article 10. Erosion and Sedimentation Control

Part 1 General

10-10 Jurisdiction

10-10-1 The erosion and sedimentation control regulations of this article apply to all of unincorporated Wake County with the exception of municipal extraterritorial jurisdictions.

The regulations of this article may also apply within the incorporated areas and the extraterritorial jurisdictions of municipalities upon proper resolution by the governing bodies of the respective municipalities and agreement by the Wake County Board of Commissioners.

10-10-2 Notwithstanding the provisions of G.S. 113A-56(a)(4) and Sec. 10-13-2(E) of this ordinance, the Wake County Board of Commissioners hereby declares that all departments and agencies of the County and its contractors and subcontractors must comply with the regulations of this article when they are more restrictive than similar regulations of the North Carolina Sediment Control Commission.

10-10-3 The Wake County Department of Environmental Services is responsible for the administration and enforcement of this article, including approval, issuance of permits related to, and enforcement of erosion and sedimentation control plans.

10-11 Purposes

The erosion and sedimentation control regulations of this article are adopted for the purposes of:

10-11-1 regulating certain land-disturbing activities to control accelerated erosion and sedimentation in order to prevent the pollution of water and other damage to lakes, watercourses, and other public and private property by sedimentation; and

10-11-2 establishing procedures through which these purposes can be fulfilled.

10-12 Definitions

Unless the context clearly indicates otherwise, the definitions of this section are to be used only in interpreting and administering the erosion and sedimentation control provisions of this article.

Accelerated Erosion

Any increase over the rate of natural erosion as a result of land-disturbing activity.

Active Construction

Activities that contribute directly to the building of facilities including land-disturbing activities for roads, parking lots, footings, etc.

Adequate Erosion Control Measure, Structure, or Device

A measure, structure or device that controls the soil material within the land areas under responsible control of the person conducting the land-disturbing activity.

Affiliate

A person that directly, or indirectly through one or more intermediaries, controls, is controlled by, or is under common control of another person.

Best Management Practices

Management and structural practices designed to reduce the quantities of pollutants washed by rain and snow melt into nearby waters.

Borrow

Fill material that is required for on-site construction and is obtained from other locations.

Buffer Zone

A strip of land adjacent to a lake or natural watercourse.

Certificate of Completion for Soil Erosion and Sedimentation Control
A certificate issued by the Wake County Department of Environmental Services indicating that the permittee has achieved acceptable stabilization in accordance with the approved plan and has completed all work necessary on the site related to soil erosion, issued according to Sec. 10-31-2.

Certificate of Compliance for Preliminary Soil Erosion and Sedimentation Control
A certificate issued according to Part 3 of this article by the Wake County Department of Environmental Services indicating that the initial erosion control devices shown on the approved plan have been installed and are operating correctly.

Completion of Construction or Development
The stage of a project in which no further land-disturbing activity is required on a phase of a project except that which is necessary for establishing a permanent ground cover.

Contiguous
Sharing the same boundary of property.

Director of Environmental Services
The Wake County official charged with administration and enforcement of the sedimentation and erosion control regulations of this article, including the Director's duly authorized agent or delegate.

Director of North Carolina Division of Land Resources
The Director of the North Carolina Division of Land Resources of the Department of Environment and Natural Resources, including the official's duly authorized agent or delegate.

Discharge Point
The point at which stormwater runoff leaves a tract of land.

Energy Dissipater
A structure or shaped channel section with mechanical armoring placed at the outlet of pipes or conduits to receive and break down the energy from high velocity flow.

Erosion
The wearing away of land surface by the action of the wind, water, gravity, or any combination thereof.

Erosion and Sedimentation Control Plan
A plan, as required by this article, for the control of erosion and sedimentation during land-disturbing activities.

Ground Cover
Any natural vegetative growth or other approved material that renders the soil surface stable against accelerated erosion.

High Quality Waters
Waters classified as such in 15A NCAC 2B.0101(e)(5) - General Procedures, which is incorporated herein by reference to include further amendments pursuant to G.S. 150B-14 (c).

High Quality Water (HQW) Zones
Areas in the Coastal Counties that are within 575 feet of High Quality Waters and for the remainder of the state, areas that are within one mile and draining to HQWs.

Lake or Natural Watercourse
Any stream, river, brook, swamp, sound, bay, creek, run, branch, canal, waterway, estuary, and any reservoir, lake or pond, natural or impounded, in which sediment may be moved or carried in suspension, and which could be damaged by accumulation of sediment.

Land Disturbance Permit
The approval document allowing land-disturbing activities to be initiated.

Land-Disturbing Activity
Any use of the land by any person in residential, industrial, educational, institutional, or commercial development, or highway and road construction and maintenance that results in a change in the natural cover or topography and that may cause or contribute to sedimentation.

Local Government
Any county, incorporated village, town, or city, or any combination of counties, incorporated villages, towns and cities, acting through a joint program pursuant to the provisions of the North Carolina Sedimentation Pollution Control Act.

Natural Erosion
The wearing away of the earth's surface by water, wind, or another natural agent under natural environmental conditions undisturbed by humans.

North Carolina Sedimentation Pollution Control Act
The North Carolina Sedimentation Pollution Control Act of 1973 (NCGS Chapter 113A Article 4, as amended) and all rules and orders adopted pursuant to it.

Parent
An affiliate that directly, or indirectly through one or more intermediaries, controls another person.

Person
Any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, interstate body, or other legal entity.

Person Conducting Land-Disturbing Activity
Any person who meets any of the following criteria:

(a) a developer or other person who has or holds himself out as having financial or operational control over a land-disturbing activity; or

(b) a landowner or person in possession or control of the land that directly or indirectly allows land-disturbing activity or has benefited from it; or

(c) a contractor or subcontractor who is authorized to perform land-disturbing work for the landowner.

Phase of Grading
One of two types of grading: rough or fine.

Sediment
Solid particulate matter, both mineral and organic, that has been or is being transported by water, air, gravity, or ice from its site of origin.

Sedimentation
The process by which sediment resulting from accelerated erosion has been or is being transported off the site of the land-disturbing activity or into a lake, natural watercourse or on other property.

Siltation
Sediment resulting from accelerated erosion which is settleable or removable by properly designed, constructed, and maintained control measures; and which has been transported from its point of origin within the site of a land-disturbing activity; and which has been deposited, or is in suspension in water.

Spoils
Refuse material removed from an excavation.

Stabilization
The process of restoring a site with ground cover as defined by this article, which renders the soil stable against accelerated erosion.

Stop Work Order
A written order to stop work, issued by the Director of Environmental Services, upon determining that work is being conducted in violation of this ordinance.

Storm Drainage Facilities
The system of inlets, conduits, channels, ditches, and appurtenances which serve to collect and convey stormwater through and from a given drainage area.

Stormwater Runoff
The surface flow of water resulting from precipitation in any form and occurring immediately after rainfall or melting.

Subsidiary
An affiliate that is, either directly or indirectly through one or more intermediaries, controlled by another person.

Ten-year Storm
A storm with an intensity expected to be equaled or exceeded, on the average, once in ten years, and of a duration that will produce the maximum peak rate of stormwater runoff for the watershed of interest under average antecedent wetness conditions.).

Tract
All contiguous land and bodies of water being disturbed or to be disturbed as a unit, regardless of ownership.

Twenty-Five Year Storm
A storm with an intensity expected to be equaled or exceeded on the average, once in 25 years, and of a duration that will produce the maximum peak rate of stormwater runoff for the watershed of interest under average antecedent wetness conditions.

Uncovered
The removal of ground cover from, on, or above the soil surface.

Velocity
The average velocity of flow through the cross section of the main channel at the peak flow of the storm of interest. The cross section of the main channel is the area defined by the geometry of the

channel plus the area of flow below the flood height defined by vertical lines at the main channel banks. Overload flows are not to be included for the purpose of computing velocity of flow.

Wake County Department of Environmental Services
The Wake County Department of Environmental Services or successor agencies.

Wake County Soil Erosion and Sedimentation Control Checklist
A form containing the list of items required in order for an erosion and sedimentation control plan to be considered complete for review, as provided by the Wake County Department of Environmental Services.

Waste
Surplus materials resulting from on-site land-disturbing activities and being disposed of at a location other than the site of the land-disturbing activity.

Working Days
Days exclusive of Saturday and Sunday during which weather conditions or soil conditions permit land-disturbing activity to be undertaken.

10-13 Applicability

10-13-1 Except for the exemptions noted in Section 10-13-2, the erosion and sedimentation control regulations of this article apply to all land disturbances exceeding one acre in disturbed surface area. For land disturbances of one acre or less of disturbed surface area, refer to Section 10-20-5 of this article for erosion and sedimentation control requirements. This article expressly applies to the following land-disturbing activities:

(A) Access and Haul Roads
Temporary access and haul roads, other than public roads, constructed or used in connection with any land-disturbing activity are co**n**sidered a part of such activity.

(B) Borrow and Waste Areas
When the person conducting the land-disturbing activity is not the person obtaining borrow and/or disposing of the waste, these areas are considered a separate land-disturbing activity. When the person conducting the land-disturbing activity is also the person conducting the borrow or waste disposal activity, the borrow or waste area must be considered part of the land-disturbing activity when:

(1) areas from which borrow is obtained are not regulated by the provisions of the Mining Act of 1971;

(2) waste areas for surplus materials that are not landfills regulated by the North Carolina Department of Environment and Natural Resources' Division of Waste Management; or

(3) waste areas for surplus materials that are not landfills regulated by Wake County under its Solid Waste Ordinance.

(C) Utility Construction
Land-disturbing activities connected with utility construction over which the State of North Carolina does not have exclusive regulatory jurisdiction as provided in G.S. 113A-56 are considered part of such activity.

10-13-2 Exemptions

The erosion and sedimentation control regulations of this article do not apply in the following situations:

(A) Agricultural Activities

Land-disturbing activities undertaken on agricultural lands for the production of plants and animals useful to man, including but not limited to forage and sod crops, grain and feed crops, tobacco, cotton, and peanuts; dairy animals and dairy products; poultry and poultry products; livestock, including the breeding and grazing of any or all such animals; bees and apiary products; and fur animals.

(B) Forestland Activities

Land-disturbing activities undertaken on forestland for the production and harvesting of timber and timber products and which are conducted in accordance with best management practices set out in *Forest Practice Guidelines Related to Water Quality* as adopted by the North Carolina Department of Environment and Natural Resources. If such land-disturbing activity is not conducted in accordance with *Forest Practice Guidelines Related to Water Quality*, the provisions of this article apply to the activity on the tract.

(C) Mining

An activity for which a permit is required under the Mining Act of 1971, Article 7 of Chapter 74 of the General Statues.

(D) Emergency Activities

Activities essential to protect human life during an emergency.

(E) Activities Under State Jurisdiction

Land-disturbing activities over which the state has exclusive regulatory jurisdiction as provided in G.S. 113A-56, including land-disturbing activities that are:

(1) conducted by the local, state or federal government;

(2) conducted by persons having the power of eminent domain; or

(3) funded in whole or in part by the state or federal government.

Sections 10-14 through 10-19 are reserved for future use.

Part 2 Standards

10-20 Land-Disturbing Activities

Land-disturbing activities shall not be undertaken except in accordance with the following standards:

10-20-1 Minimum Standards

All soil erosion and sedimentation control plans and measures must conform to the minimum applicable standards specified in North Carolina's *Erosion and Sediment Control Planning and Design Manual* and the *Wake County Sedimentation and Erosion Control Plan Review Manual.* Erosion control devices must be installed to prevent any offsite sedimentation for any construction site regardless of the size of the land disturbance.

10-20-2 Buffer Zone

No land-disturbing activity during periods of construction or improvement to land is permitted in proximity to a lake or natural watercourse unless a buffer zone is provided along the margin of the watercourse of sufficient width to confine visible siltation within the 25% of the buffer zone nearest the land-disturbing activity.

(A) Projects On, Over or Under Water

A buffer is not required for a land-disturbing activity in connection with the construction of facilities to be located on, over, or under a lake or natural watercourse.

(B) Buffer Measurement

Unless otherwise provided, the width of a buffer zone is measured horizontally from the edge of the water to the nearest edge of the disturbed area, with the 25% of the strip nearer the land-disturbing activity containing natural or artificial means of confining visible siltation.

10-20-3 Operation in Lakes or Natural Watercourses

Land disturbing activity in connection with construction in, on, over, or under a lake of natural watercourse must minimize the extent and duration of disruption of the stream channel. Where relocation of a stream forms an essential part of the proposed activity, the relocation must minimize unnecessary changes in the stream flow characteristics.

10-20-4 Fill Material

Unless a permit from the North Carolina Division of Waste Management to operate a landfill is on file for the official site, acceptable fill material must be free of organic or other degradable materials, masonry, concrete and brick in sizes exceeding 12 inches, and any materials which would cause the site to be regulated as a landfill by the State of North Carolina.

10-20-5 Standards for Erosion and Sedimentation Control Devices

(A) Land Disturbances Requiring A Permit (Greater Than One Acre of Disturbed Area)

(1) Whenever land disturbing activities disturb more than one acre on a tract, an erosion and sedimentation control permit is required. The person conducting the land-disturbing activity must install erosion and sedimentation control devices and practices that are sufficient to retain the sediment generated by the land disturbing activity within the boundaries of the tract during the development of said tract; and

(2) Must plant or otherwise provide a permanent ground cover sufficient to restrain erosion after completion of construction or development within 15 working days or 21 calendar days following completion of construction or development, whichever period is shorter, except as provided in 15A NCAC 4B .0124(e).

(B) Land Disturbances Not Requiring A Permit (One Acre or Less of Disturbed Area)

(1) Whenever land-disturbing activities disturb one acre or less on a tract, an erosion and sedimentation control permit is not required. However, the person conducting the land disturbing activity must install erosion and sedimentation control devices and practices that are sufficient to retain the sediment generated by the land disturbing activity within the boundaries of the tract during the development of said tract; and

(2) Must install a gravel pad, 10 foot in width and 30 foot in length or equivalent, at the access point(s) for construction vehicles; and

(3) Must install silt fences on the low side of the lot prior to the initial footing inspection conducted by the Building Inspections Division

(4) Areas within 25 feet of the edge of pavement or gravel of the road must be stabilized before issuance of a Certificate of Occupancy

(5) All uncovered areas that result from land disturbing activities, and are subject to continued and accelerated erosion, and are causing the movement of sediment offsite from the tract, must be provided with a ground cover or other protective measures, structures or devices sufficient to restrain accelerated erosion and control off-site sedimentation.

(6) The property owner or agent must be given notice of responsibility for compliance at the issuance of a building permit for said land disturbing activity.

(7) While a permit is not required for land disturbances of one acre or less on a tract, the County retains the right to take enforcement actions and assess penalties if the movement of sediment offsite from the tract is observed during an inspection. Enforcement actions and penalties are described in Part 4 of this article.

10-20-6 Inspection by Landowner

(A) The landowner, the financially responsible party, or the landowner's or the financially responsible party's agent must perform an inspection of the area covered by the erosion and sedimentation control plan after each phase of the plan has been completed and after establishment of temporary ground cover in accordance with G.S. 113A-57(2).

(B) The person who performs the inspection must maintain and make available a record of the inspection at the site of the land-disturbing activity. The record must set out any significant deviation from the approved erosion and sedimentation control plan, identify any measures that may be required to correct the deviation, and document the completion of those measures. The record must be maintained until permanent ground cover has been established as required by the approved erosion and sedimentation control plan.

(C) The inspections required by this subsection are in addition to inspections required by G.S. 113A-61.1.

10-20-7 Protection of Property

Persons conducting land-disturbing activities must take all reasonable measures to protect all public and private property from damage caused by such activities.

10-20-8 Maximum Peak Rate of Runoff

During construction, the planned soil erosion and sedimentation control practices and devices must be employed to restrict sedimentation soil losses from each land-disturbing site in accordance with plans approved by the Wake County Department of Environmental Services Sedimentation and Erosion Control Section. Such erosion and sedimentation control measures, structures, and devices must be planned, designed, and constructed to provide protection from the calculated maximum peak rate of runoff from the ten-year storm. Runoff rates must be calculated using the procedures in the USDA, Soil Conservation Service's *National Engineering Field Manual for Conservation Practices*, or other calculation procedures acceptable to the County.

10-20-9 Grade

(A) The angle for graded slopes and fills shall not be greater than the angle that can be retained by vegetative cover or other adequate erosion control devices or structures.

(B) Slopes left exposed must be planted or otherwise provided with ground cover, devices, or structures sufficient to restrain erosion within 21 calendar days following completion of any phase or grading, or when grading equipment leaves the site.

(C) The angle for graded slopes and fills must be demonstrated to be stable. Stable is the condition where the soil remains in its final modified configuration, with or without mechanical constraints.

10-20-10 Standards for High Quality Water (HQW) Zones

Land-disturbing activities to be conducted in High Quality Water Zones must be designed as follows:

(A) Uncovered Areas

Uncovered areas in High Quality Water (HQW) zones must be limited at any time to a maximum total area of 20 acres within the boundaries of the tract. Only the portion of the land-disturbing activity within a HQW zone is governed by this rule. Larger areas may be uncovered within the boundaries of the tract with the written approval of the Director of the North Carolina Division of Land Resources.

(B) Maximum Peak Rate of Runoff

Erosion and sedimentation control measures, structures, and devices within HQW zones must be planned, designed and constructed to provide protection from the runoff of the 25-year storm which produces the maximum peak rate of runoff as calculated according to procedures in the United States Department of Agricultural, Natural Resources Conservation Service's *National Engineering Field Manual for Conservation Practices* or according to procedures adopted by any other agency of this state or the United States or any generally recognized organization or association.

(C) Settling Efficiency

Sediment basins within HQW zones must be designed and constructed so that the basin will have a settling efficiency of at least 70% for the 40 micron (0.04mm) size soil particle transported into the basin by the runoff of that 2-year storm which produces the maximum peak rate of runoff. The maximum peak rate of runoff must be calculated according to procedures in the United States Department of Agriculture Natural Resources Conservation Services *National Engineering Field Manual for Conservation Practices* or according to procedures adopted by any other agency of this state or in the United States or any generally recognized organization or association.

(D) Grade

Newly constructed open channels in HQW zones must be designed and constructed with side slopes no steeper than 2 horizontal to 1 vertical if a vegetative cover is used for stabilization unless soil conditions permit a steeper slope or where the slopes are stabilized by using mechanical devices, structural devices or other acceptable ditch liners. In any event, the angle for side slopes must be sufficient to restrain accelerated erosion.

(E) Ground Cover

Ground cover sufficient to restrain erosion must be provided for any portion of a land-disturbing activity in a HQW zone within 15 working days or 21 calendar days, whichever

period is shorter, following completion of any phase or grading, or when grading equipment leaves the site.

10-20-11 Standards for Landfills

(A) Land disturbance permits for landfills are valid for five (5) calendar years. If no construction activity has begun within 2-years, the land disturbance permit becomes null and void.

(B) A valid land disturbance permit is required for the duration of the "active life" of the landfill or phased permitted portion thereof until completion of closure activities.

(C) Land disturbance permits for landfills may be renewed in 5-year increments.

(D) Land Disturbance permits for landfills may be automatically renewed upon the certification of Financially Responsible Party and upon concurrence by County staff that there are no major modifications to the approved plan and that the project adheres to all current applicable standards.

(E) Automatic permit renewals will not be subject to plan review and land disturbance permit fees.

(F) No plan shall be approved unless it complies with all applicable state and Wake County erosion and sedimentation control and stormwater management requirements. Approval assumes the applicant's compliance with federal and state water quality and landfill laws, regulations and rules in addition to Wake County's regulations.

(G) Adequate erosion and sediment control measures consisting of vegetative cover, materials, structures or devices must be utilized to prevent sediment from leaving the landfill facility.

(H) Whenever the County determines that significant erosion and sedimentation is occurring as a result of land-disturbing activity, despite application and maintenance of protective practices, the party conducting the land-disturbing activity will be required to and shall take additional protective action.

(I) Adequate erosion and sediment control measures consisting of vegetative cover, materials, structures or devices must be utilized to prevent excessive on-site erosion of the landfill facility or portion thereof.

(J) Erosion and sedimentation control measures, structures and devices for landfills must be designed, constructed and maintained to manage the calculated maximum peak rate of runoff generated by the 24-hour, 25-year storm event. Runoff rates must be calculated using the procedures in the USDA, Soil Conservation Service's National Engineering Field manual for Conservation Practices, or the North Carolina Department of Environment and Natural Resources Erosion and Sediment Control Planning and Design Manual or other calculation procedures acceptable to Wake County.

(K) Stormwater plan review for landfills shall be included in the plan review for erosion and sedimentation control and stormwater improvements shall be permitted under the land disturbance permit upon payment of applicable land disturbances review and permit fees.

(L) Landfills shall conform to the requirements of the Sedimentation and Pollution Control Law (15A NCAC 04) and any required NPDES permits.

(M) Phased permits may be closed upon compliance with Wake County's certificate of completion requirements.

[Amended on 11/17/2008 by OA 07-08.]

10-21 Stormwater Outlet Protection

10-21-1 Applicability

This section does not apply where it can be demonstrated to the County that stormwater discharge velocities will not create an erosion problem in the receiving watercourse.

10-21-2 Purpose

Stream banks and channels downstream from any land-disturbing activity must be protected from increased degradation by accelerated erosion caused by increased velocity of runoff from the land-disturbing activity.

10-21-3 Maximum Permissible Velocity

(A) All land-disturbing activities must be planned and conducted so that the velocity of stormwater runoff in the receiving watercourse at the point of discharge resulting from a 10-year storm after development shall not exceed the greater of:

(1) the velocity as determined from the table in this subsection; or

(2) the velocity in the receiving watercourse determined for the 10-year storm prior to development.

(B) If the conditions in Sec. 10-21-3(A)(1) and Sec. 10-21-3(A)(2) cannot be met, then the receiving watercourse to and including the discharge point must be designed and constructed to withstand the expected velocity anywhere the velocity exceeds the "prior to development" velocity by 10%.

(C) The following is a table for maximum permissible velocity for stormwater discharges:

Material	Maximum Stormwater Discharge Velocities	
	Feet per Second	Meters per Second
Fine sand (noncolloidal)	2.5	0.8
Sandy loam (noncolloidal)	2.5	0.8
Silt loam (noncolloidal)	3.0	0.9
Ordinary film loam	3.5	1.1
Fine gravel	5.0	1.5
Stiff clay (very colloidal)	5.0	1.5
Graded, loam to cobbles (noncolloidal)	5.0	1.5
Graded, silt to cobbles (colloidal)	5.5	1.7
Alluvial silts (noncolloidal)	3.5	1.1
Alluvial silts (colloidal)	5.0	1.5
Coarse gravel (noncolloidal)	6.0	1.8
Cobbles and shingles	5.5	1.7
Shales and hard pans	6.0	1.8

For sinuous channels: multiply allowable velocity by 0.95 for slightly sinuous, by 0.9 for moderately sinuous channels, and by 0.8 for highly sinuous channels.

10-21-4 Acceptable Management Measures

Measures applied alone or in combination to satisfy the intent of this section are acceptable if there are no objectionable secondary consequences. The County recognizes that the management of stormwater runoff to minimize or control downstream channel and bank erosion is a developing technology. Innovative techniques and ideas will be considered and may be used when shown to have the potential to produce successful results. Some alternatives include:

(A) avoiding increases in surface runoff volume and velocity by including measures to promote infiltration to compensate for increased runoff from areas rendered impervious;

(B) avoiding increases in surface water discharge velocities by using vegetated or roughened swales or waterways in lieu of closed drains and high velocity paved sections;

(C) providing energy dissipators at outlets of storm drainage facilities to reduce flow velocities at the point of discharge;

(D) protecting watercourses subject to accelerated erosion by improving cross sections and/or providing erosion-resistant lining; or

(E) upgrading or replacing the receiving device, structure, or watercourse so that it will receive and conduct the flow to a point where it is no longer subject to degradation from the increased rate of flow or increased velocity.

10-22 Special Neuse And Cape Fear River Basin Regulations

10-22-1 Adoption

(A) Section 15 A NCAC 2B.0233 has been adopted with changes as published 12:6 NCR 462-479 (Subchapter 2b - Surface Water and Wetlands Standards, Monitoring; Section .0200 - Classifications and Water Quality Standards Applicable to Surface Waters and Wetlands of North Carolina .0233 Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Riparian Areas with Existing Forest Vegetation).

(B) The riparian buffer protection rules of 15 A NCAC 2B.0233 (Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Existing Riparian Buffers) apply to all lands within the Neuse River and Cape Fear River basins.

10-22-2 Applicability

All plans must meet the requirements of this management strategy or receive an exemption from the North Carolina Department of Environment and Natural Resources, Division of Water Quality. The following is the management strategy for maintaining and protecting riparian areas in the Neuse River Basin:

(A) Riparian areas must be protected and maintained in accordance with the Neuse River regulations of this section on all sides of surface waters in the Neuse and Cape Fear River Basins (intermittent streams, perennial streams, lakes, ponds, and estuaries) as indicated on the most recent versions of United States Geological Survey 1:24,000 scale (7.5 minute quadrangle) topographic maps, and/or the Soil Survey for Wake County, North Carolina, whichever is more restrictive. The regulations of this section only apply to riparian areas where forest vegetation is established in Zone 1 as of July 22, 1997. Forest vegetation, as defined in 15A NCAC2B. 0202, of any width in Zone 1 must be protected and maintained in accordance with the Neuse River regulations of this section. The Neuse River regulations of this section do not establish new buffers in riparian areas. Exceptions to the Neuse River

regulations for riparian areas are described in Sec. 10-22-2(B). Maintenance of the riparian areas should be so that, to the maximum extent possible, sheet flow of surface water is achieved. The Neuse River regulations of this section specify requirements that must be implemented in riparian areas to ensure that the pollutant removal functions of the riparian area are protected and maintained.

(B) Exceptions

The following water bodies and land uses are exempt from the riparian area protection requirements.

(1) Ditches and manmade conveyances other than modified natural streams;

(2) When evidence from a field investigation reveals that areas mapped as intermittent streams, perennial streams, lakes, ponds, or estuaries on the most recent versions of United States Geological Survey 1:24,000 scale (7.5 minute quadrangle) topographic maps and/or the Soil Survey for Wake County, North Carolina, are not present as shown on the maps; then the property owner shall present the evidence from the field investigation to Wake County (Neuse of Cape Fear River Basins) or the North Carolina Division of Water Quality (Neuse River Basin only) for concurrence.

(3) Ponds and lakes created for animal watering, irrigation, or other agricultural uses that are not part of a natural drainage way that is classified in accordance with 15A NCAC 2B.0100;

(4) Water dependent structures as defined in 15A NCAC2B.0202, provided that they are located, designed, constructed and maintained to provide maximum nutrient removal, to have the least adverse effects on aquatic life and habitat and to protect quality;

(5) The following uses may be allowed where no practical alternative exists. A lack of practical alternatives may be shown by demonstrating that, considering the potential for a reduction in size, configuration or density of the proposed activity and all alternative designs, the basic project purpose cannot be practically accomplished in a manner which would avoid or result in less adverse impact to surface waters. Also, these structures must be located, designed, constructed, and maintained to have minimal disturbance, to provide maximum nutrient removal and erosion protection, to have the least adverse effects on aquatic life and habitat, and to protect water quality to the maximum extent practical through the use of best management practices.

(a) road crossings, railroad crossings, bridges, airport facilities, and utility crossings;

(b) stormwater management facilities and ponds, and utility construction and maintenance corridors for utilities such as water, sewer or gas, provided they are located in Zone 2 of the riparian area; are located at least 30 feet from the top of bank or mean high water line; and that they comply with the requirements for utility construction and maintenance corridors in Sec. 10-22-2 (B)(6).

(6) A corridor for the construction and maintenance of utility lines, such as water, sewer or gas, (including access roads and stockpiling of materials) running parallel to the stream and located within Zone 2 of the riparian area, as long as no practical alternative exists and they are located at least 30 feet from the top of bank or mean

high water line and best management practices are installed to minimize runoff and maximize water quality protection to the maximum extent practicable. Permanent, maintained access corridors must be restricted to the minimum width practicable and shall not exceed 10 feet in width except at manhole locations. A 10 feet perpendicular vehicle turnaround is allowed provided that turnarounds are spaced at least 500 feet apart along the riparian area.

(7) Stream restoration projects, scientific studies, stream gauging, water wells, passive recreation facilities such as boardwalks, trails, pathways, historic preservation and archaeological activities are allowed, provided that they are located in Zone 2 and are least 30 feet from the top of bank or mean high water line and are designed, constructed and maintained to provide the maximum nutrient removal and erosion protection, to have the least adverse effects on aquatic life and habitat, and to protect water quality to the maximum extent practical through the use of best management practices. Activities that must cross the stream or be located within Zone 1 are allowed as long as all other requirements of this subsection are met.

(8) Stream crossings associated with timber harvesting are allowed if performed in accordance with the *Forest Practices Guidelines Related to Water Quality* (15A NCAC 1I.0201-0209).

10-22-3 Riparian Area Zones

The protected riparian area has two zones as follows:

(A) Zone 1

Zone 1 is intended to be an undisturbed area of forest vegetation. Any forest vegetation, as defined in Rule .0202 of 15A NCAC 2B, in Zone 1 as of July 22, 1997 must be maintained and protected in accordance with this section.

(1) Location

(a) For intermittent streams and perennial streams, Zone 1 begins at the top of bank and extends landward a distance of 30 feet on all sides of the water body, measured horizontally on a line perpendicular to the water body.

(b) For all other water bodies, Zone 1 begins at the top of bank or mean high water line and extends landward a distance of 30 feet, measured horizontally on a line perpendicular to the water body.

(2) Activities Allowed

The following practices and activities are allowed in Zone 1:

(a) natural regeneration of forest vegetation and planting vegetation to enhance the riparian area if disturbance is minimized, provided that any plantings primarily consist of locally native trees and shrubs;

(b) selective cutting of individual trees of high value in the outer 20 feet of Zone 1, provided that the basal area (measured at 12-inch diameter at breast height) remains at or above 0.52 square feet per running feet of the over 20 feet of Zone 1, as measured along the bank of the stream or water body. Limited mechanized equipment is allowed in this area;

(c) horticultural or silvicultural practices to maintain the health of individual trees;

(d) removal of individual trees that are in danger of causing damage to dwellings, other structures or the stream channel;

(e) removal of dead trees and other timber cutting techniques necessary to prevent extensive pest or disease infestation if recommended by the Director of the North Carolina Division of Forest Resources and approved by the Director of the North Carolina Division of Water Quality; and

(f) ongoing agricultural operations, provided that existing forest vegetation is protected and requirements in Rules .0236 and .0238 of 15A NCAC 2B are followed.

(3) Activities Prohibited

The following practices are expressly prohibited in Zone 1:

(a) land-disturbing activities and placement of fill and other materials that would disturb forest vegetation, as defined in Rule .0202 of 15A NCAC 2B, other that those allowed in Sec. 10-22-2(B) and Sec. 10-22-3(A)(2);

(b) new development, except as provided in Sec. 10-22-2(B);

(c) new on-site sanitary sewage systems that use ground adsorption;

(d) the application of fertilizer; and

(e) any activity that threatens the health and function of the vegetation including, but not limited to, application of chemicals in amounts exceeding the manufacturer's recommended rate, uncontrolled sediment sources on adjacent lands, and the creation of any areas with bare soil.

(B) Zone 2

Vegetation in Zone 2 must consist of a dense ground cover composed of herbaceous or woody species that provides for diffusion and infiltration of runoff and filtering of pollutants.

(1) Location

Zone 2 begins at the outer edge of Zone 1 and extends landward a minimum of 20 feet as measured horizontally on a line perpendicular to the water body. The combined minimum width of Zones 1 and 2 must be at least 50 feet on all sides of the water body.

(2) Activities Allowed

The following practices and activities are allowed in Zone 2 in addition to those allowed in Zone 1:

(a) periodic moving and removal of plant products such as timber, nuts, and fruit on a periodic basis, provided the intended purpose of the riparian area is not compromised by harvesting, disturbance, or loss of forest or herbaceous ground cover.

(b) forest vegetation in Zone 2 may be managed to minimize shading on adjacent land outside the riparian area if the water quality function of the riparian area is not compromised.

(c) ongoing agricultural operations, provided that requirements of Rules .0236 and .0238 of 15A NCAC 2B are followed.

(3) Activities Prohibited

The following practices and activities are not allowed in Zone 2:

(a) land-disturbing activities and placement of fill and other materials, other than those allowed in Sec. 10-22-2(B), Sec. 10-22-3(A)(2) and Sec. 10-22-3(B)(2);

(b) new development, except as provided in Sec. 10-22-2(B);

(c) new on-site sanitary sewage that use ground adsorption;

(d) the application of fertilizer; and

(e) any activity that threatens the health and function of the vegetation including, but not limited to, application of chemicals in amounts exceeding the manufacture's recommended rate, uncontrolled sediment sources on adjacent lands, and the creation of any area with bare soil.

(4) Tree Removal

Timber removal and skidding of trees must be directed away from the watercourse or water body. Skidding must be done in a manner to prevent the creation of ephemeral channels perpendicular to the water body. Any tree removal must be performed in a manner that does not compromise the intended purpose of the riparian area and is in accordance with the *Forest Practices Guidelines Related to Water Quality* (15A NCAC 1I .0201-.0209).

(5) Sheet Flow

Maintenance of sheet flow in Zones 1 and 2 is required in accordance with this subsection.

(a) Sheet flow must be maintained to the maximum extent practical through dispersing concentrated flow and/or re-establishment of vegetation to maintain the effectiveness of the riparian area.

(b) Concentrated runoff from new ditches and manmade conveyances must be dispersed into sheet flow before the runoff enters Zone 2 of the riparian area. Existing ditches and manmade conveyances, as specified in Sec. 10-22-2(B)(1), are exempt from this requirement; however, care should be taken to minimize pollutant loading through these existing ditches and manmade conveyances from fertilizer application or erosion.

(c) Periodic corrective action to restore sheet flow should be taken by the landowner if necessary to impede the formation of erosion gullies which allow concentrated flow to bypass treatment in the riparian area.

(6) Maintenance Access

(a) Periodic maintenance of modified natural streams such as canals is allowed provided that disturbance is minimized and the structure and function of the riparian area is not compromised.

(b) A grassed travel way is allowed on one side of the water body when alternative forms of maintenance access are not practical. The width and specifications of the travel way must be limited to only that needed for equipment access and operation. The travel way must be located to maximize stream shading.

(7) Municipal Stormwater Management

If a local government has been issued a Municipal Separate Stormwater Sewer System permit or has been delegated to implement a local stormwater program, then the local government must ensure that the riparian areas to be protected are, as a standard practice, recorded on new or modified plats.

10-22-4 Variances

Where application of the regulations of this section would prevent all reasonable uses of a lot platted and recorded before June 3, 1974, a variance may be granted by the North Carolina Environmental Management Commission if it finds that:

(A) practical difficulties or unnecessary hardships would result in strict application of applicable regulations.

(B) such difficulties or hardships result from conditions which are peculiar to the property involved; and

(C) the general purpose and intent of the regulations would be preserved, water quality would be protected and substantial justice would be done if the variance were granted.

10-23 Maintenance

10-23-1 During the development of a site, the person conducting the land-disturbing activity must install, routinely inspect and maintain in good working order all temporary and permanent erosion and sedimentation control measures as required by the approved plan or any provision of this article, the North Carolina Sedimentation Pollution Control Act, or any order adopted pursuant to the erosion and sedimentation control regulations of this article or the North Carolina Sedimentation Pollution Control Act.

10-23-2 After site development, the property owner or person in possession or control of the land must install and/or maintain all necessary permanent erosion and sediment control measures, except those measures installed within a road or street right-of-way or easement accepted for maintenance by a governmental agency.

10-23-3 Whenever the County determines that significant erosion and sedimentation is occurring as a result of land-disturbing activity, despite application and maintenance of protective practices, the person conducting the land-disturbing activity will be required to and shall take additional protective action.

10-23-4 All streets, sidewalks, greenways or other travel ways must be kept free from mud, dirt, dust or other material that may create a hazard to public safety or cause the travel way to be unreasonably muddy, as determined by the County.

Sections 10-24 through 10-29 are reserved for future use.

Part 3 Review and Approval Procedures

10-30 Erosion and Sedimentation Control Plan and Land Disturbance Permit

10-30-1 Applicability

(A) Except as provided in Section 10-13, it is unlawful to conduct any land disturbing activity that will disturb more than one acre until both an approved erosion and sedimentation control plan and a land disturbance permit issued by the County have been obtained.

(B) The County may require preparation and approval of an erosion and sedimentation control plan for land-disturbing activities that are one acre or less in area when sediment control measures are needed to protect against off-site damages.

(C) A project may be developed in phases with separate erosion and sedimentation control plans and land disturbing permits for each phase.

10-30-2 Application Submittal and Acceptance of Erosion and Sedimentation Control Plan

(A) Submittal

A complete erosion and sedimentation control plan must be filed with the Wake County Department of Environmental Services at least 30 days prior to the anticipated start of the land-disturbing activity.

(B) Contents

The erosion and sedimentation control plan application submittal must include all of the following, with sufficient copies for necessary referrals and records, those forms, maps, plans, sets of calculations and other documents as prescribed by the Director of Environmental Services as necessary to determine compliance with applicable regulations or to address the required conclusions:

(1) Erosion and Sedimentation Control Checklist

The erosion and sedimentation control plan must contain at least all of the items specified on the Wake County Erosion and Sedimentation Control Checklist, including an application, administrative fees; architectural and engineering drawings; maps; assumptions; calculations; and narrative statements as needed to adequately describe the proposed development of the tract and the measures planned to comply with the erosion and sedimentation control regulations of this article. Detailed guidelines for plan preparation may be obtained from the Wake County Department of Environmental Services upon request.

(2) Financial Responsibility and Ownership

The erosion and sedimentation control plan must include an authorized statement of financial responsibility and ownership that complies with the following:

(a) is signed by the financially responsible party for the land-disturbing activity or his authorized agent, including the mailing and street addresses of the principal place of business of the financially responsible party the owner of the land; and any designated agents. A post office box is not an acceptable mailing address;

(b) if the financially responsible party is not a resident of Wake County, a resident Wake County agent must be designated for the purpose of receiving notices of compliance or non-compliance with the erosion and sedimentation control plan, this article, the North Carolina Sedimentation Pollution Control Act or any other applicable erosion and sedimentation control regulations;

(c) if the applicant is not the owner of the land to be disturbed, the erosion and sedimentation control plan must include the owner's written consent for the applicant to submit an erosion and sedimentation control plan and to conduct the anticipated land-disturbing activity.

(3) The Director of Environmental Services may waive one or more application requirements by certifying in writing that such information is unnecessary in the particular case to determine compliance with the applicable regulations.

(C) Acceptance

(1) The Director of Environmental Services must review a submitted plan and determine whether it complies with submittal requirements.

(2) If the erosion and sedimentation control plan does not comply with submittal requirements, the Director of Environmental Services must notify the applicant of the submittal deficiencies and invite the applicant to revise the erosion and sedimentation control plan to correct the deficiencies.

(3) No further processing of incomplete plans will occur until the deficiencies are corrected.

(4) If or when the erosion and sedimentation control plan complies with all submittal requirements, the Director of Environmental Services must accept the application as complete.

(5) An erosion and sedimentation control plan will be considered complete and ready for processing only if submitted according to the application completeness requirements of this article. The Director of Environmental Services must promptly notify the person submitting the erosion and sedimentation control plan that the 30-day time limit for review will not begin until the plan is deemed complete.

10-30-3 Review and Decision

(A) The County must forward a copy of each erosion and sedimentation control plan for a land-disturbing activity that involves the utilization of ditches for the purpose of de-watering or lowering the water table of the tract to the Director of the North Carolina Division of Water Quality.

(B) After accepting an erosion and sedimentation control plan as complete, the Director of Environmental Services must refer it to appropriate staff for review.

(C) The review staff must review the erosion and sedimentation control plan, determine whether the proposed activity complies with all applicable regulations, identify any noncompliant features, and whenever feasible, suggest modifications to correct the noncompliant features.

(D) Within 30 days of receipt of a complete initial plan submittal, and within 15 days of receipt of each revised plan, the Wake County Department of Environmental Services must notify the applicant that the plan has been approved, approved with modifications, approved with performance reservations, or disapproved.

(E) Failure to approve, approve with modifications, approve with performance reservations or disapprove a complete initial erosion and sedimentation control plan within 30 days of receipt constitutes an action of approval.

(F) Failure to approve, approve with modifications, approve with performance reservations or disapprove a resubmission of an erosion and sedimentation control plan within 15 days of receipt constitutes an action of approval.

(G) No plan shall be approved unless it complies with all applicable state and County regulations for soil erosion and sedimentation control. Approval assumes the applicant's compliance with federal, state water quality laws, regulations and rules.

(H) Applicant shall provide documentation, when requested, of compliance with federal, state and local laws, regulations and rules.

(I) Denial of the erosion and sedimentation control plan must specifically state in writing the reasons for denial.

(J) If an erosion and sedimentation control plan has been disapproved, the applicant has 12 months to submit revised plans addressing the reasons for disapproval or the erosion and sedimentation control plan is deemed null and void.

10-30-4 Decision-making Criteria

(A) An erosion and sedimentation control plan may be disapproved if the erosion and sedimentation control plan fails to adequately address the following control objectives:

(1) Identify Critical Areas

On-site areas that are subject to severe erosion, and off-site areas that are especially vulnerable to damage from erosion and/or sedimentation, must be identified and receive special attention.

(2) Limit Time of Exposure

All land-disturbing activities must be planned and conducted to limit exposure to the shortest feasible time.

(3) Limit Exposed Areas

All land-disturbing activity must be planned and conducted to minimize the size of the area to be exposed at any one time.

(4) Control Surface Water

Surface water runoff originating upgrade of exposed areas must be controlled to reduce erosion and sediment loss during the period of exposure.

(5) Control Sedimentation
All land-disturbing activity must be planned and conducted to prevent off-site sedimentation damage.

(6) Manage Stormwater Runoff
When the increase in the velocity of stormwater runoff resulting from a land-disturbing activity is sufficient to cause accelerated erosion of the receiving watercourse, plans must include measures to control the velocity at the point of discharge to minimize accelerated erosion of the site and increased sedimentation of the stream.

(B) The County must disapprove an erosion and sedimentation control plan or draft plans if implementation of the erosion and sedimentation control plan would result in a violation of the rules adopted by the Environmental Management Commission to protect riparian buffers along surface waters.

(C) The County may disapprove an erosion and sedimentation control plan upon finding that an applicant, or a parent, subsidiary, or other affiliate of the applicant, within the 2 years prior to the application date:

(1) is conducting or has conducted land-disturbing activity without an approved plan, or has received a notice of violation on a previously approved erosion and sedimentation control plan and has not complied with the notice within the time specified;

(2) has failed to pay a civil penalty assessed pursuant to the North Carolina Sedimentation Pollution Control Act or a local ordinance adopted pursuant to the North Carolina Sedimentation Pollution Control Act by the time the payment is due;

(3) has been convicted of a misdemeanor pursuant to G.S. 113A-64(b) or any criminal provision of a local ordinance adopted pursuant to the North Carolina Sedimentation Pollution Control Act; or

(4) has failed to substantially comply with state rules or local ordinances and regulations adopted pursuant to the North Carolina Sedimentation Pollution Control Act.

(5) When an erosion and sedimentation control plan is disapproved under the provisions of this subsection, the County must notify the Director of the North Carolina State Division of Land Resources of such disapproval within 10 days. The County must advise the applicant and the North Carolina State Division of Land Resources in writing as to the specific reasons that the erosion and sedimentation control plan was disapproved.

10-30-5 Amendment of Plans

(A) Application for amendment of an erosion and sedimentation control plan in written and/or graphic form may be made at any time under the same conditions as the original application. Until the County approves the amendment, the land-disturbing activity shall not proceed except in accordance with the erosion and sedimentation control plan as originally approved.

(B) The County must require a revised plan if it determines, upon review of an erosion and sedimentation control plan or inspection of the job site, that a significant risk of accelerated

erosion or off-site sedimentation exists, and the erosion and sedimentation control plan is inadequate to meet the requirements of this article. Pending the preparation of the revised plan, work must stop or continue only under conditions outlined by the appropriate authority.

10-30-6 Validity of Plan, Lapse of Approval

An approved erosion and sedimentation control plan is valid for 2 calendar years from the date of approval. If a land disturbance permit has not been obtained within the 2-year period, the erosion and sedimentation control plan approval becomes null and void.

10-30-7 Land Disturbance Permit Requirements

Land disturbance permits may be obtained upon satisfaction of the following items:

(A) Application

The applicant must provide to the Wake County Department of Environmental Services the number of copies of the approved erosion and sedimentation control plan as prescribed by the Director of Environmental Services.

(B) Fees

Payment of fees established by the Wake County Board of Commissioners for administration of these erosion and sedimentation control regulations must be made at the pre-construction conference.

(C) Pre-Construction Conference

A pre-construction conference with County staff is required prior to issuance of the land disturbance permit.

(D) Certificate of Compliance

A certificate of compliance for preliminary soil erosion and sedimentation control must be issued confirming that initial soil erosion and sedimentation controls have been installed in accordance to the approved plan.

(1) Grading, other than for installation of soil erosion and sedimentation control measures, is prohibited prior to the issuance of a certificate of compliance.

(2) The certificate of compliance must be issued prior to the approval by the County of an application for building construction in the County, in any of the incorporated areas of the County, or extraterritorial jurisdictional areas of the municipalities of the County subject to the erosion and sedimentation control regulations of this article.

(E) Additional Requirements

(1) No land disturbance permit may be issued until the County is assured that the proposed land-disturbing activity will be carried out in accordance with the proposed soil erosion and sedimentation control plan;

(2) No land disturbance permit will be issued on property owned by the same individual, corporation, etc. that is in violation of the erosion and sedimentation control regulations of this article until that violation is corrected.

10-30-8 Actions Required Prior to Land Disturbance

(A) Onsite Plan and Permit

An erosion and sedimentation control plan approval and land disturbance permit issued under this article must be prominently displayed until all construction is complete, all permanent sedimentation and erosion control measures are installed and the site has been stabilized. A copy of the approved plan must be kept on file at the job site.

(B) Notice of Activity Initiation

No person shall initiate a land-disturbing activity until notifying the agency that issued the erosion and sedimentation control plan approval of the date that the land-disturbing activity will begin.

10-30-9 Effect of Permit Issuance; Lapse of Approval

(A) The land disturbance permit is valid for 2 calendar years except as otherwise noted in Section 10-20-11 Standards for Landfills. If no construction activity has begun within the 2-year period, the land disturbance permit becomes null and void. If construction activity has begun, but the certificate of completion has not been issued within the 2 years, the land disturbance permit must be renewed.

[Amended on 11/17/2008 by OA 07-08.]

(B) The land disturbance permit may be renewed for a maximum of two years as either a single two-year extension or in two one-year extensions by submitting a request for a permit extension 30 days prior to the expiration date and payment of all applicable land disturbance fees. Permit renewal fees for the one-year extension will be prorated at 50% of the two-year renewal fee. Extension of the original permit approval beyond the maximum two-year renewal period is not allowed. Any change of ownership must be reflected in a revised financial responsibility form.

(C) Projects may be phased using multiple permits. The phasing of a project under a single permit is not allowed. Each project phase requires a separate and independent plan submittal, review fees, permit approval and payment of applicable land disturbance fees.

Commentary: The phasing of large and/or complex projects should be considered when it is anticipated that the maximum permit validity period of 4 years (the original permit has a 2 year validity, plus the maximum renewal period of 2 years) may be insufficient to complete all work or in instances where it may be desirable to obtain certificates of completion for phases, rather than one certificate of completion for the entire project.

(D) Failure to renew the land disturbance permit, in accordance with this section, is the same as failure to submit an erosion and sedimentation control plan in accordance with this article and may be subject to a civil penalty of up to $5,000 per day. Any person who is subject to civil penalty under this subsection may be subject to additional civil penalties for violation of any other provisions of this article, or rules or orders adopted or issued pursuant to the erosion and sedimentation control regulations of this article.

(E) All site improvements, as shown on the approved plan, must be completed by the end of the one-year renewal period and before the certificate of completion is issued, if the land disturbance permit is not renewed for an additional 1-year period as allowed by this section. Any person who fails to meet the conditions of the renewal will be subject to a civil penalty as set forth in Part 4 of this article.

(F) If the property associated with the approved plan is sold in whole or in part before all conditions of the approved plan are met, the land disturbance permit holder must provide notice to the new owner of conditions of the land disturbance permit and provide Wake County Environmental Services with revised financial responsibility forms.

10-31 Inspections

10-31-1 Authority

(A) The County has the power to conduct investigations as it reasonably deems necessary to carry out its duties as prescribed in this article. For this purpose, County officials may enter any property, public or private, at reasonable times for the purpose of investigating and inspecting the sites of any land-disturbing activity. No person shall refuse entry or access to any authorized representative or agent for the County who requests entry for purposes of inspections, and presents appropriate credentials, nor shall any person obstruct, hamper, or interfere with any such representatives while in the process of carrying out their official duties.

(B) Agents and officials of the County will periodically inspect land-disturbing activities to ensure compliance with the North Carolina Sedimentation Pollution Control Act, this article, or rules or orders adopted or issued pursuant to this article, and to determine whether the measures required in the erosion and sedimentation control plan are effective in controlling erosion and sedimentation resulting from land-disturbing activity. Notice of right to inspect must be included in the certificate of approval of each plan.

(C) Any land-disturbing activity will be the responsibility of the person(s) conducting the land disturbing activity, including the property owners. Failure to prevent off site sedimentation will be deemed a violation of the erosion and sedimentation control regulations of this article.

(D) The County may require written statements, or the filing of reports under oath, with respect to pertinent questions relating to land-disturbing activity.

(E) If through inspections the County determines that significant erosion or sedimentation is occurring as a result of land-disturbing activity, despite application and maintenance of protective practices, the person conducting the land-disturbing activity will be required by the Director of Environmental Services or authorized representative to take additional protective action.

10-31-2 Certificate of Completion

(A) A certificate of completion must be issued when inspections indicate that:

(1) all conditions of the approved land disturbance permit are met;

(2) all disturbed areas are stabilized with permanent ground cover, permanent armor, or impervious surface;

(3) all proposed roads, utilities, permanent erosion control devices, and other infrastructure has been installed according to approved plans;

(4) all requirements of the approved stormwater plan are met; and

(5) all temporary sediment control devices required by the approved erosion and sedimentation control plan are removed or are converted to permanent stormwater devices pursuant to an approved stormwater plan.

(B) For approved plans involving a proposed public road dedication:

(1) once a certificate of completion is issued and a petition for North Carolina Department of Transportation acceptance is submitted to the Wake County Department of Environmental Services, notification must be mailed to the North Carolina Division of Highways District 1 Office; and

(2) the notification must state that the project has been issued a certificate of completion and must describe the project in detail with publicly dedicated streets described by name and approximate length.

10-32 Appeals

10-32-1 Local Appeal of Plan Disapproval or Modification

(A) Authority

If any proposed erosion and sedimentation control plan is disapproved or modified by the County, the person submitting the erosion and sedimentation control plan is entitled to a public hearing before the Director of Environmental Services.

(B) Filing

The person who submitted the erosion and sedimentation control plan must submit a written request for a hearing within 15 days after receipt of the written notice of the disapproval or modification.

(C) Hearing

(1) A hearing before the Director of Environmental Services must be conducted within 30 days after receipt of the request.

(2) At least 7 days prior to the hearing, the Director of Environmental Services must publish a notice of the hearing, at least once, in a newspaper of general circulation in the County.

(3) The Director of Environmental Services must render a decision in writing within 7 days of the public hearing.

(D) Notice of Decision

(1) In the event that the appeal is not granted, the Director of Environmental Services must notify the Director of the North Carolina Division of Land Resources of the disapproval within 10 days.

(2) The Director of Environmental Services must advise the applicant and the Director of the North Carolina Division of Land Resources in writing as to the specific reasons that the request was disapproved.

(E) Subsequent Appeals
If the Director of Environmental Services does not grant the appeal, the person submitting the erosion and sedimentation control plan has 15 days following the denial to appeal the County's decision to the North Carolina Sedimentation Control Commission as provided in G.S. 113A-61(c) and 15A NCAC 4B .0118(d).

10-32-2 Direct Appeal to State Agency
If any proposed erosion and sedimentation control plan is disapproved, the applicant may appeal the Director of Environmental Service's decision directly to the North Carolina Sedimentation Control Commission.

Sections 10-33 through 10-39 reserved for future use.

Part 4 Enforcement and Penalties

10-40 Violations
Unless lawfully exempted, the following actions constitute a violation of this article and will be deemed in violation of this article and subject to the enforcement and penalty provisions of this article and Article 20 of the UDO:

10-40-1 to engage in land-disturbing activity without filing an erosion and sedimentation control plan in accordance with the regulations of this article;

10-40-2 to conduct a land-disturbing activity except in accordance with provisions of an approved plan;

10-40-3 to fail to protect against off-site sedimentation damage when conducting any land-disturbing activity;

10-40-4 to leave dirt, mud or other material on any travel way in a manner that is determined to be a hazard to public safety or deemed detrimental to the waters of the State;

10-40-5 to violate or continue to violate any other provisions of this article, the North Carolina Sedimentation Pollution Control Act, or rules or orders adopted pursuant to this article.

10-41 Notice of Violation
10-41-1 If the Director of Environmental Services determines that a person conducting a land-disturbing activity has violated this article, a notice of violation shall be served upon that person. The notice may be served by any means authorized under GS 1A-1, Rule 4. The notice must:

(A) specify a date by which the person must come into compliance with the applicable standards; and

(B) inform the person of the actions that need to be taken to be brought into compliance.

10-41-2 Any person who fails to comply within the time specified is subject to additional civil and criminal penalties for a continuing violation as provided in G.S. 113A-64 and this ordinance.

10-42 Civil Penalties

10-42-1 Maximum Penalty

Any person who commits a violation according to Sec. 10-40 is subject to a maximum civil penalty of up to $5,000 per violation per day. A civil penalty may be assessed from the date of the violation. Each day of a continuing violation constitutes a separate violation.

10-42-2 Civil Penalty Assessment Factors

The Director of Environmental Services is authorized to assess the penalty. Fines will be determined by considering the following:

(A) the degree and extent of harm caused by the violation;

(B) the cost of rectifying the damage;

(C) the money saved by the violator by non-compliance

(D) whether the violation was willful; and

(E) the prior record of the violator.

10-42-3 Notice of Civil Penalty Assessment

The governing body of the County must provide notice of the civil penalty amount and the basis for assessment to the person assessed. The notice of assessment must be served by any means authorized under G.S. 1A-1, Rule 4 and must direct the violator to either pay the assessment or appeal the assessment within 30 days after receipt of the notice of assessment.

10-42-4 Appeal of Civil Penalties

The person conducting the land-disturbing activity may appeal the assessment of civil penalties to the Director of Environmental Services within 30 days of receipt of the notice of assessment. The Director of Environmental Services must consider any and all extenuating or mitigating circumstances.

10-42-5 Demand for Payment

(A) The Director of Environmental Services must make a written demand, by registered or certified mail, return receipt requested, or other means provided in GS 1A-1, Rule 4 for payment upon the person in violation, and must set forth, in detail, a description of the violation for which the penalty has been imposed.

(B) If the payment is not received or equitable settlement reached within 30 days after demand for payment is made, the matter must be referred to the County Attorney for institution of a civil action in the name of the County, in the appropriate division of the General Court of Justice in Wake County for recovery of the penalty.

10-42-6 Payment of Penalties

Civil penalties collected pursuant to this ordinance must be credited to the Civil Penalty and Forfeiture Fund.

10-43 Stop Work Order

If the County, upon site inspection determines that due care for plan implementation is inadequate to meet the requirements of this article the County may issue a stop work order in accordance with the decision-

making criteria of Sec. 10-30-4. Upon the issuance of a stop work order, the Director of Environmental Services must require that all provisions of this article be met.

10-44 Road Cleaning

Any person or companies determined in violation of Sec. 10-23 will be charged for road cleaning at the rate of $300 per hour for the first hour or part of hour and $200 per hour or part of hour thereafter until work is competed as specified by the County's authorized agent.

10-45 Criminal Penalties

Any person who knowingly or willfully violates or continues to violate any provision of this article according to Sec. 10-40 is guilty of a class 2 misdemeanor which may include a fine not to exceed $5,000 per violation per day as provided in G.S. § 113A-64.

10-46 Injunctive Relief

10-46-1 Initiation

(A) Whenever the Director of Environmental Services has reasonable cause to believe that a person is violating or threatening to violate this article, a rule or order adopted or issued pursuant to this article, or any term, condition, or provision of an approved erosion and sedimentation control plan, the Director may institute a civil action in the name of the County for injunctive relief to restrain the violation or threatened violation.

(B) The action must be brought in the Superior Court of Wake County, either before or after the institution of any other action or proceeding authorized by the erosion and sedimentation control regulations of this article,.

10-46-2 Court Action

(A) Upon determination by a court that an alleged violation is occurring or is threatened, the court must enter orders or judgments as are necessary to abate the violation, to ensure that restoration is performed, or to prevent the threatened violation.

(B) The institution of an action for injunctive relief under this section does not relieve any party to the proceeding from any civil or criminal penalty prescribed for violations of the erosion and sedimentation control regulations of this article.

10-47 Civil Relief

10-47-1 Any person injured by a violation of this article, or of any rule, regulation, or order duly adopted by the Wake County Board of Commissioners, or by the initiation or continuation of a land-disturbing activity for which an erosion and sedimentation control plan is required other than in accordance with the terms, conditions, and provisions of an approved plan, may bring a civil action against the person alleged to be in violation. The action may seek:

(A) injunctive relief;

(B) an order enforcing the erosion and sedimentation control regulations of this article or rule, regulation, order or erosion and sedimentation control plan violated;

(C) damages caused by the violation;

(D) both damages and injunctive relief; or

(E) both damages and enforcement order.

10-47-2 Civil action under this section may be brought in the Superior Court of Wake County. The court, in issuing any final order in any action brought pursuant to this section may award costs of litigation (including reasonable attorney and expert witness fees) to any party, whenever it determines that such an award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the filing of a bond or equivalent security with the amount of the bond or security to be determined by the court.

10-47-3 Nothing in this section restricts any right that any person (or class of persons) may have under any statute or common law to seek injunctive or other relief.

10-48 Restoration After Non-Compliance

The County may require a person who engaged in a land-disturbing activity and failed to retain sediment generated by the activity, as required by this article and G.S. 113A-57 (3), to restore the affected waters and land to minimize the detrimental effects of the resulting pollution by sedimentation. This authority is in addition to any other civil or criminal penalty or injunctive relief authorized under this ordinance.

[Article 10 amended 11/19/2007 by OA 02-07]

Article 11. Environmental Standards

Part 1 Neuse Riparian Buffers

11-10 Applicability of Neuse Riparian Buffer Protection Rules

The riparian buffer protection rules of 15 A NCAC 2B.0233 (Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Existing Riparian Buffers) apply to all lands within the Neuse River and Cape Fear River basins.

Sections 11-11 through 11-19 are reserved for future use

Part 2 Water Supply Watershed Buffers

11-20 Purpose

Water supply watershed buffers provide strips of natural vegetation that remove pollutants from stormwater runoff before they reach a water supply source or a watercourse that drains to a water supply source. They do so by allowing infiltration of runoff and filtration of pollutants through the ground and soil, slowing runoff flow to allow settling and deposition of pollutants, and providing vegetation that absorbs pollutants through root systems. The provision of vegetated, undisturbed buffers within water supply watersheds, therefore, is an important and effective means of maintaining the quality of public water supply sources and protecting those sources from potential polluting activities associated with development.

Commentary: A summary of the Wake County Water Supply Watershed Buffers and Regulations and classifications are attached in Appendix B.

11-21 Buffer Location and Width

Water supply watershed buffers and building setbacks from such buffers must be provided in accordance with the following table.

11-21-1 General

(A) In the event of conflict with other applicable regulations, the more restrictive regulation governs. Note: Some streams may require both water supply watershed buffers and Neuse River riparian buffers. In such cases, the more restrictive of the either the U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps or the USDA Soils Map must be used to determine a perennial stream.

(B) Buffers described in Sec. 11-21-6 and Sec. 11-21-3 were previously identified and platted as “drainageway buffers.” Because they serve the same function and are subject to the same limitations as water supply watershed buffers, they have been re-designated as “water supply watershed buffers.”

(C) Some streams may require both water supply watershed buffers and Neuse River riparian buffers.

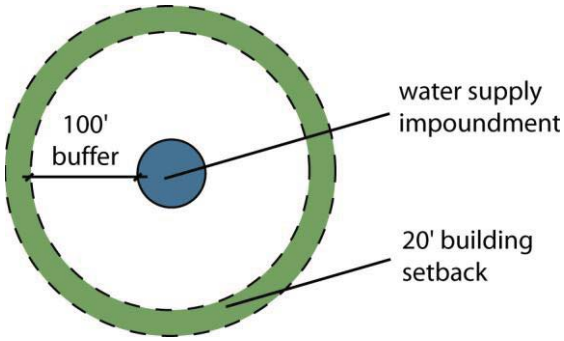
(D) All limits of disturbance within watershed buffers apply to each side of the water body.

11-21-2 Water Supply Impoundments

(A) A water supply watershed buffer with a minimum width of 100 feet must be provided around all water supply impoundments with a drainage area of 25 acres or more that are located inside the water supply watershed draining into the water supply water impoundment.

(B) The buffer width is to be measured perpendicular to the shoreline starting at the flood pool elevation of the water supply impoundment.

(C) Buildings must be setback at least 20 feet from the outer boundary of the required buffer area.

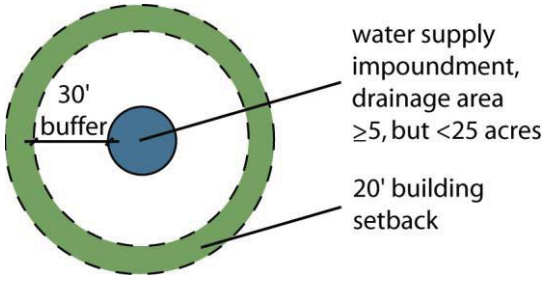


11-21-3 Water Supply Impoundments, 5 to 25 Acres

(A) A water supply watershed buffer with a minimum width of 30 feet must be provided around all water impoundments with a drainage area of at least 5 acres, but less than 25 acres, located inside the watershed draining into the water supply impoundment.

(B) Required buffers are to be measured perpendicular to the shoreline starting at the normal pool elevation of the water impoundment.

(C) Buildings must be setback at least 20 feet from the outer boundary of the required buffer area.

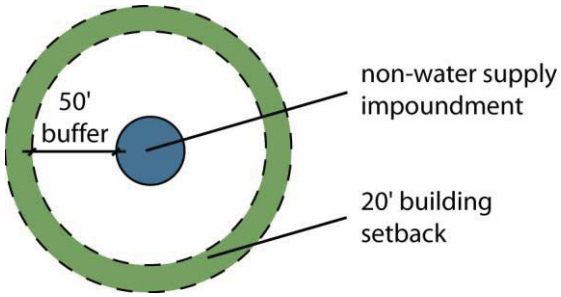


11-21-4 Non-Water Supply Impoundments

(A) A water supply watershed buffer with a minimum width of 50 feet must be provided around all non-water supply impoundments with a drainage area of 25 acres or more that are located inside the watershed draining into the non-water supply impoundment.

(B) The buffer width is to be measured perpendicular to the shoreline starting at the normal pool elevation of the non-water supply impoundment.

(C) Buildings must be setback at least 20 feet from the outer boundary of the required buffer area.



11-21-5 Perennial Streams

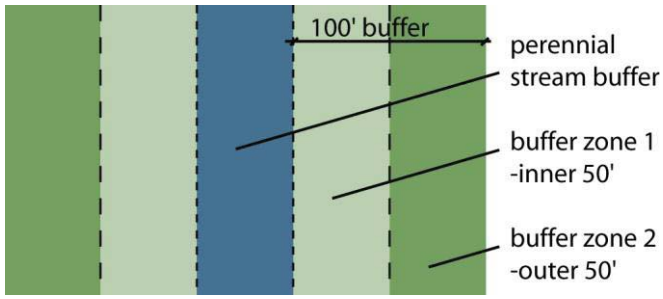
(A) A water supply watershed buffer with a minimum width of 100 feet must be provided along each side of a stream shown as a perennial stream on the most recent edition of U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps. [1]

(B) The buffer width is to be measured perpendicular to the river or stream bank starting at the river or stream bank.

(C) The area of the required buffer that begins at the stream bank and extends landward 50 feet is subject to the Zone 1 standards of Sec. Section 11-22-1(A).

(D) The area of the required buffer that begins at the outer edge of Zone 1 and extends landward 50 feet is subject to the Zone 2 standards of Sec. Section 11-22-1(B).

(E) There is no minimum building setback from the required buffer.

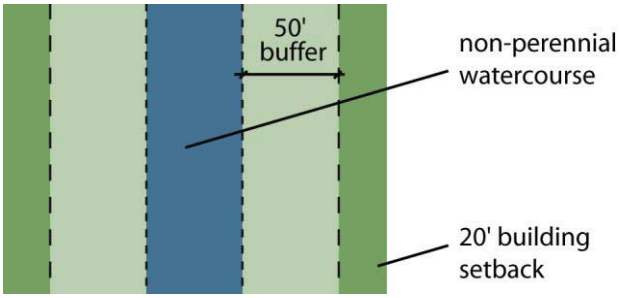


11-21-6 Non-Perennial Watercourses

(A) A water supply watershed buffer with a minimum width of 50 feet must be provided along each side of non-perennial watercourses, channels, ditches or similar physiographic features with a drainage area of 25 acres or more that are located inside the watershed draining into the stream.

(B) The buffer width is to be measured perpendicular to the drainageway starting at the natural drainage flow line of the watercourse.

(C) Buildings must be setback at least 20 feet from the outer boundary of the required buffer area.

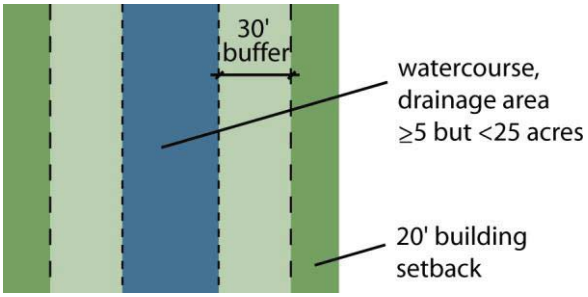


11-21-7 Watercourses and Channels, 5 to 25 Acres

(A) A water supply watershed buffer with a minimum width of 30 feet must be provided along each side of a watercourse, channel, ditch, or similar physiographic feature with a drainage area of at least 5 acres, but less than 25 acres, located inside the drainage area of the drainageway.

(B) Required buffers are to be measured perpendicular to the drainageway starting at the natural drainage flow line of the watercourse.

(C) Buildings must be setback at least 20 feet from the outer boundary of the required buffer area.



11-22 Activities Allowed Within Buffers

11-22-1 General

(A) The inner 50 feet ("Zone 1") of required 100-foot buffers along perennial streams and all other water supply watershed buffers must consist of a vegetated area that is undisturbed except for the activities expressly allowed to occur within water supply watershed buffers pursuant to subsection 11-22-2.

(B) The outer 50 feet ("Zone 2") of required 100-foot buffers along perennial streams must consist of a stable vegetated area that is undisturbed except as necessary to accommodate the activities expressly allowed to occur within water supply watershed buffers pursuant to subsection 11-22-2. Grading and revegetation, as well as lawns and landscaping, are allowed within Zone 2 of the perennial stream buffer.

(C) Any allowed disturbance that occurs as a result of the activities expressly permitted in subsection 11-22-2 must be designed, constructed, and maintained to:

(1) minimize impervious or partially impervious surface coverage;

(2) diffuse the flow of stormwater runoff, encourage sheet flow and avoid concentrated discharge of stormwater into surface waters;

(3) maximize the use of Best Management Practices (BMPs) to minimize adverse water quality impacts; and

(4) comply with all applicable standards and conditions of subsection 11-22-2.

11-22-2 Activities Allowed within Buffers

Only the activities listed below are allowed within required water supply watershed buffer areas:

(A) Archeological activities, provided any vegetation removed is restored with vegetation of a comparable assimilative capacity

(B) Bridges, provided no alternative to their location in the buffer exists

(C) Dam maintenance activities

(D) Drainage ditches, roadside ditches, and stormwater outfalls, provided:

(1) no alternative to their location in the buffer exists; and

(2) a stormwater management facility is installed to control nitrogen and attenuate flow before the conveyance discharges through the buffer

(E) Drainage of a pond, provided a new vegetated water supply watershed buffer meeting the purpose and requirements of this section is established along the new drainageway

(F) Driveway crossings that access single-family dwellings, provided:

(1) no alternative to their location in the buffer (including opportunity for shared driveways) exists;

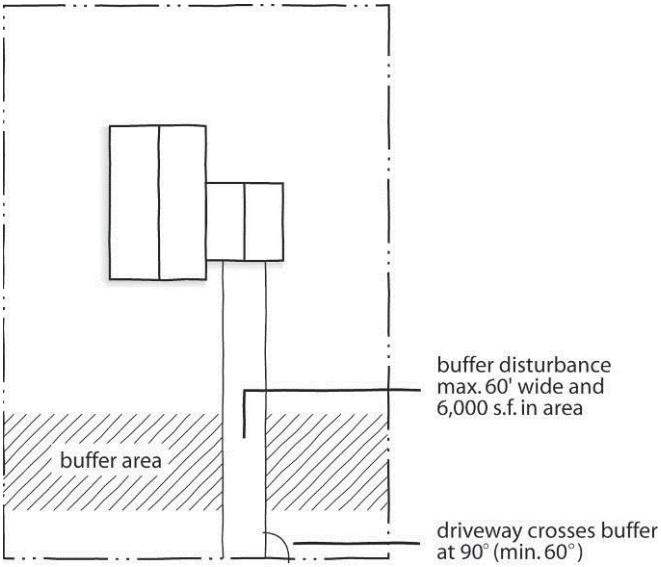
(2) buffer disturbance is no more than 60 feet wide;

(3) buffer disturbance is no more than 6,000 square feet in area (this area of disturbance may occur on “both” sides of the buffer);

(4) the driveway crosses the buffer at an angle as close to 90 degrees as possible (and not less than 60 degrees);

(5) side slopes do not exceed a 2:1 (horizontal to vertical) ratio (bridging and/or retaining walls may be used to meet this and the disturbance width standard); and

(6) all culverts are designed and constructed for the 25-year storm event or as otherwise required by the Department of Environmental Services.



Commentary: The State of North Carolina does not recognize pervious pavements as a Best Management Practice. Therefore, it cannot be credited as pervious area, although the county continues to encourage the use of pervious paving materials and/or dual ribbon design.

(G) Utility lines, provided:

(1) no alternative to their location in the buffer exists;

(2) a line crossing the buffer is combined with other permitted buffer crossings where practicable;

(3) buffer disturbance is not more than 40 feet wide;

(4) woody vegetation is removed by hand (no land grubbing or grading);

(5) vegetative root systems and stumps from cut trees are retained;

(6) no rip rap is used unless necessary to stabilize a pole or tower;

(7) active measures are taken after construction and during routine maintenance to ensure diffuse flow of stormwater through the buffer;

(8) mats are used to minimize soil disturbance (in wetlands);

(9) poles or towers are not installed within 10 feet of the lake, pond, river, stream, or drainageway;

(10) the area within 10 feet of the lake, pond, river, stream, or drainageway is managed so that only vegetation posing a hazard or with a potential to grow tall enough to interfere with the line is removed;

(11) construction activities minimize removal of woody vegetation, the extent of disturbed area, and the time during which areas remain in a disturbed state;

(12) cables are installed by vibratory plow or trenching; and

(13) trenches are backfilled with the excavated material immediately following line installation.

(H) Pedestrian, bikeway, equestrian, golf cart, and other recreation trails (public or private), provided:

(1) no alternative to their location in the buffers exists

(2) a trail crossing the buffer is combined with other permitted buffer crossings where practicable;

(3) buffer disturbance is no more than 20 feet wide (unless otherwise approved by the Department of Environmental Services);

(4) the trail is no more than 12 feet wide;

(5) a trail crossing the buffer does so at an angle as close to 90 degrees as possible (and not less than 60 degrees); and

(6) a trail running linearly within the buffer must be located, where possible, in the outer 20 feet of the buffer and in no instances may such trail be closer than 10 feet to the edge of the lake, pond, river, stream or drainageway

(I) Railroad crossings, provided:

(1) no alternative to their location in the buffer exists;

(2) buffer disturbance is not more than 60 feet wide; and

(3) buffer disturbance is no more than 6,000 square feet in area (this area of disturbance may occur on “both” sides of the buffer).

(J) Removal of previous fill or debris, provided:

(1) diffuse flow is maintained; and

(2) any vegetation removed is restored with vegetation of comparable assimilative capacity

(K) Road crossings (public or private roads), provided:

(1) no alternative to their location in the buffer exists;

(2) buffer disturbance does not extend beyond the required right-of-way or easement width, or in no case is more than 90 feet wide;

(3) buffer disturbance is no more than 9,000 square feet in area (this area of disturbance may occur on “both” sides of the buffer);

(4) the road crosses the buffer at an angle as close to 90 degrees as possible (and not less than 60 degrees);

(5) side slopes do not exceed a 2:1 horizontal: vertical ratio (bridging and/or retaining walls may be used to meet this and the disturbance width standard); and

(6) all culverts are designed and constructed for the 25-year storm event or as otherwise required by the Department of Environmental Services.

Commentary: The State of North Carolina does not recognize pervious pavements as a Best Management Practice. Therefore, it cannot be credited as pervious area, although the county continues to encourage the use of pervious paving materials and/or dual ribbon design.

(L) Scientific studies and stream gauging

(M) On-site sewage disposal systems and irrigation of reclaimed water meeting the standards set forth in 15A NCAC 02H .0219 (k) of the North Carolina Administrative Code, provided that such facilities may be located only within areas of water supply watershed buffers that are subject to Zone 2 standards as specified in Sec. 11-21.

(N) Stormwater management ponds, provided

(1) no alternative to their location in the buffer exists; and

(2) a new vegetated water supply watershed buffer meeting the purpose and requirements of this Paragraph is established around the new pond

(O) Stream restoration

(P) Stream bank stabilization

(Q) Temporary in-stream sediment and erosion control measures for work within a stream channel

(R) Vegetation management, including:

(1) emergency fire control measures, provided topography is restored;

(2) planting vegetation to enhance the buffer's function;

(3) pruning forest vegetation, provided the health and function of the vegetation is not compromised;

(4) removing individual trees that are in danger of causing damage to dwellings, other structures, or human life;

(5) removing poison ivy; and other noxious growth; and

(6) removing understory nuisance vegetation as defined in Exotic Plant Guidelines (Guideline #30, NC DENR, Div. of Parks and Recreation. 1998)

(S) Water-dependent structures

(T) Wetland restoration

11-23 Building Setbacks from Buffers

Buildings must be setback at least 20 feet from the outer edge of water supply watershed buffers. In the event of conflict between this buffer setback standard and other applicable standards, the more restrictive standard (the one requiring the greater setback) governs.

11-24 Platting of Lots

11-24-1 Options

The inner 50 feet ("Zone 1") of required 100-foot buffers along perennial streams must either be: (1) platted as part of a development lot and included within a conservation easement or (2) set-aside as a reserved conservation parcel, in accordance with the standards of this section.

11-24-2 Development Lots and Reserve Parcels

(A) "Development Lots"

For purposes of this section, "development lots," are lots that are used or intended to be used for principal uses allowed by the underlying zoning district.

(B) "Reserved Conservation Parcels"

For purposes of this section, "reserved conservation parcels" are parcels of land that are not used and are not intended to be used for principal uses allowed by the underlying zoning district, but are set-aside to conserve and protect natural areas in perpetuity.

11-24-3 Conservation Easement Option

Under the conservation easement option, the inner 50 feet ("Zone 1") of required 100-foot buffers along perennial streams must be covered by a perpetual conservation easement in accordance with the following standards.

(A) The inner 50 feet ("Zone 1") of required 100-foot buffers along perennial streams may be platted in development lots only if a perpetual conservation easement is dedicated covering the entire inner 50 feet.

(B) Conservation easements must run in favor of the Wake County Soil and Water Conservation District or any other recognized land conservation agency approved by the Planning Director.

(C) The easement grantee must grant permission to authorized employees and agents of Wake County to enter upon the property, inspect, maintain or repair the required buffer whenever the county deems necessary. This provision is not to be interpreted as an express or implicit obligation for the county to maintain or repair buffer areas.

(D) The grantee of a conservation easement is responsible for ensuring conservation and stewardship of the water supply watershed buffer and for carrying out conservation-related activities. Easement grantees are authorized to assign all or a portion of their conservation and stewardship duties to another appropriate entity approved by the Planning Director.

(E) A conservation easement and any related access easements must be shown on the record plat, noting the purpose of the easement as well as the names of the grantees and grantors.

11-24-4 Reserve Parcel Option

Under the reserve parcel option, the inner 50 feet ("Zone 1") of required 100-foot buffers along perennial streams must be set aside as reserved conservation parcels in accordance with the following standards.

(A) The inner 50 feet ("Zone 1") of required 100-foot buffers along perennial streams that is not covered by a conservation easement must be labeled on the plat as a "reserved conservation parcel" and restricted from future use or conveyance as a development lot. Reserved conservation parcels must be dedicated to a property owners' association or recognized land conservation agency.

(B) Reserved conservation parcels and remnants are exempt from the lot area and width standards of the underlying zoning district and from UDO standards requiring frontage on a public or private road, provided that a pedestrian access easement is provided to the parcel, with a minimum width of 10 feet.

(C) Under the reserve parcel option, development lots may not be platted within the inner 50 feet of required 100-foot buffers along perennial streams.

11-25 Density and Impervious Surface Calculations

11-25-1 The land area included within conservation easements and reserved conservation parcels will be included in calculating the allowable density for a cluster or open space subdivision.

11-25-2 The land area included within conservation easements and reserved conservation parcels will be included in calculating the allowable impervious surface coverage within a subdivision.

Sections 11-26 through 11-29 are reserved for future use

Part 3 Special Watershed Areas

11-30 Swift Creek Water Supply Watershed

11-30-1 Development in the Swift Creek Water Supply Watershed is subject to the requirements of the Swift Creek Land Management Plan in addition to other applicable standards of this ordinance. See also Article 9 of this ordinance.

11-30-2 All residential and commercial properties require a preliminary site plan prepared by a licensed professional land surveyor, landscape architect, architect, or engineer.

11-30-3 An as-built plan prepared by a licensed professional land surveyor is required for all lots before a Certificate of Occupancy may be issued.

11-30-4 In addition to the standards of the underlying zoning districts, the following standards apply to all land within the Swift Creek Water Supply Watershed:

Standards	Critical Area		Non-Critical Area						
	Rural	Urban	Rural		Suburban – New		Urban - New		Existing Urban
	Limited Res*	Limited Res*	Res	Nonres	Res	Nonres	Res	Nonres	Res & Nonres
Maximum Density (DU/acre)	0.5	2.5	1	n/a	2.5	n/a	6 east of Holly Springs Rd.; may exceed 6 west of Holly Springs Rd.	n/a	Res. Controlled by underlying zoning; Nonres. n/a
Max. Impervious Surface Ratio (%) [8]	6	6 [1]	12 [2]	12 [2]	12 [3]	12 [3]	12 [4]	12 [4]	12 [4]
Impoundments and Maintenance [5]	Allowed	[9]	Required if over 12% impervious, public or private maintained						
Municipal Sewer [6]	Prohibited [7]	Required if over 6%	Prohibited [7]		Required if over 12% impervious				

Standards	Critical Area		Non-Critical Area						
	Rural	Urban	Rural		Suburban – New		Urban - New		Existing Urban
	Limited Res*	Limited Res*	Res	Nonres	Res	Nonres	Res	Nonres	Res & Nonres
		impervious							
Private Sewer [6]	Prohibited		Allowed		Allowed if under 12%				

[1] Limit may be increased to 35% if consistent with the impervious surface limitations of the underlying zoning district and the first 1" of rainfall runoff is retained
[2] Limit may be increased to 30% if consistent with the impervious surface limitations of the underlying zoning district and the first ½" of rainfall runoff is retained
[3] Limit may be increased to 30% if consistent with the impervious surface limitations of the underlying zoning district and the first 1" of rainfall runoff is retained
[4] Limit may be increased to 30% and 70% (respectively) if consistent with the impervious surface limitations of the underlying zoning district and the first ½" or 1" of rainfall runoff is retained
[5] Refer to minimum state construction standards and inspection requirements
[6] Point source discharge is prohibited in basin
[7] Municipal sewer is allowed to protect public health when private systems fail
[8] Lots created after 7/01/2001 are subject to Wake County stormwater management regulations.
[9] Required if over 12% impervious, public or private maintained
* excludes public, civic and institutional uses such as colleges, schools, public libraries, museums and art galleries

11-31 Little River Water Supply Watershed

11-31-1 General Requirements

(A) All residential and commercial properties require a preliminary site plan to be prepared by a licensed professional engineer, surveyor, architect or landscape architect in order to initiate the permit process effective July 2, 2001.

(B) An as-built plan prepared by a licensed professional land surveyor is required for all lots before a Certificate of Occupancy may be issued.

11-31-2 Lot Sizes

(A) The minimum lot size for all residential lots in the Little River Water Supply Watershed is 40,000 square feet per dwelling unit.

(B) The minimum lot size for all nonresidential lots in the Little River Water Supply Watershed is 40,000 square feet plus 40,000 square feet for each additional 1,250 gallons per day or portion thereof of anticipated wastewater generated in excess of 1,250 gallons per day.

11-31-3 Impervious Surface Ratios

The following maximum impervious surface ratios apply to all nonresidential development in the Little River Water Supply Watershed:

Zoning District	Maximum Nonresidential Impervious Surface Ratio (% of lot/site)
R-80W	6
R-40W	12

11-32 Smith Creek Water Supply Watershed

11-32-1 General Requirements

(A) All residential and commercial properties require a preliminary site plan prepared by a licensed professional land surveyor, landscape architect, architect or engineer effective July 2, 2001.

(B) An as-built plan prepared by a professional land surveyor is required for all lots before a Certificate of Occupancy may be issued.

11-32-2 Lot Sizes

(A) The minimum lot size for all residential lots in the Smith Creek Water Supply Watershed is 40,000 square feet per dwelling unit.

(B) The minimum lot size for all nonresidential lots in the Smith Creek Water Supply Watershed is 40,000 square feet plus 40,000 square feet for each additional 1,250 gallons per day or portion thereof of anticipated wastewater generated in excess of 1,250 gallons per day.

11-32-3 Impervious Surface Ratios

The following maximum impervious surface ratios apply to all nonresidential development in the Smith Creek Water Supply Watershed:

Zoning District	Maximum Nonresidential Impervious Surface Ratio (% of lot/site)
R-80W	6
R-40W	12

Article 16. Landscaping and Tree Protection

16-10 Landscaping and Bufferyards

16-10-1 Off-Street Parking Area Landscaping

(A) Perimeter Landscaping

(1) The parking lot perimeter landscaping requirements of this section apply to all off-street parking lots and vehicular use areas containing 10 or more parking spaces or an area of 3,000 square feet or more. “Vehicular use areas” include drive-though lanes, travel lanes, and other areas upon which vehicles traverse the lot as a function of the primary use.

(2) The parking lot perimeter landscaping standards of this section do not apply where a lot to be used for the erection of a place of worship was purchased by a religious organization for that purpose and the purchase thereof is evidenced by a deed to the religious organization or the trustee or other proper officers thereof in their representative capacity and filed for registration in the Office of the Register of Deeds of Wake County on or prior to August 15, 1950.

(3) Parking and vehicular use areas must be screened from view of adjacent properties and public rights-of-way by a solid evergreen hedge a minimum of 3 feet in height. At least one canopy tree must be planted for each 40 linear feet of parking lot perimeter.

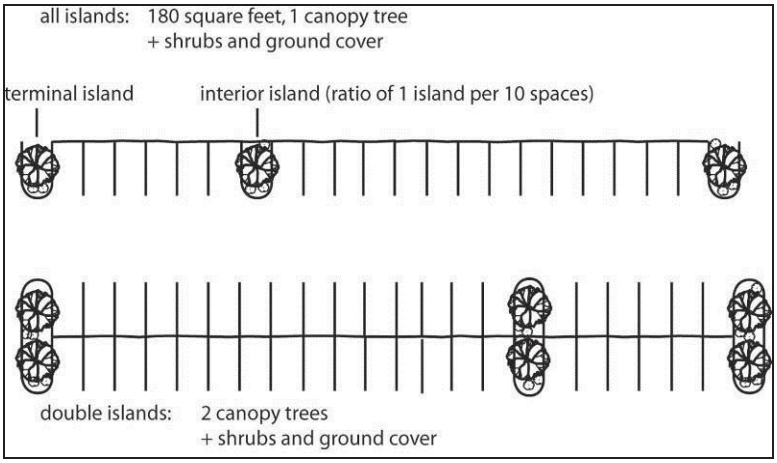
(B) Interior Landscaping

(1) The interior parking lot landscaping requirements of this section apply to all off-street parking lots containing 10 or more parking spaces except those expressly exempted under Sec. 16-10-1(A)(2), above. Interior landscaping must consist of the following:

(a) terminal landscape islands at the end of each row of parking spaces, and either;

i. interior landscape islands within each row of parking; or

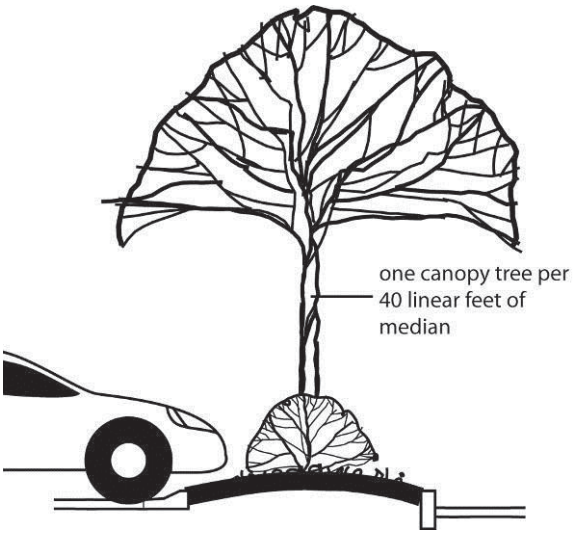
ii. a landscape divider median between abutting rows of parking spaces. Each terminal and interior landscape island must be at least 180 square feet in size and be planted with a minimum of 1 canopy tree, as well as shrubs, and ground cover. Double islands within a double row of parking (typically the area of 2 abutting parking spaces combined into a single parking lot island) must be planted with 2 canopy trees, shrubs, and ground cover.



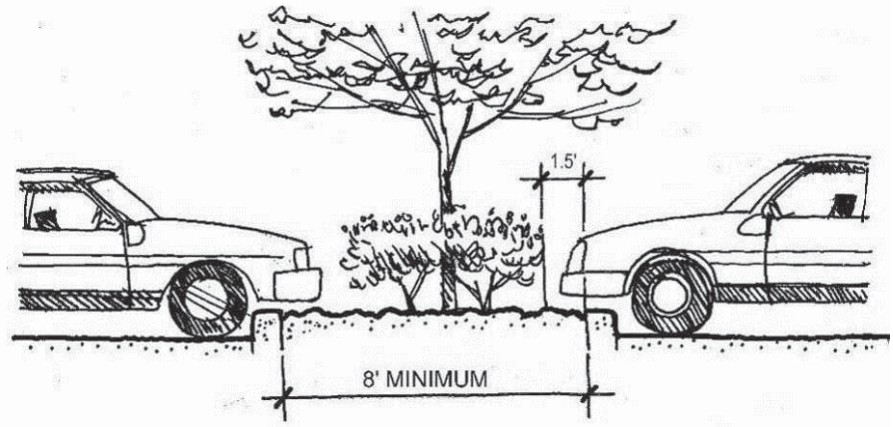
(2) Each landscape island must have a horizontal dimension of at least 9 feet, as measured back-of-curb to back-of-curb.

(3) Where interior parking lot islands are provided, ratio of 1 landscape island must be provided for every 10 parking spaces, but in no case may any parking space be located more than 50 feet from the trunk of a tree in a single landscape island, or 75 feet from the trunk of a tree in a double landscape island or landscape median.

(4) Where landscape divider medians are provided to meet the minimum landscaped area, they must be a minimum of 8 feet in width (measured back-of-curb to back-of-curb), and be planted with a minimum of 1 canopy tree for every 40 feet of linear median, as well as shrubs and ground cover. Divider medians that are at least 15 feet in width may include a pedestrian walkway, in addition to the required landscape plantings. Landscape divider medians may serve as the first 1.5 feet of required parking stall depth for parking spaces that are designated for non-compact vehicles only. A maximum of 25 percent of the total required number of parking spaces may be designated for compact vehicles.



(5) All parking spaces must be blocked or curbed to prevent vehicles from damaging adjacent fences or overhanging planting islands or landscaped yards by an average of more than 2 feet.



(C) Plans

Whenever a parking area is required to be landscaped, the information included in the approved landscaping plan must be submitted to the Planning Director as part of the plan for a parking lot or site or development plan.

16-10-2 Bufferyards

(A) Purpose

The bufferyard regulations of this section are intended to:

(1) utilize spacing and screening to buffer lower density and intensity uses from higher density or intensity uses and reduce adverse visual effects and the impacts of traffic, noise, dust, and odor;

(2) tailor bufferyard requirements to suit the varying intensities of use; and

(3) require adequate screening of commercial and industrial uses along thoroughfares to preserve building values and to enhance the visual appearance of road corridors.

(B) Applicability

(1) Any new nonresidential use or high-density residential use must provide bufferyards and screening in accordance with the requirements of this section.

(2) Any change in a nonresidential use to a more intensive class of use, or expansion of an existing nonresidential or high-density residential use by 25% or more of the floor area and/or impervious surface associated with the use as of August 15, 1996 must provide bufferyards and screening in accordance with the requirements of this section.

(3) In the case of an expansion of a lawful existing use, when the degree of expansion does not exceed 50%, such expansion need only provide a bufferyard and screening that meets the requirements of this section to a degree proportional to the degree of expansion. For example, a 30% expansion of an existing use must provide a bufferyard meeting 30% of required bufferyard depth and plant density (screen) requirements. For purposes of this section, existing uses include proposed uses for which a land use permit has been issued and remains valid, and the class of a use and zoning of vacant land must be determined from the bufferyard table in Sec. 16-10-2(D). These bufferyard regulations apply whether or not the adjoining lot is in the

same zoning district. (See Sec. 16-10-2(I) for other instances in which bufferyards are required).

(4) No landscaping material will be allowed within a minimum radius of 3 feet around any fire hydrant. Additionally, each fire hydrant must be provided with a minimum 3-foot wide access, from the adjacent parking lot, driveway, or street, that is unobstructed by any landscaping material (other than grass). Access roads must be maintained so as to remain clear of all vegetation for a width of 20 feet and a height of 13 feet 6 inches to allow for emergency vehicle access.

(5) The buffers required by this section do not apply to temporary uses.

(C) Location of Bufferyards

Bufferyards must be located:

(1) along the perimeter of a lot or parcel, but not within any portion of an existing or planned road right-of-way; or

(2) in instances where the area represented by a site plan is significantly less than the total area of the lot of record, the Planning Director may permit the screening required between the proposed use and adjacent lots to be located in a bufferyard surrounding the smaller area provided that:

(a) the depth of the bufferyard and type of screening provided for the smaller area is equal to or greater than required by the bufferyard table of Sec. 16-10-2(D);

(b) the bufferyards required in Sec. 16-10-2(D) are also provided around the perimeter of the lot of record; and

(c) the total area of the lot of record, less the smaller area represented by the subject site plan, could meet the minimum requirements within the applicable zoning district, if considered as if it were an independent lot of record.

(3) Around the perimeter of a leased lot or parcel utilized for telecommunication towers. A 40-foot, type C bufferyard is required.

[Amended on 1/22/2008 by OA 04-07.]

(D) Bufferyard Table

The following table establishes minimum bufferyard depth and screen (landscape planting) standards. To determine the applicable requirements, first identify the class of the proposed (new, changed, or expanded) use. Then identify the class of each adjacent existing use and the zoning of each adjacent vacant lot. The intersection of the row associated with the proposed use and the column associated with the adjacent use shows the minimum depth and screening requirement; the number indicates the bufferyard depth (in feet) and the letter indicates the type of screen required.

Bufferyard Depth and Screening (feet/screen type)

	Class of Proposed Use					
	Residential			Nonresidential		
	Low-density [1]	Medium-density [2]	High-density [3]	Low-intensity [4]	Medium intensity [5]	High-intensity [6]
Class of Adjacent Existing Use						
Low-density residential [1]	NA	20/E	30D	40C	60/B	80/A
Medium-density [2]	NA	NA	20E	30D	40/C	60/B
High-density residential [3]	NA	NA	NA	20E	30/D	40/C
Low-intensity nonresidential [4]	NA	NA	NA	NA	20/E	30/D
Medium-intensity nonresidential [5]	NA	NA	NA	NA	NA	20/E
High-intensity nonresidential [6]	NA	NA	NA	NA	NA	NA
Zoning of Adjacent Vacant Lot						
R-80W, R-80, R-40W, R-40, R-30, R-20	NA	20/E	30/D	40/C	60/B	80/A
R-15, R-10, RHC, HD	NA	NA	20/E	30/D	40/C	60/B
R-5, RMH	NA	NA	NA	20E	30/D	40/C
OI, GB	NA	NA	NA	NA	20E	30D
HC, RA	NA	NA	NA	NA	NA	20E
I-1, I-2, AD-1, AD-2	NA	NA	NA	NA	NA	NA

NA—no bufferyard required
[1] A low-density residential use is a residential use with a density less than 3 dwelling units per acre.
[2] A medium-density residential use is a residential use with a density between 3 and 6 dwelling units per acre.
[3] A high-density residential use is a residential use with a density of more than 6 dwelling units per acre.
[4] A low-intensity nonresidential use is a nonresidential use with a floor area ratio (gross floor area/site area) no greater than 0.15 and an impervious surface coverage no greater than 30%.
[5] A medium-intensity nonresidential use is a nonresidential use with a floor area ratio (floor area/site area) greater than 0.15 but no greater than 0.30, or an impervious surface coverage greater than 30%, but no greater than 60%.
[6] A high-intensity nonresidential use is a nonresidential use with a floor area ratio (floor area/site area) greater than 0.30 or an impervious surface coverage greater than 60%.
[7] The buffers listed in the table above may not be reduced except as expressly authorized by Sec. 16-10-2(G) or Sec. 16-10-2(H) or by the granting of a variance in accordance with Sec. 19-26.
[8] Child Care Center Class “A” must provide a 20’ bufferyard with Class C screen
[9] Child Care Center Class “B” must provide a 20’ bufferyard with Class E screen

[Amended on 7/21/2008 by OA 04-08.]

(E) Overlap with Required Setbacks

In the event that bufferyard depth requirements conflict with zoning district setback requirements, the stricter standard governs.

(F) Screen Types

(1) Landscape Plan Variations

(a) The quantities of plant materials noted below represent the number of deciduous canopy trees, full size evergreen trees, deciduous understory trees, evergreen understory trees, and shrubs that are necessary to create the type of screen specified. These stated quantities represent the number of each plant type (e.g.—deciduous canopy tree or shrub) that is necessary to achieve the specified type of screen.

(b) The Planning Director has the authority to allow variations in the mix of plants required, up to a maximum of 25% of the total required number of each type of tree (i.e.—deciduous canopy tree, evergreen tree, deciduous understory tree, or evergreen understory tree) and up to a maximum of 35% of the shrubs

(depending upon species), in order to encourage creativity in landscape design, to more effectively create a buffer or screen, to address site issues such as topography or geological features, or to allow for more efficient irrigation or water use practices so long as the intent of this Sec. 16-10-2(A) is still met. In evaluating the allowance of plant variations, the Planning Director must also give due consideration to the use of fences, walls, or berms.

(c) The following options are examples of the plantings needed to meet the required screening, however, the applicant can propose an alternative design, prepared by a licensed landscape architect that meets the same screening standard.

(2) Type A Opaque Screen

Whenever a Type A screen is required, the applicant may choose to provide any of the following screen options. The examples below are expressed in terms of the number of plants required per 100 feet of bufferyard length, and an 80-foot width.

(a) Example 1—Evergreen Screen

- **i.** 0 deciduous canopy trees
- **ii.** 10 evergreen trees
- **iii.** 0 deciduous understory trees
- **iv.** 20 evergreen understory trees
- **v.** 80 shrubs

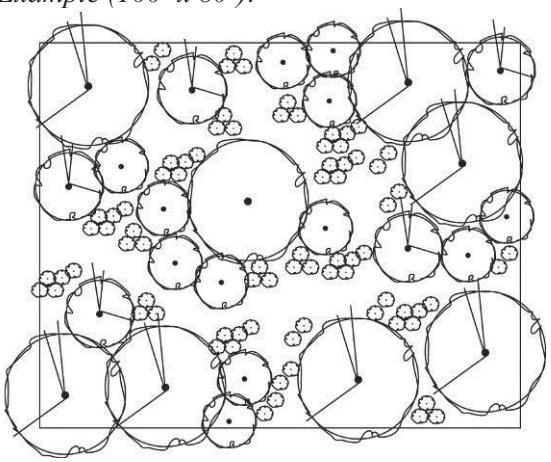
(b) Example 2—Deciduous Screen

- **i.** 10 deciduous canopy trees
- **ii.** 0 evergreen trees
- **iii.** 12 deciduous understory trees
- **iv.** 0 evergreen understory trees
- **v.** 80 shrubs

(c) Example 3— Mixed (Evergreen–Deciduous) Screen

- **i.** 7 deciduous canopy trees
- **ii.** 1 evergreen tree
- **iii.** 5 deciduous understory trees
- **iv.** 12 evergreen understory trees
- **v.** 85 shrubs

Example (100' x 80'):



(d) Example 4—Overhead Utility Screen

i. 0 deciduous canopy trees

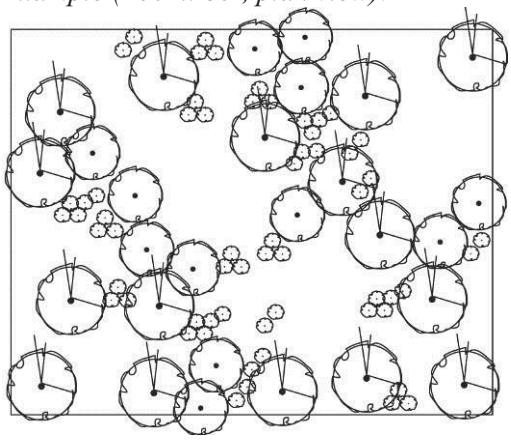
ii. 0 evergreen trees

iii. 16 deciduous understory trees

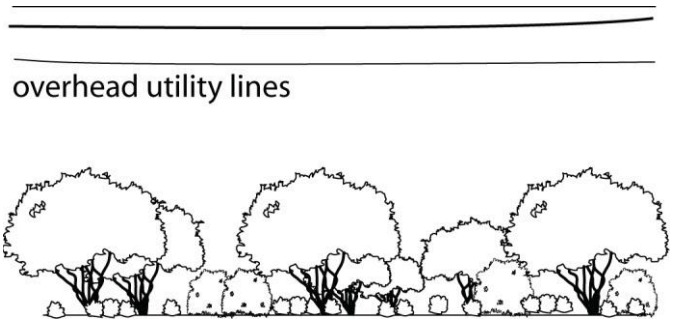
iv. 12 evergreen understory trees

v. 65 shrubs

Example (100' x 80', plan view):



Example (100' x 80', elevation view):



(3) Type B Intermittent-1 Screen

Whenever a Type B screen is required, the applicant may choose to provide any of the following screen options. The examples below are expressed in terms of the number of plants required per 100 feet of bufferyard length, and a 60-foot width.

(a) Example 1—Evergreen Screen

- **i.** 0 deciduous canopy trees
- **ii.** 8 evergreen trees
- **iii.** 0 deciduous understory trees
- **iv.** 17 evergreen understory trees
- **v.** 75 shrubs

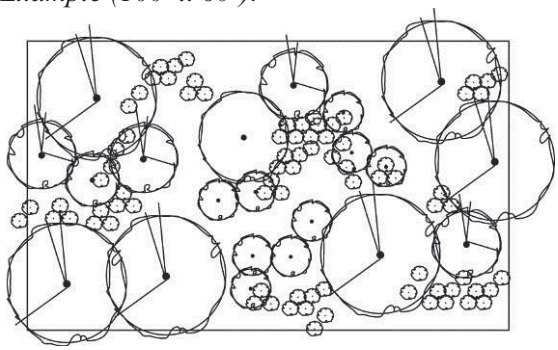
(b) Example 2—Deciduous Screen

- **i.** 8 deciduous canopy trees
- **ii.** 0 evergreen trees
- **iii.** 11 deciduous understory trees
- **iv.** 0 evergreen understory trees
- **v.** 75 shrubs

(c) Example 3—Mixed (Evergreen–Deciduous) Screen

- **i.** 6 deciduous canopy trees
- **ii.** 1 evergreen tree
- **iii.** 4 deciduous understory trees
- **iv.** 10 evergreen understory trees
- **v.** 80 shrubs

Example (100' x 60'):



(d) Example 4—Overhead Utility Screen

i. 0 deciduous canopy trees

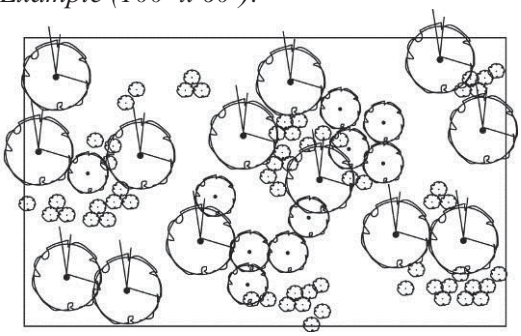
ii. 0 evergreen trees

iii. 13 deciduous understory trees

iv. 10 evergreen understory trees

v. 60 shrubs

Example (100' x 60'):



(4) Type C Intermittent-2 Screen

(a) Whenever a Type C screen is required, the applicant may choose to provide any of the following screen options. The examples below are expressed in terms of the number of plants required per 100 feet of bufferyard length, and a 40-foot width. Example 1—Evergreen Screen

i. 0 deciduous canopy trees

ii. 5 evergreen trees

iii. 0 deciduous understory trees

iv. 12 evergreen understory trees

v. 72 shrubs

(b) Example 2—Deciduous Screen

i. 5 deciduous canopy trees

ii. 0 evergreen trees

iii. 8 deciduous understory trees

iv. 0 evergreen understory trees

v. 71 shrubs

(c) Example 3—Mixed (Evergreen–Deciduous) Screen

i. 4 deciduous canopy trees

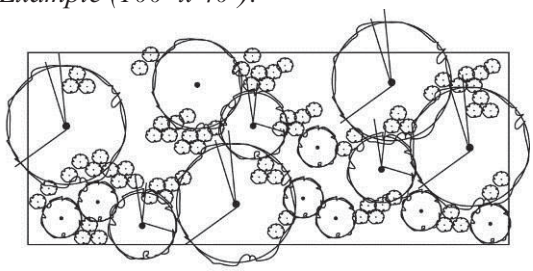
ii. 1 evergreen tree

iii. 3 deciduous understory trees

iv. 7 evergreen understory trees

v. 75 shrubs

Example (100' x 40'):



(d) Example 4—Overhead Utility Screen

i. 0 deciduous canopy trees

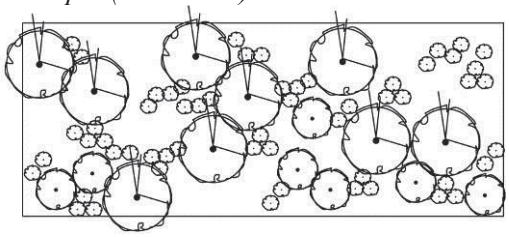
ii. 0 evergreen trees

iii. 9 deciduous understory trees

iv. 7 evergreen understory trees

v. 57 shrubs

Example (100' x 40'):



(5) Type D Intermittent-3 Screen

Whenever a Type D screen is required, the applicant may choose to provide any of the following screen options. The examples below are expressed in terms of the number of plants required per 100 feet of bufferyard length, and a 30 -foot width

(a) Example 1—Evergreen Screen

i. 0 deciduous canopy trees

ii. 5 evergreen trees

iii. 0 deciduous understory trees

iv. 12 evergreen understory trees

v. 69 shrubs

(b) Example 2—Deciduous Screen

i. 5 deciduous canopy trees

ii. 0 evergreen trees

iii. 8 deciduous understory trees

iv. 0 evergreen understory trees

v. 67 shrubs

(c) Example 3—Mixed (Evergreen–Deciduous) Screen

i. 5 deciduous canopy trees

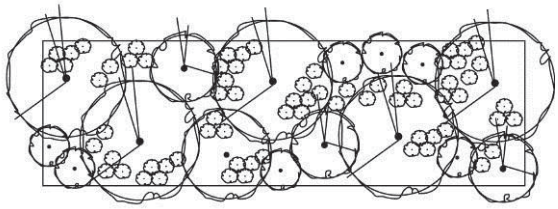
ii. 1 evergreen tree

iii. 3 deciduous understory trees

iv. 7 evergreen understory trees

v. 70 shrubs

Example(100' x 30'):



(d) Example 4—Overhead Utility Screen

i. 0 deciduous canopy trees

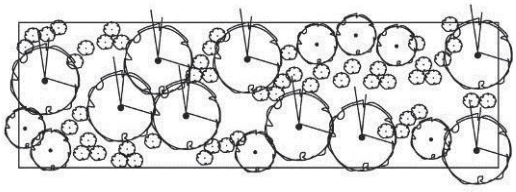
ii. 0 evergreen trees

iii. 9 deciduous understory trees

iv. 7 evergreen understory trees

v. 53 shrubs

Example (100' x 30'):



(6) Type E Intermittent-4 Screen

(a) Whenever a Type E screen is required, the applicant may choose to provide any of the following screen options. The examples below are expressed in terms of the number of plants required per 100 feet of bufferyard length, and a 20-foot width. Example 1—Evergreen Screen

i. 0 deciduous canopy trees

ii. 4 evergreen trees

iii. 0 deciduous understory trees

iv. 9 evergreen understory trees

v. 40 shrubs

(b) Example 2—Deciduous Screen

i. 4 deciduous canopy trees

ii. 0 evergreen trees

iii. 6 deciduous understory trees

iv. 0 evergreen understory trees

v. 40 shrubs

(c) Example 3—Mixed (Evergreen–Deciduous) Screen

i. 3 deciduous canopy trees

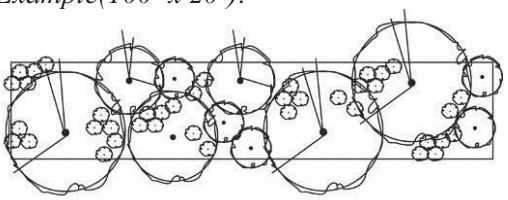
ii. 1 evergreen tree

iii. 2 deciduous understory trees

iv. 5 evergreen understory trees

v. 40 shrubs

Example(100' x 20'):



(d) Example 4—Overhead Utility Screen

i. 0 deciduous canopy trees

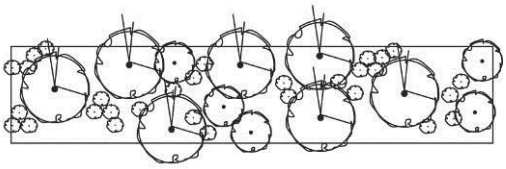
ii. 0 evergreen trees

iii. 7 deciduous understory trees

iv. 5 evergreen understory trees

v. 30 shrubs

Example(100' x 20'):



(7) Type F Streetfront Screen

Whenever a Type F screen is required, the applicant may choose to provide any of the following screen options. The examples below are expressed in terms of the number of plants required per 100 feet of bufferyard length, and a 10-foot width.

(a) Example 1—Evergreen Screen

i. 0 deciduous canopy trees

ii. 2 evergreen trees

iii. 0 deciduous understory trees

iv. 3 evergreen understory trees

v. 15 shrubs

(b) Example 2—Deciduous Screen

i. 2 deciduous canopy trees

ii. 0 evergreen trees

iii. 2 deciduous understory trees

iv. 0 evergreen understory trees

v. 14 shrubs

(c) Example 3—Mixed (Evergreen–Deciduous) Screen

i. 1 deciduous canopy tree

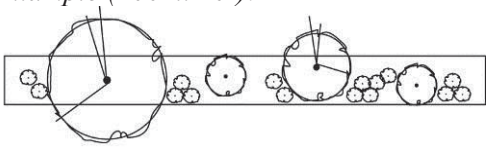
ii. 0 evergreen trees

iii. 1 deciduous understory tree

iv. 2 evergreen understory trees

v. 15 shrubs

Example (100' x 10'):



(d) Example 4—Overhead Utility Screen

i. O deciduous canopy trees

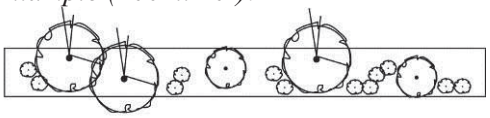
ii. 0 evergreen trees

iii. 3 deciduous understory trees

iv. 2 evergreen understory trees

v. 12 shrubs

Example (100' x 10'):



(G) Depth Reductions for Walls, Fences or Berms

The Planning Director may allow a reduction in bufferyard depth by up to 25% if a solid wall, solid fence, or berm is provided within the interior portion of the bufferyard. For purposes of this section a solid wall or fence will be considered any completely opaque wall or fence without any openings, including shadowbox fences. Walls and fences provided pursuant to this provision must have a minimum height of 6 feet and berms must have a minimum height of 4 feet. Any such fencing must have the dress side facing outward toward the right-of-way or adjacent properties. When a bufferyard depth reduction is taken pursuant to this provision, the number of shrubs required within the bufferyard may also be reduced to 50%. In order to approve such reduction, the Planning Director must determine that the proposed bufferyard plan is at least as effective in achieving the purposes of this section, as is strict compliance with the bufferyard standards.

(H) Plant Density Reductions

The Planning Director may allow a reduction in a bufferyard screening (plant) density by up to 25% if the bufferyard's depth is increased to effectively mitigate the density reduction. In order to approve a reduction in plant density, the Planning Director must determine that the proposed bufferyard plan is at least as effective in achieving the purposes of this section as is strict compliance with bufferyard standards.

(I) Additional Bufferyards and Screening

(1) Any outside storage of junk, refuse, salvage, or discarded materials must be screened from adjacent rights-of-way and adjacent properties by means of a Type A screen.

(2) Whenever a nonresidential use is proposed along a thoroughfare, a 10-foot deep bufferyard and Type F screening must be provided adjacent to the thoroughfare right-of-way.

(3) Whenever a nonresidential use is proposed next to a residential use and is separated from the residential use by a public road, a 10-feet-deep bufferyard and Type F screening must be provided adjacent to the public road right-of-way.

(4) Any outside storage existing on August 21, 1989, must be screened from adjacent properties and rights-of-way on or before December 31, 1992, by means of Type A screening or its equivalent as determined by the Planning Director.

(J) Features Allowed within Bufferyards

(1) A bufferyard may be traversed by utility lines, water supply and wastewater lines, septic systems (if a qualified soil scientist determines that such location is the only feasible alternative), sidewalks, driveways, roads and other similar improvements, provided that:

(a) the proposed locations of such uses are necessary for their proper functioning, and such uses cross the bufferyard where feasible, rather than lie along the length of the bufferyard;

(b) the total width of the bufferyard is maintained; and

(c) no screen required by this ordinance is reduced or eliminated.

(2) The required undisturbed radius around a well may lie within the bufferyard, but the well head itself may not encroach within the bufferyard.

(3) Signs are permitted within bufferyards provided that:

(a) they are completely screened from view from any point on adjacent residential properties; and

(b) placement of such signs will not violate other provisions of this ordinance.

(4) Bufferyards may not be used for parking, loading, storage, or any activity that is either part of or accessory to the proposed use.

16-10-3 Plant Material, Installation and Maintenance

[Section 16-10-3 "Landscaping of Freestanding Signs" was moved to Section 18-10-2 (P) on 1/22/2008 by OA 04-07. Section 16-10-4 "Plant Material, Installation and Maintenance" became the new Section 16-10-3.]

(A) Time of Installation

(1) All landscaping, bufferyards and screening materials must be must be in place prior to final inspection by the Wake County Zoning Inspector.

(2) When weather conditions do not permit planting, installation of plant material may be delayed until the start of the next growing season (for the particular species), provided that adequate financial guarantees are posted to ensure compliance. This performance guarantee must provide for the cost of the plant material, the labor costs of installation, and a 25 percent contingency. The process for providing such performance guarantee must parallel that described in Sec. 8-22 and is required before the issuance of a Certificate of Occupancy, or the approval of the final plat, whichever may be applicable.

(B) Plant Materials

(1) Existing Vegetation

Existing vegetation that meets or exceeds applicable screening requirements may be used to satisfy the requirements of this section, provided the bufferyard contains sufficient area surrounding the vegetation to ensure its protection from encroachments that may threaten its continued healthy growth. Due to their effectiveness in immediately providing a more effective screen, the retention and protection of existing vegetation must be given preference over the installation of new plant materials in the achievement of the required screening. Existing vegetation that is in a healthy condition, meets the minimum planting size requirements, and will meet the required mature plant size must be given credit plant for plant toward meeting the required screening. Existing vegetation must be noninvasive in nature. If nonnative invasive plants are found within the buffer, they must be permanently removed through mechanical or herbicidal means. No disposal of these plants (whole plants, clippings, root masses, etc…) may occur within buffers, easements, open space areas, or along rights-of-way. See *Appendix A* for a USDA list of nonnative invasive species.

(2) Location and Spacing

Plants must be staggered or clustered as necessary to maximize screening objectives and to meet the needs of the particular species of plants for root space, water, light, and circulation.

(3) General Standards

All landscaping materials must comply with the American Nurseryman's Standards. Nonnative or invasive plant species may not be used for planting in landscaping and bufferyards (see the USDA list of these species). Native species used in replantings are encouraged over ornamentals. All species chosen for planting should be chosen from amongst those species that typically grow in our geographical area, Zone 7. The developer is responsible for researching the biological requirements of each species utilized in the plantings.

(4) Trees

(a) Deciduous canopy trees must have a minimum size of 2-inch caliper and a minimum height of 10 feet at the time of planting and be planted at least 18 feet apart.

(b) Deciduous understory trees must have a minimum height of 8 feet at the time of planting and be planted at least 12 feet apart.

(c) Evergreen trees must have a minimum height of 8 feet at the time of planting (unless mixed with deciduous trees in which case a minimum height of 4 feet is required).

(d) Evergreen understory trees must have a minimum height of 6 feet at the time of planting.

(5) Shrubs

(a) All shrubs must be cold hardy and heat tolerant.

(b) Upright shrubs must have a minimum height of 15 inches at the time of planting.

(c) Shrubs may not be planted closer than 3 feet on-center or closer than 3 feet to planted trees.

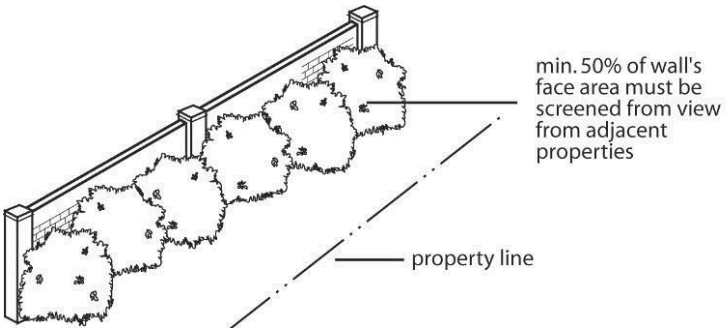
(6) Minimum Height at Maturity

Trees and shrubs must be of a variety that has a minimum mature height that will meet the minimum screening requirements for which they were chosen. Deciduous canopy trees must be of a species that will reach a minimum height of 35 feet at maturity. Deciduous understory trees must be of a species that will reach a minimum height of 15 feet at maturity. Evergreen trees must be of a species that will reach a minimum height of 35 feet at maturity. Evergreen understory trees must be of a species that will reach a minimum height of 20 feet at maturity. Shrubs must be of a species that will grow to a minimum height of 36 inches at maturity.

(C) Fences, Walls and Berms

(1) Fences and Walls

Fences and walls must be screened over at least 50% of their exterior face area by plantings that provide year round screening to obstruct the view of the fence or wall from adjacent properties. This may be achieved with a tight evergreen hedge that is one-half (½) the height of the fence or wall; or by using plants other than the evergreen hedge meeting the above requirement, provided that figures on the average mature height and spread of each species to be planted are submitted with the site plan for approval by the Planning Director. The plantings required by this section may be included in the totals listed in the various options that are established in Sec. 16-10-2(F). In evaluating the allowance of plant variations, the Planning Director must also give due consideration to the use of fences, walls, or berms.



(2) Berms

Berms must be planted with trees, shrubs, vines, grasses, or other groundcover. Part of a berm may be devoted to a nonliving screen such as a fence or wall.

(3) Location of Required Planting Materials

Whenever a wall, fence or berm is proposed, the placement of the required plant materials (other than that required by 16-10-3(C)), in relation to the wall, fence or berm, must take into consideration such factors as the intensity level of the proposed use, the degree of dissimilarity of the proposed use to the adjacent use, the site topography, the road curvature and other factors. The applicant may propose the location of the wall, fence or berm and the amount of the landscaping material that will be placed on each side of the wall, fence or berm. The Planning Director must

consider these factors noted above in determining whether the proposal complies with the intent of Sec. 16-10-2(A).

(D) Maintenance

All required landscaping and screening must be maintained. If necessary to ensure the continued effectiveness and intended purpose of the screen, plantings that deteriorate or dies must be repaired or replaced during the next planting season, or within 6 months. Failure to maintain required landscaping and buffers is a violation of this ordinance (including the limbing of growing trees and the pruning of shrubs to encourage compact new growth). Plant materials must be located and maintained by the property owner, or property owner association, in such a manner that they do not overhang into utility easements or the fire hydrant access ways that are required by Sec. 16-10-2(B)(4). Access roads must be maintained so as to remain clear of all vegetation for a width of 20 feet and a height of 13 feet 6 inches to allow for emergency vehicle access.

(E) Clear View of Intersections

Bufferyards and visual screens may not interfere with sight lines at intersections.

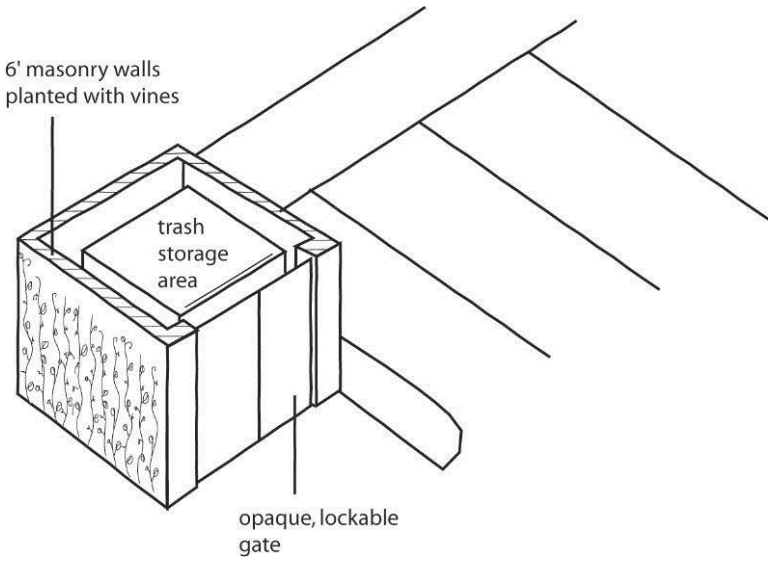
OA 05/03 September 19, 2005

16-11 Trash Storage Area Screening

16-11-1 Screening Methods

(A) Required trash storage area screening may be achieved by designating an enclosed space for trash facilities within a principal building or within an accessory building such as a garage.

(B) When trash storage areas are not enclosed within a principal building or accessory building, they must be screened from off-site view on all sides by masonry walls with a minimum height of 6 feet. One side of the storage area must be furnished with an opaque, latchable gate.



(C) The screening walls required by this section must be planted with vines or surrounded with other landscape material.

16-12 Tree Protection

16-12-1 General Intent

The regulations of this section are intended to preserve trees and other significant vegetation along the outer perimeter of development sites. Such regulations will help to ensure that trees and vegetation along the perimeter of a site are not removed or disturbed so as to preserve and enhance the visual character of the County, control surface water runoff, and moderate temperatures. Tree and vegetation protection will also help conserve water because of increased absorption ability of retained plants.

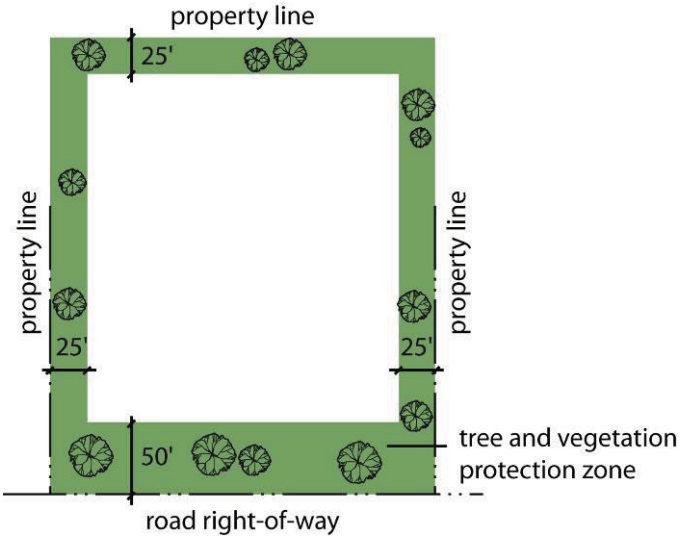
[Amended of 1/22/2008 by OA 04-07.]

16-12-2 Applicability; Effect

(A) The tree and vegetation protection standards of this section apply to the outer perimeter of parcels proposed to be graded, disturbed or subdivided—an area known as the "tree and vegetation protection zone." The boundaries of the tree and vegetation protection zone extend the following distances from the outer perimeter of a parent parcel:

(1) 50 feet from all public road rights-of-way; and

(2) 25 feet from all other property lines.



(B) The standards of this section generally require that the tree and vegetation protection zone remain undisturbed and that trees and vegetation within the zone be preserved, except that the Planning Director or Planning Board may permit land disturbance and tree and vegetation removal within the protection zone when deemed necessary to allow for reasonable use and development of the property.

(C) A permanent tree and vegetation protection zone is required on the outer perimeter of lands included in the initial approved preliminary plan of a parent tract of land. Subsequent subdivisions of lots within the parent tract are not required to provide additional tree and vegetation protection zones.

[Amended on 1/22/2008 by OA 04-07.]

16-12-3 Exemptions

The following activities are exempt from the tree and vegetation protection standards of this section:

(A) the removal of dead or naturally fallen or severely damaged trees or vegetation, or the removal, by an approved method, of trees or vegetation that are a threat to the public health, safety, or welfare;

(B) the removal, by hand, of diseased or insect-infected trees or vegetation that pose a risk to adjoining trees as determined by the North Carolina Division of Forest Resources or by a certified arborist (International Society of Arboriculture);

(C) the selective and limited removal of trees or vegetation necessary to obtain clear visibility at driveways, intersections, or within required sight triangles;

(D) the removal of trees on tracts of 2 acres or less in area located within a single-family residential zoning district. Land within public rights-of-way is excluded from the area calculation.

Commentary: Since tracts of 2 acres or less are exempt from compliance with tree and vegetation protection standards, it is intended that development and building on such lots will be subject only to the building setback standards of the underlying zoning district. The "tree and vegetation zone" definition is not to be interpreted as additional building setback requirements in those instances in which tree and vegetation preservation is not required.

(E) the removal of trees as part of normal forestry activities on property taxed under the present-use value standard or conducted pursuant to a forestry management plan prepared or approved by a forester registered pursuant to NCGS Chapter 89B. However, for such properties, the County may deny a building permit or refuse to approve a site plan or subdivision plan for a period of 3 years following completion of the harvest if all or substantially all of the trees that should have been protected within the tree and vegetation protection zone were removed from the tract of land for which the permit or plan is sought. The County may deny a permit or refuse to approve a site plan or subdivision plan for a period of 2 years if the owner replants the protection zone within 120 days of harvest with plant material that is consistent with buffer areas required under the County buffer area standards;

Commentary: As its name implies, the "tree and vegetation protection zone" is intended as an area in which tree and vegetation removal is prohibited or otherwise strictly limited. It is not intended as an additional building setback requirement in those instances in which tree and vegetation preservation is not required.

(F) the removal of trees or vegetation for the purpose of sale by commercial garden centers, greenhouses, or nurseries; and

(G) the removal of damaged or dead trees or vegetation during or after emergencies or inclement weather such as wind storms, ice storms, fire, or other disasters.

16-12-4 Maximum Size of Tree and Vegetation Protect Zone

The total area of a tree and vegetation protection zone is not required to exceed 20% of the total area of the parcel, excluding any land area located within public road rights-of-way and any required conservation easements. (Note: Conservation easements located within tree and vegetation protection zones will be credited toward compliance with the tree and vegetation protection standards of this section)

16-12-5 Delineation of Tree and Vegetation Protection Zone

Subdivision plans must indicate the limits of the tree and vegetation protection zone. Tree surveys of individual trees are not required, but whenever protected trees are proposed for removal, such plans must indicate the location and size of all protected trees within the tree and vegetation protection zone that are proposed for removal (and replacement).

16-12-6 Allowed Encroachments

(A) It is the intent of this section to permit reasonable predevelopment activity on lands that are subject to the tree and vegetation protection standards of this section. It is recognized that encroachment into the tree and vegetation protection zone may be necessary to allow for reasonable use and development of the subject parcel. The Planning Director or Planning Board may approve encroachments it deems necessary to permit reasonable use and development. Examples of encroachments that may be permitted include utilities, driveways, sidewalks, entrances and entrance features, supplemental landscaping, as well as access routes for construction vehicles or equipment where no alternative means of access exists on the site. Septic fields must be allowed to encroach into the tree and vegetation protection zone if a qualified soil scientist determines that such location is the only feasible and safe alternative.

(B) At the time of consideration of a site plan or other authorized development plan for the subject site, review and decision-making bodies are authorized to approve land disturbance, development activity and tree and vegetation removal in accordance with applicable zoning and site development regulations.

(C) When encroachment is deemed necessary by the Planning Director or Planning Board, any protected trees that are removed or that die within 1 year after the encroachment must be replaced in accordance with Sec. 16-12-7. In addition, when encroachment must occur, care must be taken to remove and/or disturb the minimum amount of trees and vegetation, possible. Any proposed encroachment within tree and vegetation protection zones must be indicated on subdivision plans.

16-12-7 Replacement of Protected Trees

No protected tree may be removed from tree and vegetation protection zones unless the applicant or developer replaces such trees within the tree and vegetation protection zone at a rate of 1 inch of replacement tree (DBH) per 2 inches of removed tree (DBH). For example, if a 24-inch tree is removed, the following options exist for replacement: 1, 12-inch tree; 2, 6-inch trees; 3, 4-inch trees; 4, 3-inch trees; or 6, 2-inch trees.

(A) The minimum size (DBH) of a replacement tree is 2 inches.

(B) The Planning Board or Planning Director may allow replacement trees to be placed outside the tree and vegetation protection zone when adequate area does not exist within the tree and vegetation protection zone, or when placement in other areas of the site, or protection of other significant trees adjacent to the perimeter of the site, would better meet the general intent of this section.

(C) It is the intent of this section to preserve protected trees and other vegetation and understory plant material that surrounds protected trees. It is recognized that clearing or disturbance of vegetation in and adjacent to protection zones can significantly impact protected trees within close proximity. Therefore, while there is no replacement requirement for the clearing of vegetation surrounding protected trees, clearing of any vegetation in these areas is strongly discouraged.

16-12-8 Tree Protection During Construction

(A) Owner's Responsibility

During development of the property, the owner is responsible for the erection and maintenance of any and all barriers necessary to ensure protection of protected trees and vegetation from damage during construction.

(B) Protective Fencing

(1) Where Required

All protected trees that are to be preserved must be surrounded by a clearly visible fence before grading begins. Required fencing must extend as far as practical from a protected tree; preferably at least 1 foot from the tree for each inch of DBH. Protective fencing is not required to extend beyond the tree's dripline. No construction, grading, equipment or material storage, or any other activity is allowed within the tree and vegetation protection zone, unless approved by the Planning Director or Planning Board in accordance with Sec. 16-12-6.

(2) Plans

The location and a detail of the proposed protective fencing or other means of demarcation must be clearly shown on subdivision plans.

(3) Type of Fencing

All fencing required by this section must be a minimum 4 feet in height and of durable construction. Orange polyethylene laminar fencing is acceptable. Passive forms of tree and vegetation protection may be utilized to delineate tree and vegetation protection zones that are not located near areas of land disturbance. These must be surrounded by fencing, continuous rope, or durable taping that is a minimum of 4 inches wide.

(4) Signs

Signs must be installed on the protective fence so that they are visible on all sides of the area to be protected. At least one sign must be placed on each side, with signs spaced no more than 150 linear feet apart. The size of each sign must be a minimum of 2 feet by 2 feet and must contain the following language: "KEEP OUT, TREE AND VEGETATION PROTECTION ZONE," both in Spanish and in English.

OA 04/10 January 18, 2005

Article 14. Flood Hazard Areas

14-10 Purpose

14-10-1 Flood hazard areas of the county are subject to periodic inundation that may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety or general welfare. The cumulative effect of obstructions in floodplains causes increased flood heights and velocities and, therefore, increase flood losses.

14-10-2 It is the purpose of the flood hazard area standards of this article to promote the public health, safety and general welfare by reducing public and private losses caused by flood conditions in specific areas by provisions designed to:

(A) restrict or prohibit uses that are dangerous to health, safety and property when flooded;

(B) require that uses vulnerable to floods, including ancillary facilities that serve such uses, be protected against flood damage at the time of initial construction;

(C) control the alteration of natural flood plains, stream channels, and natural protective barriers, which are involved in passage of flood waters;

(D) control filling, grading, dredging and other land alterations which may increase flood damage;

(E) prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or increase flood hazards elsewhere; and

(F) protect individuals from purchasing lands which are unsuitable for intended purposes because of flood hazards.

14-11 Disclaimer

While the degree of flood protection required by this ordinance is considered reasonable, it does not imply total flood protection.

14-12 Definitions

Unless specifically defined below, words or phrases used in this section must be interpreted in accordance with Article 21 or, if not defined therein, to give them their most common dictionary meaning, and to give this ordinance its most reasonable application.

Area of Special Flood Hazard

The land in a floodplain subject to a one percent or greater chance of flooding in any given year. Such areas, which are also referred to as "special flood hazard areas," are:

(A) Those areas identified under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its Flood Insurance Study (FIS) and its accompanying Flood Insurance Rate Map (FIRM), for Wake County dated April 16, 2013, which are adopted by reference and declared to be a part of this ordinance;

[Amended by OA 01-13 on 3/18/2013.]

(B) those areas specified as "regulated discharge floodplain areas;" and

(C) those areas specified as flood hazard soils in the Soil Survey, Wake County, North Carolina, dated November 1970, and any subsequent revisions thereto, as delineated by transparent photographic enlargements of soil maps taken therefrom, hereafter referred to as "soil overlay maps." (These maps must be used in all areas of the county where flood hazards exist but are not shown on maps in the Flood Insurance Study.) Soil overlay maps were produced at the same scale as the county tax maps in order that flood hazard areas may be located with reference to property lines. Flood hazard areas are identified by those soils (listed in the definition below) described in the Soil Survey, Wake County, North Carolina, subject to flooding and having severe limitations for home sites and certain other uses because of flooding.

Base Flood
The flood having a one percent chance of being equaled or exceeded in any given year (100-year flood).

Base Flood Elevation (BFE)
A determination of the water surface elevations of the base flood in Special Flood Hazard Areas as published in the *Flood Insurance Study* or as determined by a licensed professional engineer in flood hazard soils areas.

Basement
The lowest level or story which has its floor subgrade on all sides.

Breakaway Wall
A wall that is not part of the structural support of the building and is intended, through its design and construction, to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system. A breakaway wall must have a design safe loading resistance of not less than 10, and no more than 20, pounds per square foot. A wall with loading resistance of more than 20 pounds per square foot requires a licensed architect or licensed professional engineer to certify that the designs proposed meet the following conditions: (1) Breakaway wall collapse must result from a water load less than that which would occur during the base flood; and (2) The elevated portion of the building and supporting foundation system may not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum wind and water loading values to be used in this determination must each have no more than a one percent chance of being equaled or exceeded in any given year (100-year mean recurrence interval). Such enclosed space (formed by the breakaway wall and the elevated building) must be usable solely for parking of vehicles, building access, or storage. It may not be used as habitable space.

Chemical Storage Facility
A building, portion of a building, or exterior area adjacent to a building used for the storage of any chemical or chemically reactive products.

Development
Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

Disposal
the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or on any land or water so that the solid waste or any constituent part of the solid waste may enter the environment or be emitted into the air or discharged into any waters, including groundwaters, as defined in NCGS 130A-290(a)(6),.

Elevated Building
A nonbasement building which has the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, columns (posts and piers), shear walls, or breakaway walls.

Expansion of an Existing Mobile Home Park
The preparation of additional sites by the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads.

Existing Mobile Home Park
A mobile home park for which the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including, at a minimum, the installation of utilities, either final site grading or the pouring of concrete pads, and the construction of roads) is completed before January 17, 1983.

FEMA
The Federal Emergency Management Agency or its successor.

Flood or Flooding
A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal water or the unusual and rapid accumulation of runoff or surface waters from any source.

Flood Hazard Soils
Soils described in the Soil Survey, Wake County, North Carolina, as being subject to flooding, and identified in engineering interpretations therein as having severe limitations for home sites and certain other uses because of flooding, and recommended for inclusion among flood hazard areas by the Wake County District Conservationist, U.S. Department of Agriculture, Soil Conservation Service. (See also Sec. 14-13)

Flood Insurance Rate Map (FIRM)
An official map of a community issued by the Federal Emergency Management Agency on which the areas of special flood hazard and the applicable risk premium zones applicable to the community are delineated.

Flood Insurance Study (FIS)
The official report (Flood Insurance Study for the County of Wake) issued by the Federal Emergency Management Agency. The report contains flood profiles, as well as the Flood Insurance Rate Map and the water surface elevation of the base flood.

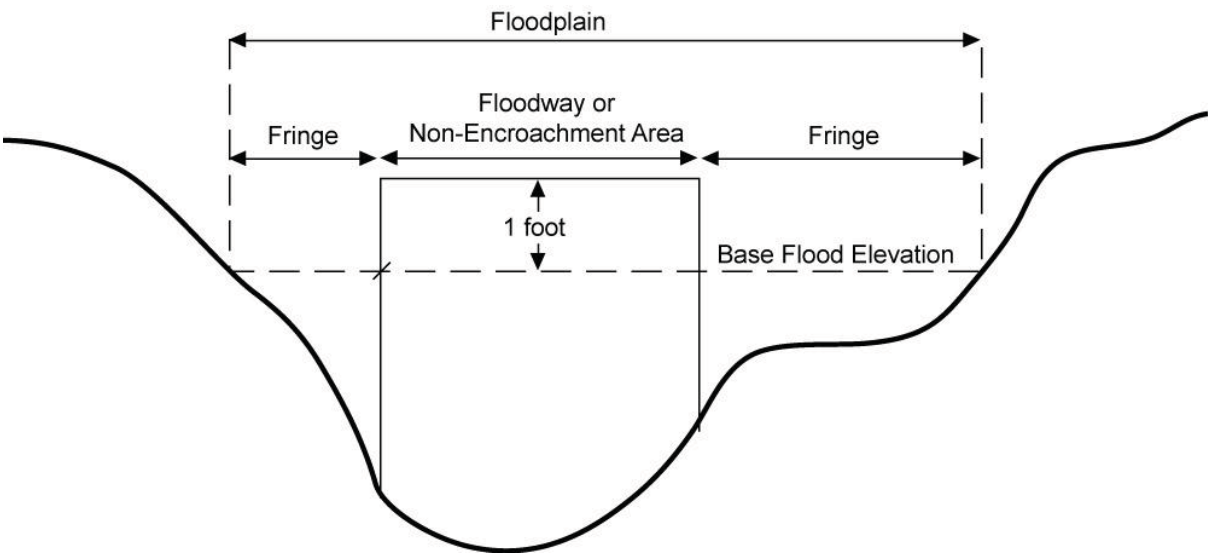
Flood Study
A study of the potential changes in the base flood elevation caused by the obstruction, encroachment, alteration or relocation of: (1) a FEMA mapped floodway; (2) a non-encroachment area; (3) a FEMA mapped area of special flood hazard that has not previously been studied in detail; (4) flood hazard soils areas with a total drainage area of more than 5 acres but no more than 25 acres;

(5) flood hazard soils areas with a total drainage area of more than 25 acres, but less than 100 acres; and (6) flood hazard soils area with a total drainage area of 100 acres or more.

Floodplain

Any land area susceptible to being inundated by water from the base flood. The floodplain includes the floodway or non-encroachment area plus the flood fringe.

Stream Cross-Section Showing Floodplain, Flood Fringe, Non-Encroachment Area and Floodway



Note: 1 foot indicates the maximum rise of the base flood elevation attributable to fill and or encroachment into the floodway fringe.

Floodplains accommodate increased water flow during storm events. As the level of development within a watershed increases, many characteristics of streams change, including the location/elevation of the floodplain. As development occurs and impervious surfaces increase, there is more runoff during storms, and the water levels within urban streams rise quickly.

Limiting development in the floodplain minimizes the amount of property damage that will occur during storms and protect lives. In addition, undeveloped floodplains filter sediment and other pollutants and help protect water quality.

Floodplain Administrator

The individual appointed to administer and enforce the floodplain management regulations.

Floodproofing

Any combination of structural and nonstructural features, additions, changes, or adjustments to land and structures in accordance with or comparable to guidelines set forth in *Floodproofing Regulations* (June 1972 edition, published by the Office of the Chief of Engineers, U.S. Army, Washington, D.C.), which reduce or eliminate flood damage to lands, water and sanitary facilities, structures, and contents of buildings.

Floodway

(1) For areas which have been studied and mapped in detail by FEMA, the floodway must be the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

(2) For areas designated as Zone A on the Flood Insurance Rate Map where no base flood elevation data has been provided by FEMA, the entire area designated as Zone A must be considered as the floodway.

Floodway Fringe
That part of the area of special flood hazard, shown on the Federal Emergency Management Agency's maps, exclusive of the floodway or non-encroachment area.

Functionally Dependent Facility
A facility which cannot be used for its intended purpose unless it is located or carried out in close proximity to water, such as docking or port facility necessary for the loading and unloading of cargo or passengers, shipbuilding, ship repair, or seafood processing facilities. The term does not include long-term storage, manufacture, sales, or service facilities.

Hazardous Waste Facility
A facility for the collection, storage, processing, treatment, recycling, recovery, or disposal of hazardous waste, as defined in NCGS Article 9 of Chapter 130A.

Highest Adjacent Grade
The highest natural elevation of the ground surface, prior to construction, next to the proposed walls of the structure.

Historic Structure
Any structure that is: (1) Listed individually in the National Register of Historic Places (a listing maintained by the U.S. Department of the Interior), or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register of Historic Places; (2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary as qualifying as a registered historic district; or (3) Listed individually on the State Study of Historic Places (a listing maintained by the North Carolina Department of Cultural Resources, Division of Archives and History).

Lowest Floor
The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area, is not considered a building's lowest floor provided that such enclosure is not built to render the structure in violation of the applicable non-elevation design requirements of this section.

Major Repairs
Any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure. The market value must be determined at the time the improvement or repair is started, or if the structure has been damaged and is being restored, at the time immediately preceding the damage. For the purposes of the definition, major repair is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include:

(D) Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are necessary to assure safe living conditions; or

(E) Any alteration of a structure listed on the National Register of Historic Places or a State inventory of historic places.

Mean Sea Level
For purposes of this ordinance, the National Geodetic Vertical Datum (NGVD) as corrected in 1929, the North American Vertical Datum (NAVD) as corrected in 1988, or other vertical control datum used as a reference for establishing varying elevations within the floodplain, to which Base Flood Elevations (BFEs) shown on a FIRM are referenced. Refer to each FIRM panel to determine datum used.

Minimum Finished Floor Elevation
The highest water surface elevation predicted for the base flood in a non-FEMA mapped area obtained by the methods prescribed by Sec. 14-14 and Sec. 14-15.

Mobile Home
Any vehicle or structure built on a chassis, designed to be transported, and intended for human occupancy for unlimited periods of time. Such vehicle must contain as an integral part of its construction, kitchen facilities and a completely equipped bathroom consisting of a flush toilet, lavatory, and bathtub or shower. Recreational vehicles are not mobile homes.

New Construction
Structures for which the start of construction commenced on or after January 17, 1983, and includes any subsequent improvements to such structures.

New Mobile Home Park
A mobile home park is considered new if the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including, at a minimum, the installation of utilities, final site grading or pouring of concrete pads, and the construction of roads), is completed on or after January 4, 1960.

Non-detailed Flood Hazard Area
A Special Flood Hazard Area designated as Zone A on the Flood Insurance Rate Map where no base flood elevation data has been provided by FEMA. The entire area designated as Zone A will be considered to be the floodway until the area is studied and a floodway or non-encroachment area is established.

Non-Encroachment Area
The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot as designated in the Flood Insurance Study report.

Nuisance Flooding
The ponding of water in ditches, watercourses, yards, sites, or parcels, created by a rainfall event occurring in total drainage areas of less than 5 acres.

Recreational Vehicle
A vehicle that is:

1. built on a single chassis;
2. 400 square feet or less in area when measured at its largest horizontal projections;
3. designed to be self-propelled or permanently towable by a light duty truck; and

4. designed primarily for use as temporary living quarters for recreational, camping, travel, or seasonal use, and not for use as a permanent dwelling.

Regulated Discharge Floodplain Areas
Those areas subject to reservoir-regulated flood releases within Special Flood Hazard Areas are designated as "Special Limited Use Areas" as delineated by the U.S. Army Corps of Engineers and adopted by the Wake County Board of Commissioners.

Regulatory Flood Protection Elevation (RFPE)
The highest water surface elevation reached by the base (100-year) flood, also known as the base flood elevation or the 100-year flood elevation. In FEMA areas of detailed study, the RFPE will be considered to be the base flood elevation with floodway as listed in the floodway data tables of the Flood Insurance Study.

Remedy a Violation
To bring a structure or other development into compliance with State or local flood plain management regulations, or, if this is not possible, to substantially reduce the impacts of its noncompliance.

Salvage Yard
Any nonresidential property used for the storage, collection, and/or recycling of any type of equipment, and including but not limited to vehicles, appliances and related machinery.

Soil Overlay Maps
Transparent photographic enlargements of soils maps taken from Soil Survey, Wake County, North Carolina. These overlay maps are at the same scale as the Wake County Tax Maps.

Soil Survey
The Soil Survey, Wake County, North Carolina.

Solid Waste Disposal Facility
Any facility involved in the disposal of solid waste as defined in NCGS 130A-290(a)(35).

Solid Waste Disposal Site
Any place at which solid wastes are disposed of by incineration, sanitary landfill, or any other method as defined in (NCGS 130A-290(a)(36).

Special Flood Hazard Areas
Same as "Area of Special Flood Hazard."

Start of Construction
The first placement of permanent construction of a structure on a site, such as the pouring of slabs or footings or the placement of pilings, columns, or piers or any work beyond the stage of excavation; or the placement of a mobile home on a foundation. Permanent construction does not include clearing or grading; neither does it include excavation for a basement, footing, piers, or foundations, or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the start of construction is the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not the alteration affects the external dimensions of the building.

Structure
A walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a mobile home.

Substantial Damage
Damage, of any origin, sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.

Substantial Improvement or Major Repairs
Any repair, reconstruction, rehabilitation, addition, or other improvement of a structure, the costs of which equals or exceeds 50% or more of the market value of the structure before the "start of construction" of the improvement. This term includes structures that have incurred "substantial damage," regardless of the actual repair work performed. The term does not include either (1) any improvement of a structure needed to comply with existing State and local health, sanitary, or safety code specifications, or (2) any alteration of a "historic structure," provided the alteration will not preclude the structure's continued designation as a "historic structure."

Violation of Flood Hazard Regulations
The failure of a structure or other development to fully comply with the provisions of Article 14. A structure or other development without the elevation certificate, other certifications, or other required evidence of compliance is presumed to be in violation until such time as that documentation is provided.

Water Surface Elevation (WSE)
The height, in relation to mean sea level, of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

14-13 List of Flood Hazard Soils

14-13-1 The following are classified as "flood hazard soils" in Wake County.

Soil Map Symbol	Name
AfA	Altavista fine sandy loam 0 to 4% slopes
Au	Augusta fine sandy loam 0 to 4% slopes
Bu	Buncombe 0 to 2% slopes
Cm	Chewacla 0 to 2% slopes
Cn	Colfax sandy loam 0 to 6% slopes
Co	Congaree fine sandy loam 0 to 2% slopes
Cp	Congaree silt loam 0 to 2% slopes
Ly	Lynchburg sandy loam 0 to 2% slopes
Me	Mantachie soils 0 to 4% slopes
Ps	Plummer sand 0 to 4% slopes
Ra	Rains fine sandy loam 0 to 2% slopes
Ro	Roanoke fine sandy loam 0 to 2% slopes
Sw	Swamp
Wh	Wahee fine sandy loam 0 to 2% slopes
Wn	Wehadkee silt loam 0 to 2% slopes
Wo	Wehadkee and Bibb soils 0 to 2% slopes
Wy	Worsham sandy loam 0 to 4% slopes

14-13-2 Flood hazard soil boundaries may be modified by field investigation by a soil scientist. The report of the field investigation must conclude with a description of the actual soil

horizons which were encountered on the site. These soils must be placed in a soil complex or major soil association as prescribed by the standards and guidelines of the American Registry of Certified Professionals in Agronomy, Crops, and Soils, or the checklist of the Department of Environmental Services.

14-13-3 Base flood elevation studies, prepared and certified by a design professional, as appropriate for their licensing, may supersede existing flood hazard soil boundary designations when approved by the Department of Environmental Services. Base flood elevation studies may be prepared only by licensed professional engineers.

14-14 Permit and Certification Requirements

14-14-1 No permit for any new construction, substantial improvements, or other development proposed in an area of special flood hazard must be issued until the Department of Environmental Services has reviewed the plans for the development and has accepted the findings of the applicant that the development, as proposed, would comply with all relevant requirements of this section. As provided in 19-42-1(C), those land uses otherwise exempted from the general permit requirements of 19-42-1(A) and 19-42-1(B), including land uses associated with bona fide farms, may not be so exempted where the proposed development is located within an area of special flood hazard.

14-14-2 In addition to the requirements imposed by Sec. 19-42, all applications for building permits for property located in areas of special flood hazards must be accompanied by evidence showing:

(A) elevation of the base flood, in relation to mean sea level, on the property;

(B) existing or proposed cut and fill;

(C) existing or proposed drainage facilities;

(D) as-built elevations, certified by a licensed professional land surveyor, of the lowest floor (basement floor or otherwise) of all existing structures or the proposed lowest floor elevation of all proposed structures;

(E) as-built elevations to which any nonresidential structure has been floodproofed;

(F) certification from a licensed professional engineer or architect showing that nonresidential floodproofing meets the floodproofing criteria referenced in Sec. 21-11;

(G) the extent to which any watercourse will be altered or relocated as a result of proposed development, including sufficient hydraulic information to show that such alteration or relocation will not increase the base flood elevation at any point along the watercourse above the allowable rise listed in the FEMA floodway tables or, in non-FEMA mapped areas, increase the depth of flood waters on property not controlled by the property owner; and

(H) permit approval for proposed development from those federal, state, or local governmental agencies from which prior approval is required.

14-14-3 If a nonresidential structure must be floodproofed, the applicant must provide a Floodproofing Certificate (FEMA Form 81-65), with supporting data and an operational plan, that such structure must meet the floodproofing criteria specified in 14-14-2(F),Subsection C(6), and a post-construction certification from a licensed professional

engineer or architect which states that such structures do in fact comply with the required floodproofing criteria. The floodplain administrator must review the certificate data and plan. Deficiencies detected by such review must be corrected by the applicant prior to permit approval. Failure to submit the certification or failure to make required corrections is cause to deny a floodplain development permit. Failure to construct in accordance with the certified design is cause to withhold the issuance of a Certificate of Compliance/Occupancy.

14-14-4 If any watercourse is to be altered or relocated, the applicant must provide financial sureties and deed restrictions to ensure that sufficient maintenance of the altered or relocated portion of said watercourse will be provided to ensure that the flood-carrying capacity of the watercourse is undiminished.

14-14-5 A final as-built Elevation Certificate (FEMA Form 81-31) is required after construction is completed and prior to Certificate of Compliance/Occupancy issuance. It is the duty of the permit holder to submit to the floodplain administrator a certification of final as-built construction of the elevation of the reference level and all attendant utilities. The floodplain administrator must review the certificate data submitted. Deficiencies detected by such review must be corrected by the permit holder immediately and prior to Certificate of Compliance/Occupancy issuance. In some instances, another certification may be required to certify corrected as-built construction. Failure to submit the certification or failure to make required corrections is cause to withhold the issuance of a Certificate of Compliance/Occupancy.

14-15 Exemptions and Special Requirements

14-15-1 Driveways are exempt from all flood hazard soil area regulations in this section provided the conditions of Sec. 14-15-2, Sec. 14-15-3, Sec. 14-15-4 and Sec. 14-21 are met. Driveways are not exempt from floodway, non-encroachment area and floodway fringe regulations.

14-15-2 Development in flood hazard soil locations involving less than 5 acres of drainage area are exempt from all flood hazard soil area regulations in this section.

14-15-3 Development in flood hazard soil locations involving 5 or more acres but less than 25 acres of drainage area are subject to the following requirements:

(A) Natural Conditions

All relevant information related to development occurring adjacent to a flood hazard soils area but not encroaching into the area must be certified by a licensed professional land surveyor. The certification must be based on the Wake County Soils Map which will be adjusted to conform to the Wake County Topographic Maps. Alternatively, the certification may be based upon the results of field investigations, surveys and engineering studies conducted by appropriate professionals if found to be acceptable by the Department of Environmental Services. The licensed professional land surveyor must establish the limits of the flood hazard soil area based on the adjusted soils map and the proposed property lines.

(B) Modified Conditions

Encroachments into a flood hazard soils area must be designed and certified by an appropriate design professional. The design must be based upon the establishment of a temporary or permanent benchmark and an analysis of the effects of the proposed encroachment to establish a base flood elevation or depth of flow, using Manning's Equation, field surveyed cross-sections including channel slope, Wake County Topographic Maps, and, where appropriate, use of Culvert Headwater Charts. No

benchmarks are required when establishing a depth of flow. A minimum of one vertical foot must be added to the calculated base flood elevation or depth of flow to provide a factor of safety due to the potential backwater effects of the encroachment. The analysis must conclude that no existing or proposed structures or offsite properties will be inundated by the base flood. As-built certification of compliance with the construction drawings must be provided prior to receiving a footing inspection from the Wake County Building Inspections Division on any structures on any lots involved in the analysis. The as-built certification with the construction drawings is in addition to any elevation certifications which may be required for the structures.

14-15-4 Development in flood hazard soil locations involving 25 acres or more of drainage area but less than 100 acres of drainage area are subject to the following requirements:

(A) Natural Conditions

Certification is required in accordance with 14-15-3(A).

(B) Modified Conditions

Encroachments into a flood hazard soils area must be designed and certified by an appropriate design professional. The design must be based upon the establishment of a temporary or permanent benchmark and an analysis of the effects of the proposed encroachment to establish a base flood elevation or depth of flow; using Manning's Equation, field surveyed cross sections including channel slope, Wake County Topographic Maps, and where appropriate use of Culvert Headwater Charts. No benchmarks are required when establishing a depth of flow. A minimum of one vertical foot must be added to the calculated base flood elevation or depth of flow to provide a factor of safety due to the potential backwater effects of the encroachment. The analysis must conclude that no existing or proposed structures, or offsite properties will be inundated by the base flood. As-built certification of compliance with the construction drawings must be provided prior to receiving a footing inspection from the Wake County Building Inspections Division on any structures on any lots involved in the analysis. The as-built certification with the construction drawings is in addition to any elevation certifications which may be required for the structures.

14-15-5 Development in flood hazard soil locations involving 100 acres or more of drainage area are subject to the following requirements:

(A) Natural Conditions

Certification must be provided in accordance with 14-15-3(A).

(B) Modified Conditions

Encroachments into a flood hazard soils area must be designed and certified by an appropriate design professional. The design must be based upon the establishment of a temporary or permanent benchmark based on National Geodetic Vertical Datum and an analysis of the effects of the proposed encroachment to establish a base flood elevation; using Manning's Equation, the Standard Step Method to analyze backwater effect, field-surveyed cross sections including channel slope, and where appropriate, use of Culvert Headwater Charts. The analysis must conclude that no existing or proposed structures, or offsite properties will be inundated by the base flood. As-built certification of compliance with the construction drawings must be provided prior to receiving a footing inspection from the Wake County Building Inspections Division on any structures on any lots involved in the analysis. The as-built certification with the construction drawings is in addition to any elevation certifications which may be required for the structures.

14-15-6 Development of farm ponds as part of a bona fide farm use in flood hazard soil locations must either comply with the provisions of paragraph (2), (3), (4), or (5) of this subsection, as appropriate to the size of the drainage area, or comply with the following alternative requirements:

(A) Natural Conditions

Certification is required in accordance with Sec. 14-15-3(A).

(B) Modified Conditions for Farm Ponds

Farm ponds must be designed and constructed such that no offsite properties will experience an increase in flood elevations resulting from the 100-year storm event, unless the property is obtained or controlled through a recorded easement in favor of the party introducing the use. Furthermore, the dam must comply with all State and federal laws and regulations including the Dam Safety Law of 1967 (NCGS 143-215.23 through 143-215.37).

14-16 Administration

The Director of the Department of Environmental Services (also referred to as the "Floodplain Administrator") must, in addition to other power and duties identified in this ordinance, perform the following:

14-16-1 notify, or see that notification is given to, adjacent communities and to the State Coordinator of the National Flood Insurance Program (located in the North Carolina Department of Crime Control and Public Safety, Division of Emergency Management) prior to any alteration or relocation of a watercourse, or submit evidence of such notification to the Federal Emergency Management Agency, or successor agency;

14-16-2 ensure, by requiring appropriate financial sureties and deed restrictions, that maintenance will be provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished;

14-16-3 ensure that any base flood elevation data available from a federal, State, or other source is considered when base flood elevation data has not been provided by the Federal Emergency Management Agency, or successor agency, in order to administer the provisions of Sec. 14-19, Sec. 14-20 and Sec. 14-21;

14-16-4 advise permittee that additional federal or State permits may be required, and if specific federal or State permits are known, require that copies of such permits be provided and maintained on file with the development permit;

14-16-5 determine the exact location of boundaries of the areas of special flood hazard (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) when interpretation is necessary. The person contesting the location of the boundary must be given a reasonable opportunity to appeal the Director of the Department of Environmental Services' interpretation to the Wake County Board of Adjustment as provided in Sec. 19-41; and

14-16-6 maintain all records pertaining to the flood hazard regulations of Wake County, which must be open for public inspection.

14-17 Delineation of Special Flood Hazard Areas

The areas of special flood hazard within the jurisdiction of Wake County are divided into 4 categories:

14-17-1 floodway, as defined in 14-12, and as shown on the FIRM;

14-17-2 non-encroachment areas, as defined in 14-12, and as described in the Limited Detailed Flood Hazard Data Tables in the Flood Insurance Rate Study Report;

14-17-3 floodway fringe, as defined in 14-12, and as shown on the FIRM; and

14-17-4 flood hazard soils, as defined in 14-12, and as shown on the soil overlay maps.

14-18 Special Flood Hazard Area Standards

An appropriate design professional, must certify that the standards of this section are satisfied. The certification must be submitted to the Department of Environmental Services.

14-18-1 In all areas of special flood hazards, the following general provisions apply:

(A) all new construction and major repairs must be anchored to prevent floatation, collapse, or lateral movement of the structure;

(B) all new construction and major repairs must be floodproofed;

(C) all new construction or major repairs must be constructed by methods and practices that minimize flood damage;

(D) all new construction and substantial improvements must be constructed with materials and utility equipment resistant to flood damage;

(E) all new and replacement water supply systems must be designed to eliminate infiltration of flood waters into the system;

(F) new and replacement sanitary sewage systems must be designed to eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters;

(G) on-site waste disposal systems must be located to prevent impairment of them, or contamination from them, during the flooding;

(H) all other public utilities such as gas and electrical systems must be located and constructed to minimize or eliminate flood damage; and

(I) in regulated discharge floodplain areas, roads must be constructed so that surface elevations are no lower than the RFPE.

(J) All new construction or major repairs [substantial improvements] must have adequate drainage provided to reduce exposure to flood hazards.

14-18-2 Any alteration, repair, reconstruction, or improvements to a structure which is in compliance with the provisions of this ordinance must meet the requirements of "new construction" contained in this ordinance.

14-18-3 In all areas of special flood hazard:

(A) new residential construction or major repairs of any residential structure must have the lowest floor, including basement, elevated to or above the regulatory flood protection elevation (RFPE);

(B) new nonresidential construction or major repairs of any commercial, industrial or other nonresidential structure must have the lowest floor, including basement, elevated to or above the level of the regulatory flood protection elevation (RFPE);

(C) electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities must be designed and/or located to prevent water from entering or accumulating within the components during conditions of flooding; and

(D) for all new construction, major repairs, and substantial improvements, fully enclosed areas below the lowest floor that are subject to flooding must be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a licensed professional engineer or architect or must meet or exceed the following minimum criteria: A minimum of 2 openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding must be provided. The bottom of all openings must be no higher than one foot above grade. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

14-18-4 Any recreational vehicle placed on a site must either:

(A) be on the site for fewer than 180 consecutive days;

(B) be fully licensed and ready for highway use, that is, is on its wheels or jacking system, is attached to the site only by quick-disconnect-type utilities and security devices, and has no permanently attached additions; or

(C) meet the permit requirements of Sec. 14-14 and the elevation and anchoring requirements for mobile homes in subparagraph 14-18-5(A) below.

14-18-5 In all areas of special flood hazard, the following provisions apply for mobile homes:

(A) no mobile home may be placed in a floodway or non-encroachment area except in a mobile home park existing prior to January 17, 1983;

(B) all mobile homes and accessory structures must be anchored to prevent floatation, collapse, or lateral movement by providing over-the-top and frame ties to ground anchors. Mobile homes must be anchored in accordance with the requirements in the "State of North Carolina Regulations for Manufactured Homes," as adopted, and subsequently amended, by the North Carolina Commissioner of Insurance. Any additions to mobile homes must be similarly anchored;

(C) for any mobile home to be placed or substantially improved on a site located within a new mobile home park, within an expansion to an existing mobile home park, within a mobile home park that has incurred substantial damage as a result of a flood, or outside of a mobile home park:

(1) the mobile home must be elevated on a permanent foundation so that its lowest floor is at or above the base flood elevation;

(2) the mobile home must be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement;

(3) adequate surface drainage and access for a hauler must be provided; and

(4) in the instance of elevation on pilings:

(a) lots must be large enough to permit steps;

(b) piling foundations must be placed in stable soil no more than 10 feet apart (Piling foundations must be certified (sealed) by a licensed professional engineer); and

(c) lateral reinforcement must be provided for pilings extending more than 6 feet above the ground level (Reinforcements must be certified by a licensed professional engineer).

(D) For a mobile home to be placed or substantially improved on a site within an existing mobile home park not subject to the provisions in (c) above:

(1) The mobile home must be elevated so that:

(a) its lowest floor is at or above the base flood elevation; and

(b) its chassis is supported by reinforced piers or other foundation elements of at least equivalent strength.

(2) The mobile home must be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

14-18-6 In all Special Limited Use Areas, the following additional provisions apply:

(A) New residential construction or development and all public or joint-use access roads must be constructed to a level that is at or above the RFPE.

(B) Exception may be allowed to requirements in (A) above for access to facilities and/or equipment (pump stations, substations, etc.), as determined by the Department of Environmental Services.

14-19 Floodways and Non-Encroachment Areas

14-19-1 General Provisions

Floodways and non-encroachment areas are extremely hazardous because of the velocity of flood waters which carry debris, potential projectiles, and erosion potential. Therefore, the following provisions apply:

(A) All uses permitted in 14-19-2(A)through 14-19-2(F) and 14-19-2(I) through 14-19-2(L) requiring encroachments, including fill, new construction, major repairs, or other developments are prohibited unless certification by the developer's engineer or other representative authorized by statute shows that all encroachments are floodproofed and that no encroachments will result in an increase in the elevation of the base flood above the elevation with floodway as established by the Floodway Data Tables. .

(B) All uses permitted in subparagraphs 14-19-2(G) and 14-19-2(H) are allowed to increase the elevation of the base flood provided they are elevated or floodproofed and certified by the developer's engineer or other representative authorized by statute and provided:

(1) all changes in the base flood elevations as established in the Federal Emergency Management Agency's Flood Insurance Study report must be submitted to and approved by the Federal Emergency Management Agency, or successor agency;

(2) all dams which fall under the purview of the North Carolina Dam Safety Act (NCGS 143.215) must meet the standards of said Act;

(3) all areas inundated by the base flood as a result of such uses must be owned by, or controlled through a recorded easement in favor of the party introducing the use. Additionally, the party introducing the use must be responsible for floodproofing all utilities susceptible to the hazards of flooding;

(4) full compliance with the standards and procedures listed in 14-21-4 and 14-21-5 is required; and

(5) full compliance with Sections 60.3, 65.6, 65.7, and 65.12 of the National Flood Insurance Program, 44 CFR Chapter l, 10-1-88 Edition, and any subsequent changes to these sections as contained in the most current edition.

(C) Any violation of this Article constitutes a misdemeanor under the authority of NCGS 143-215.58.

(D) Failure to remove any artificial obstruction or enlargement in the floodway or non-encroachment area that violates the regulations of this Article (or the provision of any permit issued) under the authority of NCGS 143-215.58 constitutes a separate violation for each 10 days that such failure continues after written notice from the county.

14-19-2 Uses Permitted in Floodways and Non-Encroachment Areas

The following uses, and uses listed in 11-22-2 are permitted in floodway and non-encroachment areas, provided that they are not prohibited by this or any other law; permanent facilities are floodproofed; they will not adversely affect the capacity of the channels, floodway or non-encroachment areas of any river, creek, stream, tributary, or other drainage areas; and provided, still further, that no such use will raise the elevation of the base flood except as provided in 14-19-1(A):

(A) temporary facilities (for a specified number of days) such as displays, circuses, carnivals, or similar transient amusement enterprises upon filing an evacuation plan with Wake County Office of Emergency Management Services, or successor agency;

(B) archaeological activities;

(C) boat docks, ramps, piers, or similar water-dependent structures;

(D) any use employing a structure provided that all portions of any structure, including foundation and supports, must be located outside the floodway area or non-encroachment area and that any structure which overhangs the floodway or non-encroachment area is elevated above the depth of the 500-year flood;

(E) quarrying provided spoilage is not stored in the floodway or non-encroachment area;

(F) any other use not employing a structure and not subject to floating away during a flood;

(G) reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places;

(H) roads, bridges, overhead utility lines, hydroelectric plants, railway lines and rights-of-way, creek and storm drainage facilities, sewage or waste treatment plant outlets, water supply intake structures, manholes and wastewater mains, and other similar public, community or utility uses; and

(I) dams (including fill) provided they are constructed perpendicular to the floodway or non-encroachment area flow; provided still further that the emergency spillway is designed to safely pass the maximum expected peak discharge of the 100-year storm event; and provided still further that the dam complies with all state and federal laws and regulations. The construction of dams within jurisdictional waters of the United States may be prohibited by the federal and/or state government;

(J) drainage ditches, roadside ditches, and stormwater outfalls, provided no alternative exists and any necessary stormwater management device(s) is/are installed to control nitrogen, to attenuate the velocity of the discharge, and to return the discharge to a diffuse flow (all to the maximum extent practicable), prior to the conveyance of the discharge through the buffer;

(K) pedestrian, bikeway, equestrian, golf cart, and other recreation trails; and

(L) stream and wetland restoration and stream bank stabilization.

14-19-3 Uses Prohibited in Floodway and Non-Encroachment Areas

(A) No new structures may be constructed or placed within a floodway or non-encroachment area except as otherwise provided by subsection 14-19-2;

(B) No fill may be placed in a floodway or non-encroachment area except as otherwise provided by subsection 14-19-2;

(C) No new solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities or similar uses that may result in environmental contamination is permitted within floodways and non-encroachment areas. A structure or tank for chemical or fuel storage incidental to an allowed use or to the operation of a water treatment plant or wastewater treatment facility may be located in a floodway or non-encroachment area only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified accordingly.

14-20 Floodway Fringe

14-20-1 Uses Permitted (Below the Regulatory Flood Protection Elevation)

The following uses are permitted within floodway fringe areas below the regulatory flood protection elevation to the extent that they are not otherwise prohibited by this or any other law or ordinance:

(A) uses permitted and regulated in floodways and non-encroachment areas; and

(B) underground storage and structure foundations and supports which are watertight and substantially impermeable to the passage of water and are designed to withstand the flood depths, velocities, impact and uplift forces associated with the base flood at the location of the structure.

14-20-2 Uses Prohibited in the Floodway Fringe

(A) No new structures may be constructed or placed within the floodway fringe except as otherwise provided by subsection 14-20-1.

(B) No fill may be placed in the floodway fringe except as otherwise provided by this ordinance unless cut and fill is balanced on the site and a licensed professional engineer provides a no-rise certification accompanied by sufficient documentation to verify that there will be no increase in the base flood elevation. Subsequently, no portion of the property may be permitted to be included in a request for a Letter of Map Amendment (LOMA).

(C) No new solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities or similar uses that may result in environmental contamination are permitted in the floodway fringe. A structure or tank for chemical or fuel storage incidental to an allowed use or to the operation of a water treatment plant or wastewater treatment facility may be located in the floodway fringe only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified accordingly.

14-21 Flood Hazard Soil Areas

14-21-1 Uses Permitted

All uses permitted in Sec. 14-19 and Sec. 14-20, or in subsection 11-22-2 are permitted in flood hazard soil areas, and such uses may raise the elevation of the base flood in excess of one foot, provided that any use which raises the elevation of the base flood meets the following conditions:

14-21-2 the Department of Environmental Services must review and approve any hydrologic or other data prepared to show regulatory flood protection elevations;

14-21-3 all areas upstream of the use which become inundated by the base flood as a result of that use must be owned by or controlled through a recorded easement in favor of, the party introducing the use. Additionally, the party introducing the use must be responsible for floodproofing all utilities that are susceptible to the hazards of flooding because of their location below the base flood elevation; and no floodwaters must be in excess of the pre-development base water surface elevation on properties not owned or controlled by the applicant; and

14-21-4 such uses are subject to standards and procedures established by the Department of Environmental Services, including: Section 1, Subsection 104; Section 3, Table 300.1; and Section 3, Subsection 301.03 of the North Carolina State Highway Commission's Handbook of Design for Highway Surface Drainage Structures.

14-21-5 such uses are subject to the standards set out in the Wake County Standards and Specifications for Soil Erosion and Sediment Control.

14-22 Uses Allowed Without a Permit

The following uses are allowed within a floodway, non-encroachment, floodway fringe, or flood hazard soils area without a permit provided the existing topography and drainage is not altered by construction, the level of the base flood is not increased, and the use does not involve any man-made change to improved or unimproved real estate (including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations, or storage of equipment or materials).

14-22-1 general farming, pasture, outdoor plant nurseries, horticulture, forestry, wildlife sanctuary, game farm, and other similar agricultural, wildlife and related uses;

14-22-2 ground level loading areas, parking areas, rotary aircraft ports and other similar ground level area uses;

14-22-3 lawns, gardens, play areas, and similar uses; and

14-22-4 golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, parks, hiking or horseback riding trails, open space and other similar private and public recreational uses.

OA 05/04 May 1, 2006

(c) Where public necessity requires the location of major public utility lines adjacent to a Special Highway and the easement or right-of-way for a line precludes provision of a Special Highway bufferyard immediately adjacent to the highway right-of-way, the required bufferyard must be provided adjacent to the outer edge of the utility easement or right-of-way. The public utility line easement or right-of-way must be screened in accordance with the requirements of (C)(2) below.

(2) Bufferyard Screening and Vegetation

(a) Along that part of the Special Highway bufferyard closest to the Special Highway, existing vegetation must be retained or supplemented with additional planting as necessary to provide Type A Screening. Within the remainder of the bufferyard existing vegetation must be left undisturbed except as necessary to allow the construction or installation of structures permitted in the bufferyard (see (c) below). The provisions of subsections 16-10-3, 16-10-3(B), 16-10-3(C) and 16-10-3(D), applicable to bufferyards, also apply to Special Highway bufferyards.

(b) Where public necessity requires the location of major public utility lines adjacent to a Special Highway, sufficient vegetation and/or other screening must be retained or provided within the Special Highway right-of-way (with approval from NCDOT) or the public utility line easement or right-of-way to minimize any dominating linear view of the cleared utility line easement or right-of-way seen by travelers on the Special Highway.

(c) The following minor structures are allowed in a Special Highway bufferyard:

i. pedestrian or bicycle paths, including steps;

ii. planters, retaining walls, fences, park tables and seating, hedges, and other landscaping structures; and

iii. utility lines (above or below the ground), their support structures, and minor structures accessory to utility lines, provided that they generally cross rather than run along the length of the bufferyard.

(D) Exterior Lighting

All exterior lighting must be constructed or located so that the light source is not directly visible from a vehicle traveling on the Special Highway.

3-72 RCOD-1, Resource Conservation Overlay District

3-72-1 Purpose; Locational Criteria

(A) The RCOD-1, Resource Conservation overlay district is intended to:

(1) protect and preserve the water quality of designated special water impoundments while allowing the orderly development of land in the watersheds of these sensitive areas;

(2) protect the water quality in these impoundments by requiring vegetated buffer areas around them as well as along drainageways leading to them; and

(3) be applied within special watersheds and such other significant physical and biological areas and habitats as the Wake County Board of Commissioners deems appropriate.

(B) Special water impoundments provide significant wildlife or plant life habitats, possess characteristics unique to Wake County, public recreation, or offer potentials for future public recreation.

3-72-2 Allowed Uses

Principal uses are allowed in the RCOD-1 overlay district in accordance with the use regulations of the underlying base zoning district, except that location of such uses are restricted as required by the requirements of this section.

3-72-3 Other District-Specific Regulations

The standards of both the RCOD-1 overlay district and the underlying district apply. Where the standards of the overlay district and the underlying district differ, the more restrictive standards control. All limits of disturbance within watershed buffers apply to each side of the water body.

(A) 100-foot-wide special water impoundment buffers must be maintained around special water impoundments. Special water impoundment buffers must be measured perpendicular to the normal pool shoreline of the special water impoundment, and must extend 100 feet from the normal pool shoreline of the special water impoundment, inside the watershed draining into that impoundment.

(B) 50-foot-wide drainageway buffers must be maintained along each side of a stream, and 25-foot wide drainageway buffers must be maintained along each side of an upper watershed drainageway, up to a point where less than 5 acres are drained by such upper watershed drainageway. In order to determine the amount of land drained by an upper watershed drainageway or a stream, USGS or Wake County topographic maps may be used.

(C) 50-foot-wide water impoundment buffers must be maintained around water impoundments located on a stream, and 25-foot-wide water impoundment buffers must be maintained around water impoundments located on an upper watershed drainageway.

(D) Drainageway buffers, water impoundment buffers, and special water impoundment buffers must be designated on lots created after November 19, 1986. Vegetation within such buffers must remain undisturbed except as may be necessary to accommodate any of the following uses:

(1) boat docks, ramps, piers, or similar structures;

(2) greenways, pedestrian paths, path shelters and benches, and related recreational uses;

(3) reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places;

(4) drainage facilities or utilities;

(5) roads, provided they cross the buffer at a horizontal angle of at least 60 degrees;

(6) forestry and husbandry activities that eliminate diseased, infected or damaged timber or nuisance vegetation;

(7) sedimentation and erosion control measures and devices as approved by the Department of Environmental Services;

(8) grassed yards; and

(9) construction of new lakes or ponds, provided that applicable buffers are designated around such new lakes or ponds.

(E) All buildings must be set back at least 20 feet from the edge of any drainageway buffer, special water impoundment buffer, or water impoundment buffer.

(F) In the event of conflict with other applicable regulations, the more restrictive regulation will govern.

(G) Some streams may require both special watershed buffers and Neuse River riparian buffers.

3-73 RCOD-2, Resource Conservation Overlay District 2

3-73-1 Purpose and Intent

(A) The RCOD-2 overlay district is intended to protect and preserve the water quality of special watersheds while allowing the orderly development of land in the watersheds of these sensitive areas. The purpose of these regulations is consistent with the Wake County Land Use Plan and otherwise advance the public health, safety, and general welfare.

(B) Special watersheds provide significant wildlife, aquatic and other organisms, or plant life habitats; possess characteristics unique to Wake County. It is the intent of these regulations to protect the water quality in these watersheds by requiring vegetated buffer areas along perennial streams and stormwater runoff controls.

(C) As is the case with any regulation or provision of this ordinance, when practical difficulties or unnecessary hardships would result from carrying out the strict letter of the regulation, the Board of Adjustment may vary or modify said regulation after making findings of fact supporting its conclusions in accordance with Sec. 19-26.

3-73-2 District Boundary

RCOD-2 overlays districts must be appropriately located within special watersheds and such other significant physical and biological areas and habitats, as the Wake County Board of Commissioners deems appropriate.

3-73-3 Regulation Of Uses

The uses permitted or prohibited in the RCOD-2 district will be those uses permitted or prohibited in the underlying zoning district.

3-73-4 Existing Development, Redevelopment, And Expansions

(A) Existing development is not subject to the requirements of this section; existing development will be considered to be any impervious surfaces created, or for which a vested right has been established, as of May 31, 2005.

(B) Redevelopment and expansions of any existing nonresidential development will be subject to the requirements of this section; however, the impervious surface coverage of the existing development is not required to be included when applying the impervious surface coverage limits of this section.

3-73-5 Uses Exempted

Bona fide farms, including land held for forestry practices, are exempt from the provisions of this section, provided that farming constitutes the primary use of the property. Any use of farm property for non-farm purposes is subject to these regulations.

3-73-6 Development Standards

The following standards apply in RCOD-2 district. The standards of both the RCOD-2 district and the underlying district will apply. Where the standards of the Overlay District and the underlying district differ, the more restrictive standards will control on lots created after May 31, 2005.

(A) Stormwater Runoff Control

(1) Peak stormwater runoff leaving any site for the one-year storm may be no greater for post development conditions than pre-development conditions. The same methodologies used to calculate stormwater runoff must be used for both pre-development and post-development conditions.

(2) In addition to those activities exempted above, the stormwater runoff control requirements of this section will not apply to one or more of the following:

(a) The increase in peak stormwater runoff between pre-development and post development conditions for the one-year storm is 10 percent or less.

(b) The maximum impervious surface coverage of the lot is no more than 15 percent and the remaining pervious portions of the lot are utilized to convey and control the stormwater runoff of the lot to the maximum extent practical. In determining a subdivision lot's eligibility for this exemption, the amount of impervious surface coverage in a lot will be increased by the lot's proportional share of impervious surface coverage devoted to roadways and improvements in the subdivision and will be decreased by the lot's proportional share of subdivision parcels devoted to open space, had they been created as building lots. Any lot which is exempted from the runoff control requirements by this subsection, must comply with all the requirements of this section whenever:

i. The exempted lot is subdivided; or

ii. The exempted lot size is reduced by recombination; or

iii. Impervious surfaces on the exempted lot equal or exceed the maximum allowable as determined in Section 3-73-6(A)(2)(b).

(c) Compliance with the runoff limitations in Section 3-73-6(A) would result in greater adverse downstream impact, such as local flooding, as determined by County approved engineering studies.

(d) The County reserves the right to require stormwater runoff control measures for projects without any measures, and the County reserves the right to require

additional stormwater runoff control measures for projects which are complying with this section if stormwater runoff from the site will cause adverse effects on other properties including without limitation public streets, greenway, and utility easements.

(B) Location and Width of Special Watershed Buffers

The location and width of the special watershed buffer must be maintained as shown below:

(1) General

(a) In the event of conflict with other applicable regulations, the more restrictive regulation will govern.

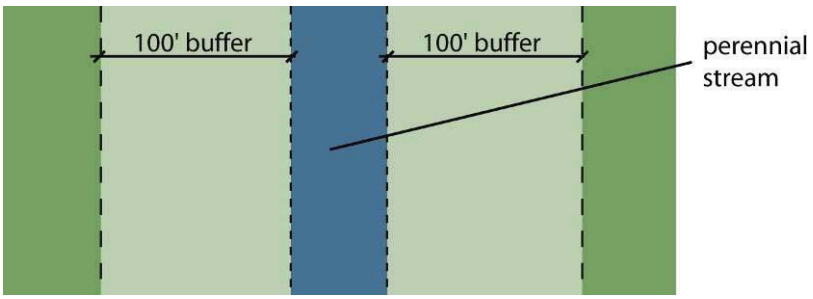
(b) Some streams may require both special watershed buffers and Neuse River riparian buffers.

(2) Perennial Streams

(a) A special watershed buffer with a minimum width of 100 feet must be provided along each side of a stream shown as a perennial stream from the 1999 Wake County Surface Water Survey Mapping Project – 1:1,200 scale map.

(b) The buffer width is to be measured perpendicular to the river or stream bank starting at the river or stream bank.

(c) There is no minimum building setback from the required buffer.



3-73-7 Activities Allowed within Special Watershed Buffers

(A) General

The required 100-foot buffer along a perennial stream must consist of a vegetated area that is undisturbed except for the activities expressly allowed to occur within special watershed buffers pursuant to Section 3-73-7(B). All limits of disturbance within watershed buffers apply to each side of the water body.

(B) Activities Allowed within Required Special Watershed Buffers

Only the activities listed below are allowed within required special watershed buffer areas:

(1) Archeological activities, provided any vegetation removed is restored with vegetation of a comparable assimilative capacity

(2) Bridges, provided no reasonable alternative to their location in the buffer exists

(3) Dam maintenance activities

(4) Vegetated swales, provided:

(a) no reasonable alternative to their location in the buffer exists; and

(b) a stormwater management facility is installed to control nitrogen and attenuate flow before the conveyance discharges through the buffer

(5) Drainage of a pond, provided a new vegetated special watershed buffer meeting the purpose and requirements of this Section is established along the new drainageway

(6) Driveway crossings that access single-family dwellings, provided:

(a) no reasonable alternative to their location in the buffer (including opportunity for shared driveways) exists;

(b) buffer disturbance is no more than 60 feet wide [1];

(c) buffer disturbance is no more than 6,000 square feet in area;

(d) the driveway crosses the buffer at an angle as close to 90 degrees as possible (and not less than 60 degrees);

(e) side slopes do not exceed a 2:1 (horizontal to vertical) ratio (bridging and/or retaining walls may be used to meet this and the disturbance width standard); and

(f) all culverts are designed and constructed for the 25-year storm event or as otherwise required by Wake County Environmental Services.

(7) Utility lines, provided:

(a) no reasonable alternative to their location in the buffer exists;

(b) a line crossing the buffer is combined with other permitted buffer crossings where practicable;

(c) buffer disturbance is not more than 40 feet wide;

(d) woody vegetation is removed by hand (no land grubbing or grading);

(e) vegetative root systems and stumps from cut trees are retained;

(f) no rip rap is used unless necessary to stabilize a pole or tower;

(g) active measures are taken after construction and during routine maintenance to ensure diffuse flow of stormwater through the buffer;

(h) mats are used to minimize soil disturbance (in wetlands);

(i) poles or towers are not installed within 10 feet of the lake, pond, river, stream, or drainageway;

(j) the area within 10 feet of the lake, pond, river, stream, or drainageway is managed so that only vegetation posing a hazard or with a potential to grow tall enough to interfere with the line is removed;

(k) construction activities minimize removal of woody vegetation, the extent of disturbed area, and the time during which areas remain in a disturbed state;

(l) cables are installed by vibratory plow or trenching; and

(m) trenches are backfilled with the excavated material immediately following line installation.

(8) Wells, subject to applicable local, state, and federal regulations.

(9) Sewage disposal systems, on-site (including but not limited to septic tanks, pumps, and ground absorption areas), provided that this is a replacement of an existing sewage disposal system, approved by the Director of Environmental Services.

(10) Recreation trails (public or private), provided:

(a) no reasonable alternative to their location in the buffers exists

(b) a trail crossing the buffer is combined with other permitted buffer crossings where practicable;

(c) buffer disturbance is no more than 20 feet wide (unless otherwise approved by Wake County Environmental Services);

(d) the trail is no more than 12 feet wide;

(e) a trail crossing the buffer does so at an angle as close to 90 degrees as possible (and not less than 60 degrees); and

(f) trail running linearly within the buffer must be located in the outer 20 feet of the buffer

(g) [Use of pervious surfacing materials is encouraged]

(11) Railroad crossings, provided:

(a) no reasonable alternative to their location in the buffer exists;

(b) buffer disturbance is not more than 60 feet wide; and

(c) buffer disturbance is no more than 6,000 square feet in area

(12) Removal of fill deemed harmful to the stream's water quality, provided:

(a) no excavation below the prior natural elevation;

(b) diffuse flow is maintained; and

(c) any vegetation removed is restored with woody native species of equivalent or better quality

(13) Road crossings (public or private roads), provided:

(a) no reasonable alternative to their location in the buffer exists;

(b) buffer disturbance does not extend beyond the required right-of-way or easement width, or in no case is more than 90 feet wide;

(c) buffer disturbance is no more than 9,000 square feet in area;

(d) the road crosses the buffer at an angle as close to 90 degrees as possible (and not less than 60 degrees);

(e) side slopes do not exceed a 2:1 horizontal: vertical ratio (bridging and/or retaining walls may be used to meet this and the disturbance width standard); and

(f) all culverts are designed and constructed for the 25-year storm event or as otherwise required by Wake County Environmental Services.

(14) Scientific studies and stream gauging

(15) Stormwater management ponds, provided

(a) no reasonable alternative to their location in the buffer exists; and

(b) a new vegetated buffer is established around the new pond

(16) Stream restoration and bank stabilization for mitigation purposes only

(17) Temporary in-stream sediment and erosion control measures for work within a stream channel

(18) Manual vegetation management is permitted but no grubbing or excavation; manual vegetation management may include:

(a) emergency fire control measures, provided topography is restored;

(b) planting vegetation to enhance the buffer's function;

(c) pruning forest vegetation, provided the health and function of the vegetation is not compromised;

(d) removing individual trees that are in danger of causing damage to dwellings, other structures, or human life; and

(e) removing poison ivy; and other noxious growth

(19) Water dependent structures (See definition, Section 21-11)

(20) Wetland restoration

3-73-8 Design, Construction, and Maintenance of Disturbances within Special Watershed Buffers

Any allowed disturbance that occurs as a result of the activities expressly permitted in Section 3-73-7(B) must be designed, constructed, and maintained so as to:

(A) minimize impervious or partially impervious surface coverage;

Commentary: The use of pervious surfacing materials and/or dual ribbon design is encouraged.

(B) diffuse the flow of stormwater runoff, encourage sheet flow and avoid concentrated discharge of stormwater into surface waters;

(C) maximize the use of Best Management Practices (BMPs) to minimize adverse water quality impacts; and comply with all applicable standards and conditions of Section 3-73-7(B).

OA 05/02 May 16, 2005

3-74 WSO, Water Supply Watershed Overlay District

3-74-1 Purpose

The WSO, Water Supply Watershed Overlay district is intended to ensure that the quality of public water supplies is protected while allowing limited orderly development. The regulations of the WSO overlay district protect water quality by requiring vegetated watershed buffers around surface water bodies and streams and by limiting the area of impervious coverage. The subdistricts and their accompanying development standards are consistent with the classifications used by North Carolina Department of Environment and Natural Resources and recognize the varying function and sensitivity of different watershed areas.

3-74-2 Subdistricts Established

The WSO overlay district includes the following subdistricts:

(A) WSO-2NC, Water Supply Watershed II (Non-Critical Area)

The WSO-2NC overlay district is intended to be applied to the area outside of the designated critical area of all WS-II watersheds outside of the watershed's critical area, as classified by the North Carolina Department of Environment and Natural Resources.

(B) WSO-3NC, Water Supply Watershed III (Non-Critical Area)

The WSO-3NC overlay district is intended to be applied to the area outside of the designated critical area of all WS-III watersheds, as classified by the North Carolina Department of Environment and Natural Resources.

(C) WSO-3CA, Water Supply Watershed III (Critical Area)

The WSO-3CA overlay district is intended to be applied to the designated critical area of all WS-III watersheds, as classified by the North Carolina Department of Environment and Natural Resources.

(D) WSO-4P, Water Supply Watershed IV (Protected Area)

The WSO-4P overlay district is intended to be applied to the designated protected area of all WS-IV watersheds, as classified by the North Carolina Department of Environment and Natural Resources. The overlay contains two subdistricts: WSO-4P-1 and WSO-4P-2.

3-74-3 Applicability

(A) WSO-2NC Designated Area

Land in a water supply watershed classified WS-II (e.g., the Little River watershed) that is outside of the watershed's critical area and that:

(1) is already located in an underlying district that does not apply appropriate watershed protection standards; or

(2) is located within an Urban Services Area/Water Supply Watershed (as designated in the Land Use Plan) and is being rezoned, in accordance with an adopted joint land use plan, to an underlying district that does not apply appropriate watershed protection standards.

(B) WSO-3NC, Designated Area

Land in a water supply watershed classified WS-III (e.g., the Swift Creek watershed) that is outside of the watershed's critical area and that:

(1) is already located in an underlying district that does not apply appropriate watershed protection standards; or

(2) is located within an Urban Services Area/Water Supply Watershed (as designated in the Land Use Plan) and is being rezoned, in accordance with an adopted joint land use plan, to an underlying district that does not apply appropriate watershed protection standards.

(C) WSO-3CA, Designated Area

Land in the critical area of a water supply watershed classified WS-III (e.g., the Swift Creek watershed) that:

(1) is already located in an underlying district that does not apply appropriate watershed protection standards; or

(2) is located within an Urban Services Area/Water Supply Watershed (as designated in the Land Use Plan) and is being rezoned, in accordance with an adopted joint land use plan, to an underlying district that does not apply appropriate watershed protection standards.

(D) WSO-4P, Designated Area

(1) WSO-4P-1

The WSO-4P-1 subdistrict includes land in the protected area of a water supply watershed classified WS-IV—other than the Falls Lake watershed (e.g., the Jordan Lake, Cape Fear (Lillington), Cape Fear (Sanford) and Upper Neuse River/Richland Creek watersheds)—that:

(a) is located in an underlying district that does not apply appropriate watershed protection standards; or

(b) is located within an Urban Services Area/Water Supply Watershed (as designated in the Land Use Plan) and is being rezoned, in accordance with an

adopted joint land use plan, to an underlying district that does not apply appropriate watershed protection standards.

(2) WSO-4P-2

The WSO-4P-2 subdistrict includes land in the protected area of a water supply watershed classified WS-IV—other than the Falls Lake watershed (e.g., the Jordan Lake, Cape Fear (Lillington), Cape Fear (Sanford) and Upper Neuse River/Richland Creek watersheds)—that:

(a) has been, or is committed to being, developed with basin-wide or other large-area stormwater management systems with lakes and detention facilities that provide protection of water quality beyond that provided by limiting the impervious surface coverage of individual developments; and

(b) makes up no more than 10% of the total land area of that portion of the watershed outside of its critical area and within the county's zoning jurisdiction as of July 1, 1995.

3-74-4 Exemptions

Existing development is not subject to the requirements of Sec. 3-74; existing development must be considered to be any impervious surfaces created, or for which a vested right has been established, as of December 31, 1993. Redevelopment and expansions of any existing development are subject to the requirements of this section; however, the impervious surface coverage of the existing development is not required to be included when applying the impervious surface coverage limits of this section. The land area to which this section's impervious surface coverage limits are applied is the total area of a parcel minus the area of impervious surfaces existing or vested as of December 31, 1993.

3-74-5 General Standards

All development within WSO overlay districts must, to the maximum extent practicable, minimize impervious or partially pervious surface coverage, direct stormwater away from surface waters, incorporate Best Management Practices (BMPs) to minimize water quality impacts, and transport stormwater runoff from the development by vegetated conveyances.

3-74-6 Allowed Uses

Principal uses are allowed in all WSO overlay districts in accordance with the use regulations of the underlying base zoning district.

3-74-7 Lot and Building Standards

(A) General

The use and development of land or structures within all WSO overlay districts must comply with the use and development regulations applicable to the underlying zoning district, except that the standards of this subsection apply whenever they are more restrictive than those of the underlying zoning district.

(B) WSO-2NC, WSO-3CA and WSO-3NC Districts

Development within WSO-2NC, WSO-3CA and WSO-3NC overlay districts must comply with the following standards whenever they are more restrictive than those of the underlying zoning district.

Overlay District	Minimum Lot Area (sq. ft.)	Maximum Density (lots/acre)	Max. Impervious Surface
WSO-2NC [1]	40,000	1	12%
WSO-3CA [1]	40,000	1	12%
WSO-3NC [2]	20,000	2	24%

[1] In WSO-2NC and WSO-3CA districts, residential lots of at least 40,000 square feet in area and residential lots in a cluster subdivision, open space subdivision or existing Consolidated Open Space Development with an overall lot density no more than one lot per acre are not subject to impervious surface coverage limits except as required by the underlying zoning. For all other residential lots and for nonresidential developments in those districts, impervious surface coverage may not exceed 12% of the total area of the site, as designated on the site plan.
[2] In WSO-3NC districts, residential lots of at least 20,000 square feet in area and residential lots in a cluster subdivision, open space subdivision or existing Consolidated Open Space Development with an overall lot density of no more than 2 lots per acre are not subject to impervious surface coverage limits except as required by the underlying zoning. For all other residential lots and for nonresidential developments in those districts, impervious surface coverage may not exceed 24 percent of the total area of the site, as designated on the site plan.

(C) WSO-4P Districts

Development within WSO-4P districts must comply with the following standards whenever they are more restrictive than those of the underlying zoning district.

(1) With Curb and Gutter

In a development served by a curb and gutter system, residential lots of at least 20,000 square feet in area and residential lots in a cluster subdivision, open space development or existing consolidated open space development with an overall lot density no more than 2 lots per acre, are not subject to impervious surface coverage limits except as required by the underlying zoning. For all other residential lots and for nonresidential developments, the following standards apply:

(a) WSO-4P1

In the WSO-4P1 district, impervious surface coverage may not exceed 24 percent of the total area of the site, as designated on the site plan.

(b) WSO-4P2

In the WSO-4P2 district, impervious surface coverage may not exceed 30 percent of the total area of the site, as designated on the site plan.

Commentary: Curb and gutter are limited in water supply watersheds. See Sec. 8-32-18.

(2) Without Curb and Gutter

In a development not served by a curb and gutter system, residential lots of at least 15,000 square feet in area and residential lots in a cluster subdivision, open space development or existing consolidated open space development with an overall lot density no more than 2 lots per acre, are not subject to impervious surface coverage limits except as required by the underlying zoning. For all other residential lots and for nonresidential developments, impervious surface coverage may not exceed 30 percent of the total area of the site, as designated on the site plan.

(3) Engineered Stormwater Control Structures

Engineered stormwater control structures must meet design guidelines of the State Division of Water Quality, or its successor agency. Responsibility for maintenance of all permanent infiltration, retention, and detention control measures and facilities, after site development is completed, rests with the owner of the use. When designed in accord with the guidelines of the State Division of Water Quality, or its successor

agency, lakes and ponds used singularly or in a system for stormwater runoff control may be included as a pervious surface for the purpose of calculating the impervious surface coverage of a site.

3-74-8 Other District-Specific Regulations

(A) Watershed Buffers

Any development in water supply watershed buffer areas is subject to the requirements of Article 11.Part 2 (Water Supply Watershed Buffers)

(B) Limitations on Use and Storage of Hazardous Materials in Nonresidential Developments

In designated Water Supply Watershed Overlay districts, the use and storage of hazardous materials is permitted in accord with local, state, and federal legislation regulating the use and storage of hazardous materials.

[Amended on 7/21/2008 by OA 03-08.]

(C) Requirements for Forestry Activities

Silvicultural activities are subject to the provisions of the Forest Practices Guidelines Related to Water Quality (15 NCAC 1I .0101-.0209), implemented by the State Division of Forest Resources.

(D) Prohibited Land Applications

Land application of sludge residuals or petroleum-contaminated soils is prohibited.

(E) Gasoline Sales Prohibited

The sale of gasoline is prohibited.

3-75 Airport Overlay District

3-75-1 Purpose

(A) The Airport Overlay District (AO) is established as an overlay district of all general zoning districts located within Wake County's jurisdiction that are in the general vicinity of the Franklin County Airport. The purpose of the AO district is to protect the airport environs from encroachment of incompatible land uses that would present hazards to users of the airport or to persons residing or working in the airport vicinity. The supplemental regulations imposed in the AO district are designed to place a height restrictions of 1,050 feet on buildings and structures, as well as some limitations on uses and lighting within this area.

(B) It is the intent of this section:

(1) to prevent creation of conditions hazardous to aircraft operation,

(2) to prevent conflict with land development which may result in a loss of life and property, and

(3) to encourage development this is compatible with airport use characteristics within the intent and purpose of zoning.