SECTION 6

Mitigation for Secondary and Cumulative Impacts

The Town of Holly Springs continues to grow as a result of the overall healthy economic conditions in the region and is specifically fueled by continued job growth in the Triangle area. As a result of higher wages brought on by this economic growth and the proximity to RTP, the Town has experienced a steady influx of new residents and continued population growth is anticipated.

As the Town continues to grow, to ensure the quality of life for its residents and continue to make it an attractive place to live and raise a family, Town leaders are taking a proactive approach to protecting the environment and preserving open space. This is being accomplished by the use of innovative planning approaches and techniques. As part of this program, the Town is working to address environmental concerns related to open space, water, wastewater, transportation, and stormwater. The Town has voluntarily implemented many measures and programs to direct growth to its downtown area; preserve open space; protect floodplain and riparian buffers; and maintain water quality through zoning ordinances, sedimentation, and stormwater programs.

This section identifies and discusses these local programs and illustrates how they fit with Federal and State programs. These programs mitigate the potential SCI discussed in Section 5.

6.1 Summary of Federal and State Regulations and Programs

There are several Federal and State regulations and programs that will mitigate the impacts related to growth. These include: the Endangered Species Act (ESA) of 1973, the CWA, the Clean Air Act (CAA), the National Flood Insurance Program (NFIP), stormwater regulations, programs to reduce nutrient loading in the Neuse River basin and Jordan Lake watershed, archaeological protection through various laws and programs, the Sedimentation and Pollution Control Act, the Clean Water Management Trust Fund (CWMTF), and the Ecosystem Enhancement Program (EEP. Table 6-1 summarizes these programs and indicates whether local involvement is needed to fully implement them. Where local programs are provided to implement the State and Federal regulations/programs, the program description is provided under the Town regulations and programs discussion in Section 6.2. For other programs that are not eligible for local administration, the Town works closely with State and Federal regulatory agencies to help enforce those programs.

TABLE 6-1
Summary of Existing State and Federal Programs and the Environmental Resources They Protect

Program or Regulation	Local Govt. Program Required	Wetlands	Land Use	Fish and Wildlife	Sensitive Species	Water Quality and/or Quantity	Air Quality	Ground-water	Noise	Toxics
Endangered Species Act		X	X	X	X	X				
Fish and Wildlife Coordination Act				X	X					
Clean Water Act - Section 303(d)		X		X		X	X			X
Clean Water Act- Section 404		X	X	X	X	X				
Clean Water Act - Section 401		X	X	X	X	X				
Clean Water Act - Sanitary Sewer Overflow Regulations		X	X	X	X	X		X		X
Clean Water Act - NPDES Stormwater Regulations	X	X		X	X	X				X
Protection of Wetlands		X	X	X	X	X				
Isolated Wetland Protection		X	X	X	X	X				
Safe Drinking Water Act		X	X			X		X		X
Clean Air Act							X			
Floodplain Management		X	X			X				
National Flood Insurance Program		X	X	X	X	X				X
Wild and Scenic Rivers Act			X	X	X	X				
Archaeological Protection			X							
Archaeological and Historic Preservation Act			X							
National Historic Preservation Act			X							
Protection and Enhancement of Cultural Environment			X							
Farmland Protection Policy Act			X							
Sediment and Erosion Control	X	X	X	X	X	X				
CWMTF/State Revolving Fund (SRF)		(X)	(X)	(X)	(X)	(X)				
Ecosystem Enhancement Program		X		X	X	X				
Groundwater			X					X		X
Neuse Nutrient Sensitive Water (NSW)	X	X		X	X	X				
Water Supply Watershed (WSW)	X	X	X	X	X	X				
Land Conservation Incentives		(X)	(X)	(X)	(X)	(X)				

X = Demonstrates clear environmental benefits
(X) = Shows potential for environmental benefits (policy only, program not mandatory, or regulation not yet adopted)

6.1.1 Endangered Species Act

The ESA (16 U.S.C. 1531 et seq.), enacted in 1973, conserves ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, through Federal action and State programs. The ESA:

- Authorizes the determination and listing of species as endangered and threatened
- Prohibits unauthorized taking, possession, sale, and transport of endangered species
- Provides authority to acquire land for the conservation of listed species, using land and water conservation funds
- Authorizes establishment of cooperative agreements and grants-in-aid to States that establish and maintain active and adequate programs for endangered and threatened wildlife and plants
- Authorizes the assessment of civil and criminal penalties for violating the ESA or regulations
- Authorizes the payment of rewards to anyone furnishing information leading to the arrest and conviction for any violation of the ESA or any regulation issued thereunder
- Requires Federal agencies to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat

6.1.2 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act states that whenever the waters or channel of a body of water are modified by a department or agency of the U.S., the department must first consult the USFWS, the National Marine Fisheries Service , and the lead state wildlife agency. The purpose of the Fish and Wildlife Coordination Act is to prevent or minimize impacts to wildlife resources and habitat due to water or land alterations. When modifications occur, provisions must be made for the conservation, maintenance, and management of wildlife resources and habitat in accordance with a plan developed with the aforementioned wildlife protection agencies.

6.1.3 Clean Water Act

In 1972, The CWA (33 U.S.C. 1251 et seq.) was enacted to "restore and maintain the chemical, physical, and biological integrity of the Nation's water." The CWA includes a number of sections that are relevant to the SCI study:

- Section 303(d) of the CWA established a program to identify waters that do not support their designated uses and develop plans to address the impairments of these waters.
- Section 401 of the CWA requires certification that a project does not violate the State's water quality standards as administered by NCDENR.
- Section 404 of the CWA established a program to regulate the discharge of dredged and fill material into waters of the U.S., including wetlands.

Additionally, the CWA provides the regulatory authority for sanitary sewer overflows and NPDES stormwater programs.

6.1.3.1 Section 303(d) of the Clean Water Act

Section 303(d) of the CWA requires States to identify waters that do not support their designated uses. These waters must be prioritized, and a total maximum daily load (TMDL) or management strategy to achieve the designated uses must subsequently be developed. TMDLs are calculations that determine the maximum amount of a pollutant that a water body can assimilate and still meet water quality standards and an allocation of that amount to the pollutant's sources. As part of the TMDL development process, the sources of the pollutant must be identified, and the allowable amount of pollutant must be allocated among the various sources within the watershed. Management strategies are allowed in lieu of a TMDL when the source of impairment is not specifically tied to specific pollutants.

The Town will work with NCDWR to implement TMDLs as they are developed. Middle Creek is currently the only listed water within the Planning Area. Along Middle Creek, the Town owns a 74-acre and 50-acre undeveloped park property known as Sunset Oaks and Woodcreek Park site, respectively. The Town will work with NCDWR on management strategies developed for impaired waters within its jurisdiction.

6.1.3.2 Sections 404 and 401 of the Clean Water Act

Two main regulatory programs regulate impacts to jurisdictional waters, including streams and wetlands in the project area. Both programs originate from CWA--Section 404, regulation of dredged and fill activities (administered by the USACE), and Section 401, certification that a project does not violate the State's water quality standards (administered by NCDWR). All private and public construction activities over a specific acreage or stream length that affect jurisdictional waters are required to obtain certifications and permits from NCDWR (Section 401 WQ Certification) and from the USACE (Section 404 Permits).

The State's 401 Water Quality Certification Program and the Federal 404 Wetlands Protection Program protect jurisdictional waters by requiring avoidance and mitigation for wetland impacts across the state. However, it is possible for permits to be issued under both the State and Federal programs that allow small impacts to jurisdictional waters.

Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit that conducts any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification from the state in which the discharge originates or would originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the affected waters. The jurisdiction is determined at the point where the discharge originates or would originate, and the discharge is required to comply with the applicable effluent limitations and water quality standards.

In 2006, the Supreme Court addressed the jurisdictional scope of Section 404 of the CWA specifically in terms of the scope of "the waters of the U.S." statement, in *Rapanos v. U.S.* and in *Carabell v. U.S.* The rulings of each case provide analytical standards for the determination of jurisdiction of water bodies that are not traditional navigable waters (TNW) or wetlands adjacent to TNWs. Wetlands adjacent to non-TNWs are subject to jurisdiction of the CWA if (1) the water body is a relatively permanent water (RPW), i.e. flows year-round or at least 3 months of the year, or is a wetland that directly abuts an RPW; or (2) a water body including adjacent wetlands that have a significant nexus based on the biological, physical, or chemical integrity with TNWs.

6.1.3.3 Sanitary Sewer Overflows

The USEPA prohibits discharges to waters of the United States from municipal separate storm sewer systems (MS4s), unless authorized by an NPDES permit. In April 2000, the USEPA released the *Compliance and Enforcement Strategy Addressing Combined Sewer Overflows and Sanitary Sewer Overflows* (USEPA, 2000). In summary, each USEPA region is responsible for developing an enforcement response plan, which includes an inventory of sanitary sewer overflow (SSO) violations. State regulations (15A NCAC 2B.05.06) require municipalities and other wastewater treatment operators to report wastewater spills from discharges of raw sewage from broken sewer lines and malfunctioning pump stations within 24 hours. NCDWR adopted policies that include strict fines and other enforcement programs to protect surface water quality from wastewater spills.

For public health, environmental, and regulatory reasons, eliminating SSOs is a high priority for the Town, as it is for the State of North Carolina. The Town seeks not only to comply with the minimum requirements regulating its operations, but also to eliminate SSOs in the Town system to the maximum extent feasible. The Town's inflow and infiltration program reduces the potential for SSOs.

The North Carolina Clean Water Bill of 1999 provides for the development of permits for collection systems that include requirements for inspections, sewer maintenance, and other operational items. The Town's Wastewater Collection System Permit was renewed on October 2, 2008.

6.1.3.4 NPDES Stormwater Regulations

NPDES stormwater discharges are controlled by the Federal NPDES regulations and enforced by NCDEMLR. The program regulates all major discharges of stormwater to surface waters. NPDES permits are designed to require the development and implementation of stormwater management measures. These measures reduce or eliminate pollutants in stormwater runoff from certain municipal storm sewer systems and industrial activities.

The NPDES stormwater permitting system is being implemented in two phases. Phase I was implemented in 1991 and applied to six municipal separate storm sewer systems (MS4s) in North Carolina with populations greater than 100,000 at that time (and thus, did not include the Town). USEPA's NPDES Phase II rules were finalized on October 29, 1999, and published in the Federal Register on December 8, 1999. The Town was required to develop and implement a stormwater management program under NPDES Phase II regulations.

For the post-construction runoff control, NCDEMLR requires local governments subject to NPDES Phase II to require new developments and redevelopment where more than 1 acre is disturbed and density exceeds 24 percent built-upon area to implement stormwater BMPs. These BMPs must control and treat the difference in stormwater runoff volume leaving the project site between the pre- and post-development conditions for the 1-year, 24-hour storm. In addition, the BMPs must achieve 85 percent reduction in total suspended solids (TSS) loading.

In 2006, the North Carolina General Assembly enacted Session Law 2006-246 to provide for the implementation of Phase II stormwater management requirements. Session Law 2006-246 is related to, but is not a part of, the NPDES stormwater program and recognizes that

urban development can impact surface waters regardless of whether the NPDES stormwater requirements apply. The Session Law established post-construction stormwater management requirements for development activities in areas outside of municipalities that operate municipal separate storm sewer systems (permitted MS4s). The Session Law requires that new development and redevelopment in these areas meet the post-construction requirements of the Phase II NPDES stormwater management program beginning on July 1, 2007. Permits under this program are issued by NCDEMLR. This law is applicable to new development and redevelopment activities that will result in a cumulative disturbance of 1 acre or more of land.

Under Session Law 2006-246, all unincorporated and incorporated areas within Wake County must meet the post-construction requirements of the Phase II NPDES stormwater management program beginning on July 1, 2007. The post-construction stormwater permit conditions, included in permits issued by NCDEMLR or other delegated programs, regulate the design, construction, operation, and maintenance of the post-construction stormwater control measures implemented by regulated developments.

An operation and maintenance plan that ensures the adequate long-term operation of the program's structural BMPs is required. The operation and maintenance plan requires the owner of each structural BMP to submit a maintenance inspection report on each structural BMP annually to the local jurisdiction.

Because the Town is located in the Neuse River basin, the Neuse River Basin Nutrient Sensitive Water Management Strategy rules apply, as discussed in more detail later in this section.

The Town received its NPDES Phase II permit in 2005, which was renewed in 2011, as discussed in Section 6.2.

6.1.4 Protection of Wetlands, Executive Order 11990

The Protection of Wetlands (Executive Order 11990) was set into place to avoid long- and short-term adverse impacts associated with the destruction or modification of wetlands. Every Federal agency must minimize the destruction, loss, and degradation of wetlands, as well as working to preserve and enhance the natural and beneficial values of wetlands. Federal projects must avoid wetland impacts and where avoidance is not possible, minimize impacts to wetlands.

6.1.5 Isolated Wetland Protection

Isolated wetlands are those that have no visible connection to surface waters, and are therefore not regulated under Section 404 of the CWA. NCDWR has jurisdiction over isolated wetlands within the state's boundaries. NCDWR states that any activity that results in the loss of wetland function including filling, excavating, draining, and flooding shall be considered a wetland impact. Impacts to isolated wetlands are subject to the requirement of NCDWR permitting and mitigative measures.

6.1.6 Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) provides protection of public health by regulating the nation's drinking water supply. The SDWA authorizes the USEPA to set national health

standards for drinking water to protect against natural and man-made contaminants that may be found in public drinking water. The USEPA is charged with the responsibility of assessing and protecting drinking water sources, as well as ensuring the appropriate treatment of water by qualified operators. The USEPA is also to ensure the integrity of water delivery systems and inform the public of the quality of their drinking water supply.

6.1.7 Clean Air Act

The CAA (42 U.S.C. 7401 et seq.) is intended to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." Section 118 of the CAA (42 U.S.C. 7418) requires that each federal agency with jurisdiction over any property or facility engaged in any activity that might result in the discharge of air pollutants comply with "all Federal, state, interstate, and local requirements" with regard to the control and abatement of air pollution.

On April 15, 2004, the USEPA designated ozone nonattainment areas. These non-attainment areas either have violated the national 8-hour ozone standard or have contributed to its violation. The USEPA categorized these nonattainment areas into five groups ranging from basic to severe, with basic having the least stringent requirements and severe having the most stringent requirements. As of June 2005, Wake County, which is identified as a maintenance area, is no longer subject to the 1 hour standard (USEPA, 2013).

As of December 26, 2007, USEPA approved the request from NCDENR to redesignate the Triangle area 8-hour ozone nonattainment area to attainment for the 8-hour NAAQS ozone standard (FR 72948). In 2008, the 8-Hour Ozone NAAQS was revised to 0.075 parts per million (ppm). The USEPA is moving forward with the implementation of the 2008 ozone standard and the USEPA requested that states wishing to revise their boundary recommendations submit the revisions by October 28, 2011. North Carolina made its revised boundary recommendations based on the 2009-2011 data. These data did not show nonattainment of the ozone standard for the Triangle area. On December 8, 2011, the USEPA sent North Carolina its response, stating that the agency intended to support North Carolina's recommended area designations and boundaries for all areas (NCDENR, 2013a).

The North Carolina Division of Air Quality (NCDAQ) has implemented an aggressive Air Awareness Education Program that encompasses daily ozone forecasts by meteorologists reported using media such as the internet, television, newspapers, and radio. The public has become very informed of ozone issues and steps they can take to reduce ozone emissions, which include combining errands into one trip, maintaining automobiles and lawn equipment, and using lawn equipment in the evening.

The Clean Smokestacks Act of 2002 requires coal-fired power plants to achieve a 77 percent reduction in nitrogen oxide (NOx) emissions by 2009. NOx is the main cause of ozone, one of North Carolina's biggest air quality problems, and it contributes to haze and acid rain. Under the Clean Smokestacks Act, utility companies must achieve these goals actual reductions and not by buying or trading emissions credits from utilities in other states, as allowed under federal regulations. The utilities also cannot sell credits for their emissions reductions (NCDENR, 2009).

North Carolina had its lowest ozone levels on record in 2013 since air monitoring began in the early 1970s. The declining ozone levels were generally concurrent with lower

emissions from the state's power plants. A recent report by NCDAQ shows that the state's coal-fired power plants have cut their NOx emissions, a primary industrial contributor to ozone pollution, by more than 80 percent since the General Assembly enacted the Clean Smokestacks Act in 2002 (NCDENR, 2013a).

In addition to the effects on transportation, new and expanding industries in the County will be subject to strict emission control requirements. Implementing these requirements will result in significant costs to industry and could discourage new industry from coming to the County.

6.1.8 Floodplain Management, Executive Order 11988

Floodplain Management (Executive Order 11988) addresses the long- and short-term adverse impacts associated with the occupancy and modification of floodplains. Federal agencies must take action to reduce the risk of flood loss and flood impacts on human safety, health, and welfare. Agencies are also charged with the responsibility to restore and preserve the natural and beneficial values of floodplains. Federally supported projects that directly impact floodplains should consider alternatives which avoid the floodplains.

6.1.9 National Flood Insurance Program

The NFIP, managed by FEMA, was created in the 1960s in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. Floodplain management under the NFIP is an overall program of corrective and preventive measures for reducing flood damage. It includes but is not limited to emergency preparedness plans, flood-control works, and floodplain management regulations, and generally covers zoning, subdivision, or building requirements and special-purpose floodplain ordinances. One aspect of the program is that it aids in the protection of stream riparian areas and wetlands and serves to protect water quality by restricting development in the floodplain. Information on the Town's flood protection programs are further discussed in Section 6.2.

6.1.10 Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act charges the regulatory agencies with the protection of selected rivers of the nation. These rivers include those that possess remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. These rivers should be preserved for the benefit and enjoyment of future generations. The Wild and Scenic Rivers Act prescribes the method for designating standards for selection of protected rivers. Rivers protected under the Wild and Scenic Rivers Act are classified in one of three categories depending on their characteristics:

- Wild river areas: Rivers or sections of rivers that are free of impoundments and are generally inaccessible except by trail. Watersheds and shorelines surrounding this river class are essentially primitive and waters are unpolluted.
- Scenic river areas: Rivers or sections of rivers are similar in character to wild river areas, but can be accessed in places by roads.

- Recreational river areas: Rivers or sections of rivers that are readily accessible by road or railroad, and may have development along their shorelines. These rivers may have undergone some impoundment or diversion in the past.

No rivers protected by the Wild and Scenic Rivers Act exist in Wake County.

6.1.11 Archaeological Protection

Archaeological resources are protected on private and public lands through the North Carolina Archaeological Resources Protection Act, the Unmarked Human Burial and Human Skeletal Remains Protection Act, the North Carolina Archaeological Record Program, SEPA, and various Federal laws. These laws are only applicable to projects that are State or Federally approved, permitted, or funded, or exist on State or Federal lands. Although this often exempts many private development projects, the USACE does require archaeological reviews for any project that needs a CWA Section 404 permit.

6.1.11.1 Archaeological and Historic Preservation Act

The Archaeological and Historic Preservation Act of 1974 provides protection of historical American sites, buildings, objects, and antiquities of national significance, as well as protecting historical and archaeological data that could potentially be lost due to:

- Flooding
- Building of access roads
- Erection of laborer communities
- Relocation of highways and railroads
- Alteration of terrain caused by the construction of dams (by the U.S. government and private corporations)
- Any alteration of terrain as a result of any federal construction project or any federally licensed project

If any federal agency finds that a federally supported project may cause irreparable loss or destruction of scientific, prehistorical, historical, or archaeological data, the agency must notify the Department of the Interior so it may undertake recovery, protection, and preservation of the data.

6.1.11.2 National Historic Preservation Act

The National Historic Preservation Act (NHPA) is the central act that establishes historic preservation law. The act sets the policy for the U.S. government to promote conditions in which historic properties can be preserved in harmony with modern society. The NHPA authorizes the Department of the Interior to establish, maintain, and expand the National Register of Historic Places (NRHP). State Historic Preservation Officer (SHPO) responsibilities are established by the NHPA, which charges the SHPO with the responsibility to develop a statewide plan for preservation, surveying historic properties, nominating properties to the NRHP, providing technical assistance to Federal, State, and local agencies, and undertaking the review of Federal activities that affect historic properties.

6.1.11.3 Protection and Enhancement of the Cultural Environment, Executive Order 11593

This EO requires the federal government to provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the nation. Federal agencies, in cooperation with State historic preservation agencies, are to locate, inventory, and nominate sites, buildings, districts, and objects as candidates for the NRHP. All sites listed in the NRHP will be maintained to professional standards set by the Secretary of the Interior. Federal agencies that are directly or indirectly involved with the alteration or destruction of property listed on the NRHP shall take timely steps to make a record of all data present in that property. That record is kept in the Library of Congress.

6.1.12 Farmland Protection Policy Act

The purpose of the Farmland Protection Policy Act is to minimize the extent to which Federal programs contribute to unnecessary and irreversible conversion of farmland to non-agricultural uses. The Farmland Protection Policy Act, enforced by USDA, assures that Federal programs will be administered in such a manner that they are not incompatible with State and local governments, as well as private programs with policies to protect farmland.

6.1.13 Sediment and Erosion Control

The North Carolina Division of Energy, Mines, and Land Resources (DEMLR) administers programs to control erosion and sedimentation caused by land disturbing activities on 1 or more acres of land. Control measures must be planned, designed, and constructed to provide protection from the calculated peak rate of runoff from a 10-year storm. Enforcement of the program is at the State level, but can be delegated to local governments with certified erosion control programs. The Town enforces its own erosion and sedimentation control program requirements. This program is discussed further in Section 6.2.

6.1.14 North Carolina Clean Water Management Trust Fund

The Clean Water Management Trust Fund (CWMTF) was created by the 1996 Legislature to help finance projects that specifically address water pollution problems. Its purpose was modified through the passage of the 2013-2014 North Carolina budget. It is a non-regulatory program that focuses its efforts on upgrading surface waters in distress, eliminating pollution, protecting and conserving unpolluted surface waters, and establishing a network of riparian buffers and greenways for environmental, educational, and recreational benefits as well as acquiring lands with cultural or historical significance.

Possible use of CWMTF monies could be for wetland and/or riparian corridor identification and preservation (through acquisition and easement techniques) to allow comprehensive protection of wetlands and riparian buffers in the project area to protect water quality and sensitive aquatic species.

The Town partnered with the CWMTF and NCDWR to restore Bass Lake after the dam was breached by Hurricane Fran. As part of this restoration program, the Town developed a park largely used for passive recreation and implemented 100-foot riparian buffers within the watershed to protect water quality.

6.1.15 State Revolving Fund

In previous years, the CWMTF had been used to fund wastewater improvements and conventional stormwater projects as well as the acquisition of lands. As part of Session Law 2013-360, the funding of wastewater improvements and conventional stormwater projects is now handled through the State Revolving Fund and is administered by the Division of Water Infrastructure and State Water Infrastructure Authority.

6.1.16 North Carolina Ecosystem Enhancement Program

The EEP was established as a non-regulatory program within NCDENR to:

- Provide a systematic approach for meeting NCDOT's compensatory mitigation requirements.
- Maximize the ecological benefit of compensatory mitigation projects.
- Reduce delays in the construction of transportation improvement projects associated with compensatory mitigation requirements.

The EEP also provides a compensatory mitigation option for permit applicants other than the NCDOT, administers the Mitigation Program for Protection and Maintenance of Existing Riparian Buffers in the Neuse, Tar-Pamlico, and Catawba River basins, and provides a repository for nutrient offset payments in the Neuse River basin.

6.1.17 Groundwater Protection

Several regulations and programs exist at the State and local levels that protect groundwater from urban growth:

- Wellhead Protection Program
- Regulation of potential contamination sources
- Management of groundwater contamination incidents
- Ambient groundwater monitoring
- Regulation of well construction

These regulations and programs may afford some protection to groundwater wells from the most common forms of groundwater pollution—point sources such as chemical manufacturing facilities, underground storage tanks, and accidental spills. However, more diffuse and evasive groundwater pollutants from agricultural uses (livestock facilities and chemical application on crops) and urban land uses (over-application of fertilizers and improper use of toxic household chemicals) may not be well managed under these regulations and programs.

6.1.18 Neuse River Basin Nutrient Sensitive Waters (NSW) Rules

The entire Neuse River basin was classified as NSW in 1988. As a result of the NSW classification, a nutrient management strategy was initially developed to manage phosphorus from point source dischargers and nitrogen and phosphorus from nonpoint sources. At that time, most of the nutrient problems were occurring in the lower freshwater portion of the river, and phosphorus was considered the controlling nutrient.

Increasing algal blooms and fish kills in the estuarine portion of the Neuse River, attributed to nitrogen over-enrichment, led to a revision of the NSW strategy to address nitrogen inputs to the estuary. The Neuse River NSW Strategy Rules became effective on August 1, 1998. New development and redevelopment that drains in whole or in part to NSW must implement stormwater BMPs that reduce nutrient loading. NCDENR has specified basinwide stormwater requirements for the Neuse River basin as described in 15A NCAC 02B .0235. These rules apply to a portion of the Town's Planning Area.

The Neuse River NSW rules require that existing riparian buffer areas be protected and maintained on both sides of intermittent and perennial surface waters. A 50-foot buffer consisting of 30 feet of undisturbed forest and 20 feet of grassed/vegetated area must be maintained. The rule does not require restoration of buffers that no longer exist. Perennial and intermittent stream determinations are to be based on soil survey maps prepared by the Natural Resources Conservation Service (NRCS) or the most recent version of USGS topographic maps (7.5 minute quadrangle).

While this revised strategy places more stringent nutrient removal requirements on point source dischargers, it also addresses other sources of nutrients, including urban stormwater, agricultural sources, and nutrient application management. In addition, the strategy includes special provisions to protect stream buffers to prevent further degradation of the watershed's ecological integrity.

The Neuse River NSW Rules were designed by the State and stakeholders to:

- Hold nitrogen loading from new development at 70 percent of that contributed by 1995 land uses in the non-urban areas of the Neuse River basin (using an export coefficient of 3.6 pounds per acre per year [lb/ac/yr]).
- Offset total nitrogen loads by funding wetland or riparian area restoration projects through payments to the EEP.
- Hold the increase in peak flow leaving the site during the 1-year, 24-hour storm to its levels under predevelopment conditions.

As part of this program, developers must determine the nitrogen loading attributed to the new development, and must meet a target of 3.6 lb/ac/yr through site design and BMPs. In the Neuse basin, residential development may achieve 6 lb/ac/yr and buy down the difference. Commercial development may buy down after achieving 10 lb/ac/yr.

The Town was not named a community for stormwater controls in the Neuse Basin Rules; therefore they do not apply to the Town at this time. The Town does, however, implement these nitrogen control performance standards for any new development or redevelopment that disturbs greater than 20,000 square feet throughout the Town's limits and ETJ.

The Town's riparian buffer requirements are compliant with Neuse Basin Rules. Rules specific to the Town are discussed further in Section 6.2.

6.1.19 Water Supply Watershed Protection Program

The Environmental Management Commission (EMC) and NCDWR have administered the WSW Protection Program since 1986. Initially, the program was administered voluntarily by counties and municipalities pursuing protective measures for their water supply watersheds. The measures included limitations on the number and type of wastewater discharges that were allowed in the water supply watersheds.

In 1989, the North Carolina General Assembly ratified the Water Supply Watershed Protection Act, codified as General Statutes 143-214.5 and 143-214.6. The WSW Protection Act mandated the EMC to adopt minimum statewide water supply protection standards by January 1, 1991 and to adopt and to reclassify all existing surface water supply watersheds to the appropriate classification by January 1, 1992. The goals of the WSW Protection Program include:

- Protection of surface drinking water supplies in North Carolina from nonpoint source and point source pollution from urban runoff and wastewater discharges
- Provision of a cooperative program of watershed management and protection which is administered by local governments consistent with minimum statewide standards

The Town does not currently have jurisdiction in a WSW.

6.1.20 Conservation Reserve Enhancement Program

The USDA and NCDENR manage the Conservation Reserve Enhancement Program. USDA and NCDENR, with the participation of the NRCS, the Farm Service Agency, EEP, and the CWMTF. This program protects water quality in the Neuse River basin, using financial incentives to encourage farmers to voluntarily remove sensitive land from agricultural use or implement BMPs.

6.1.21 Miscellaneous Land Conservation Incentive Programs

Other voluntary strategies exist at the Federal and State levels that provide incentives to protect natural lands, wetlands, agricultural lands, and sensitive species habitat and forest lands from development. These non-regulatory approaches include providing tax credits for donating lands to specific organizations (usually land trusts) and providing funding for various grants and trust funds to purchase or protect undeveloped lands.

6.2 Local Regulations and Programs

Environmental protection is one of the Town's core values. The Town has developed several programs to meet its internal goals to provide a high-quality life for its residents. To meet those goals, it has established an Open Space Master Plan with emphasis on protecting important habitat areas and water quality, a Parks and Recreation Plan, a Comprehensive Plan, and a Land Use Plan that encourage growth in certain areas and discourage growth in other areas. In addition, the Town has developed a riparian protection program, floodplain program, erosion and sediment control program, and stormwater program to protect water quality and instream habitat. A full-time environmental specialist oversees most of these programs, providing a strong local commitment to the environment. In addition, the Town has a regulation that requires written documentation to be provided for all State and Federal

environmental approvals before new projects can be undertaken and permitted at the local level. Appendix F contains excerpts from ordinances discussed in this section. Table 6-2 summarizes the programs that impact development procedures, and Table 6-3 illustrates the environmental resources that various programs protect.

The following summary addresses relevant regulations and programs from an environmental management and land use policy analysis perspective. These local initiatives prevent impacts to natural resources and will offset future impacts resulting from growth.

TABLE 6-2
Summary of Existing Local Programs

Program	Summary
Riparian Buffers Unified Development Ordinance (UDO) 7.06D	Neuse River basin: 100-foot riparian buffers along perennial streams and 50-foot riparian buffers along intermittent streams. The inner 30 feet is undisturbed forested buffer and the outer 70 or 20 feet, respectively, must be vegetated. Cape Fear River basin: 30-foot undisturbed forested riparian buffers along both perennial and intermittent streams. Bass Lake watershed: 100-foot undisturbed riparian buffers along all perennial streams required. Stream classification is determined by the most recent version of a USGS quadrangle topographic map and/or Soil Survey for Wake County. In the event of a discrepancy, the classification requiring the most stringent buffer would apply. Riparian buffers must be graphically illustrated and labeled on all development plans, including final recorded plat maps. Written documentation of State and Federal approvals to encroach into State regulated buffers must be provided to the Town prior to local approvals being granted for projects. Developers are required to develop a Homeowner Education Packets to be distributed at the time of the purchase of the property to all property owners with riparian buffer on or adjacent to their property.
Floodplain Protection Town Code Chapter 8, Article III (Flood Damage Prevention Ordinance)	Residential development is not allowed in the 100-year floodplain. No encroachments, including fill, are permitted in the floodplain for residential development. For non-residential development, no fill is permitted in the floodway. Both the 100-year, 100-year future and 500-year floodplain limits and wetlands must be graphically illustrated and labeled on all development plans, including final recorded plat maps. The lowest finished floor must be elevated 2 feet above base flood elevation for any adjacent development. If the base flood elevation is unknown, no encroachments are allowed, including fill within 20 feet of the top of the stream bank or within a distance of 5 times the stream width, whichever is greater, unless a professional engineer certifies that the encroachment will not result in an increase in the base flood level. Riparian buffer requirements also protect the floodplain on smaller streams. Town policy requires developers to perform hydrologic and hydraulic studies for development that occurs upstream or downstream of areas with known drainage problems or flooding. The new development cannot result in an increase in the 100-year base flood elevation. The Town regulated floodplains are required to be identified and protected in drainage areas starting at 20 acres to the start point of the FEMA regulated floodplain. The Town's Flood Damage Prevention Ordinance applies to all floodplain found in its jurisdiction (Town and FEMA floodplain).
Erosion and Sediment Control Program Town Code Chapter 8, Article II	The Town has a delegated Local Program for enforcement of the State's Soil Erosion and Sedimentation Control standards. The Town's sediment and erosion control practices support an overall stream protection plan by limiting in-stream suspended sediment and sediment deposition. The erosion and sediment control strategy is discussed at a pre-construction conference through the permit and plan approval process, which also allows for the review of stormwater controls. The Town requires an erosion and sediment control plan when any land-disturbing activity uncovers more than 20,000 square feet.

TABLE 6-2
Summary of Existing Local Programs

Program	Summary
(Erosion and Sedimentation Control, Stream and Wetland Protection, Land Disturbance Ordinance)	The Town does not allow any land-disturbing activity in the proximity of a lake or natural watercourse unless erosion and sedimentation control measures are present. An undisturbed buffer may be used provided the undisturbed zone shall be of sufficient width to confine visible siltation within 25% of the undisturbed zone nearest the land-disturbing activity. Soils are stabilized as rapidly as possible by establishing a grass cover or mulching and tacking. The ordinance, in accordance with the NPDES Construction Permit NCG01000, requires that this occur in a maximum of 7 days for slopes and in a maximum of 14 days for non-slope areas. The Town has required that this be accomplished in areas in the proximity of streams in a shorter time frame as a condition of plan approval.
UDO Section 7.11 (Forestry Activity, Timbering Operations and Site Clearing)	The 10-year storm event is the minimum design standard for planning, designing, and construction of sediment and erosion control measures, structures, and devices. In high quality water zones, a 25-year storm event is the design standard. Phased construction is reviewed in the Town 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. The angle for graded slopes and fills shall be no greater than 2:1, an angle that can be retained by vegetative cover. The Town requires an initial and final site inspection prior to issuance of a Certificate of Occupancy (CO) for all residential and non-residential structures. At these inspections, environmental staff review the site for sufficient groundcover, stabilization, buffers, and installation of stormwater devices. Additionally, a Land Disturbance Permit is required for lot construction resulting in land disturbance activities of a cumulative 20,000 square feet of disturbed area. Town staff are trained as Clear Water Contractor trainers, and participate annually in regional contractor training. The Town also encourages contractor education and training related to erosion and sediment control.
Stormwater Program	Neuse River and Cape Fear River basins: Developers must determine the nitrogen loading levels attributed to new development, and they must install BMPs to meet established goals.
Engineering Design and Construction Standards Town Code Chapter 8, Article V (Post-Construction Stormwater Ordinance) Town Code Chapter 8, Article VI (NPDES Phase II Stormwater Illicit Discharge Detection and Elimination Ordinance)	The pre-development peak runoff rate must be maintained for the 1-year, 24-hour storm. Runoff volume drawdown time shall be a minimum of 24 hours, but not more than 120 hours. The Town requires hydrologic and hydraulic studies to be prepared or updated for development upstream or downstream of existing or potential drainage/ flooding problems and drainage areas of 20 acres or greater. These studies will be used to evaluate and minimize the impact of new development in drainage basins with existing stormwater problems. The Town currently has various drainage basins modeled within the Town limits and requires “no rise” in the 100-year surface water elevation for all new development projects in these basins. The Town’s Phase II Federal NPDES Stormwater permit was renewed, effective December 1, 2011. The NPDES Phase II program regulates discharges of stormwater to surface waters and requires control of suspended solids, fecal coliform, and nutrients. New development and redevelopment projects that disturbs greater than or equal to 20,000 sq. ft., must implement structural and non-structural stormwater BMPs to meet nitrogen control performance standards. The Town maintains a map of all structural BMPs, per requirements of the NPDES Phase II permit. The Town requires financial sureties in the amount of 150% of the estimated construction cost (Performance Surety) and 35% of the actual cost of construction (Maintenance Surety) for stormwater BMPs. The owner of each stormwater control structure shall submit a Maintenance Inspection Report and certification annually, conducted by a qualified professional. Illicit Discharge Detection and Elimination (IDDE) program: The program prohibits illicit discharges, connections, and dumping to stormwater conveyance systems and includes a provision for assessing civil penalties on violators.

TABLE 6-2
Summary of Existing Local Programs

Program	Summary
	Developers are required to conduct Homeowner Education for all property owners with riparian buffers on or adjacent to their property, stormwater BMPs in the development or other environmental features such as wetlands or floodplain. Town staff provides environmental education programs to residents by giving presentations at local schools and providing environmental programs at Bass Lake Park; and to the development community at workshops and open house events. The Town provides educational outreach to businesses with brochures and face to face educational meetings. Staff provides good housekeeping and illicit discharge training to all applicable Town staff. The Town has various public participation and outreach campaigns that include the Storm Drain Marker Program, Dog Waste Sign Program and Big Sweep. The Town participates in the Clean Water Educational Partnership and other regional water quality groups.
Open Space UDO Section 2.09 UDO Section 5 UDO Section 7.06F	Developers are required to set aside 1/35-acre for each dwelling unit or lot. If lands are dedicated that lie within the floodplain, have slopes greater than 15%, or are included in utility easements, 1/20-acre for each dwelling unit or lot must be set aside. The Town encourages cluster development by allowing cluster subdivision designs without going through the variance process. Planned Unit Developments (PUDs) are required to preserve 10% of the development as open space, and required landscape and riparian buffers cannot be included as part of this open space. The Town currently owns approximately 175 acres of open space along Middle Creek, including an intended 40-acre voluntary dedicated tiger salamander preserve.
Town Code, Chapter 8, Article IV, (Timbering Ordinance)	A timbering ordinance was developed which regulates the removal and preservation of existing trees and shrubs prior to development within a perimeter buffer zone.

TABLE 6-3
Summary of Existing Local Programs and the Environmental Resources They Protect

Program	Terrestrial Habitat Protection	Aquatic Habitat Protection	Water Quality and/or Quantity Protection	Air Quality Protection
Vision Holly Springs Comprehensive Plan	X	X	X	X
Open Space Planning	X	X	X	X
Land Use Planning	X	X	X	X
UDO and Zoning Process	X	X	X	X
Parks, Recreation, Greenways, and Open Space Master Plans	X	X	X	X
Riparian Buffers and Floodplain Protection	X	X	X	X
Erosion and Sediment Control Program	X	X	X	

TABLE 6-3
Summary of Existing Local Programs and the Environmental Resources They Protect

Program	Terrestrial Habitat Protection	Aquatic Habitat Protection	Water Quality and/or Quantity Protection	Air Quality Protection
Stormwater Program and Impervious Surface Limitations	X	X	X	
Water Conservation		X	X	
Air Pollution Prevention				X
Tree Protection Regulations and Timbering Ordinance	X	X	X	X

6.2.1 Managing Growth in the Town of Holly Springs

The Planning Department, in conjunction with the Engineering Department, is committed to ensuring quality development within the Town. These departments work together to ensure that development protects environmentally sensitive areas, provides for adequate transportation networks, promotes economic vitality, provides quality housing at affordable prices, and promotes a sense of community that is compatible with the small town character of the Town.

The Town's Vision Holly Springs Comprehensive Plan lays the foundation for achieving many of the Town's goals and objectives. The Town Council adopted this plan, which included an updated land use element, in November 2007, updated in 2009 and has most recently been amended in 2013. The Comprehensive Plan seeks to identify the specific issues facing Holly Springs and conveys a vision for the future. The Comprehensive Plan also provides a framework for incorporating continuing projects and new initiatives within a larger management strategy and serves as a guide for long-range planning, revision of local development regulations and review processes, and infrastructure investment (Design Based Planning, 2009).

The Town's vision for the future, as outlined in the Vision Holly Springs Comprehensive Plan, includes the following:

- To enable all residents with the ability to live within walking distance of a neighborhood commercial center and central civic space.
- To establish a community-wide "green infrastructure" that provides all residents with convenient access to trails and open space.
- To prioritize future Town land acquisitions and ensure the continuity of civic space.
- To preserve and protect, where appropriate, agricultural land, open space, woodlands, and the natural environment.
- To prevent sprawl and ensure that community services and infrastructure are used strategically and conservatively.

The Comprehensive Plan includes the following elements:

- Future Land Use
- Transportation
- Parks, Recreation, and Open Space
- Community Character
- Community Facilities
- Infrastructures & Utilities
- Natural Resources

The purpose of the natural resources element of the Vision Holly Springs Comprehensive Plan is to protect and enhance the natural environment while accommodating growth and development. The Plan outlines several objectives, related to the natural resources element, that are in various stages of implementation, including the following:

- Work with the existing contours of the land by minimizing grade changes of native topography when permitting development.
- Provide for and invest in connected greenways, open space areas, land conservation, parks, and access to water resources.
- Support the public acquisition of lands that are environmentally sensitive for passive public recreation and/or conservation purposes.
- Ensure that uses that could detract from or damage environmentally sensitive areas are not permitted adjacent to these areas.
- Protect aquatic species and their habitat through protection of water quality by preventing point and nonpoint source pollution of local waterways.
- Work with landowners and developers to use tools such as grants, conservation easements, purchase of development rights, and transfer of development rights to protect natural, cultural, and historic resources.

Further information on specific strategies is outlined in later sections.

6.2.1.1 Land Use Plans

The Town's Future Land Use Plan and small area land use plans were updated in 2009 and 2013 as part of the Town's Comprehensive Plan (Design Based Planning, 2009). In addition to the objectives identified earlier in this section, the Future Land Use Plan component of the Town's Comprehensive Plan includes the following policies and goals:

- To establish and enhance a Town-wide identity.
- To enhance the existing Downtown by encouraging additional commercial use, providing a variety of cultural attractions, and focusing on the development of a pedestrian-friendly streetscape.
- To guide the development of regional commercial areas (such as "big-box" stores) so they are contained, and their access is managed, to protect the character of the remainder of the community.

The Land Use Plan also identifies several Regional Centers and Community Growth Areas (CGA) which will have similar land use patterns. The Regional Centers are located along major routes in order to minimize impacts to neighborhoods and to protect the Town's desired "village" character. Community growth areas will have a mixed use commercial core with higher density residential surrounding the core, transitioning to lower density residential expanding outward.

The Land Use element of the Comprehensive Plan has short-term (0 to 5 year) and long-term (5+ years) implementation actions items. Progress has been made on the outlined short-term action items below.

The following actions have been incorporated into the implementation plan action items:

Short-Term Action Items (2010 to 2014)

- Prepare Town Policies to allow for a rural development option for 1+ acre residential projects to connect to Town water and utilize individual septic systems.
- Continue communications with surrounding communities and entities, including Towns of Apex, Cary, and Fuquay Varina, Wake County as well as Duke Energy, to stay informed on their planning decisions.
- Prepare Detailed Special Area Plans for the following CGAs to outline the overall vision, development parcels, trail connectivity, and future police and fire services:
  - Avent Ferry Road and Cass Holt Road CGA
  - New Hill Road, Friendship Road, and Cass Holt Road CGA
  - Piney Grove-Wilbon Road and Wade Nash Road CGA

Long-Term Action Items (2015+)

- Evaluate the Comprehensive Plan every 5 years for possible updates.
- Prepare a Detailed Special Area Plan for the following CGA:
  - New Hill Road and Friendship Road

According to Town's Future Land Use Plan, the Town's highest density development is planned near the Village District. This area and other activity areas are further detailed in the small area land use plans.

6.2.1.2 Small Area Land Use Plans

The Town's three small area land use plans are the Village District Area Plan (amended 2013), the Northeast Gateway Plan (amended 2009), and the Southern Gateway Plan (amended 2009). Excerpts from these plans are found in Appendix D. Following is a description of how these plans contribute to the Town's efforts to manage growth.

The Village District Area aims to protect historic assets in downtown Holly Springs as well as developing parks and open space within the mixed use district. The Village District Area plan is coordinated with the Southern Gateway plan to provide bike and pedestrian connections between the two areas (Town of Holly Springs, 2009a).

The policies for the Southern Gateway plan include encouraging mixed use and opportunities for multi-modal transportation as well as minimizing parking so as to limit impervious area (Town of Holly Springs, 2009b).

The Northeast Gateway was prepared for guiding development expected to occur in this area in response to NC 540. The guiding policies of this plan include preservation of open space, mixed land use, and thoroughfare interconnectivity (Town of Holly Springs, 2009c).

6.2.2 Open Space Preservation

In Holly Springs, open space protection can provide wildlife corridors between these important habitat areas. The Town has several plans, programs, and ordinances to preserve open space; these include Beyond the Green: a Parks, Recreation and Open Space Master Plan, a Comprehensive Transportation Plan, which incorporates greenways, open space initiatives, and a UDO. The land use plans discussed above also serve to protect open space.

6.2.2.1 Town of Holly Springs Open Space Planning Process

The Town's ongoing open space planning process evaluates several attributes in given areas including the location of rare, threatened, and endangered species; the location of significant forest communities; water quality protection; natural, greenway, and utility corridors; connectivity of open space; the location of farms; and the location of historic and cultural properties. The Town has identified more than 2,200 acres of existing land use as open space. Details on the plans and initiatives that led to the preservation of this open space are included in the following sections.

6.2.2.2 Parks, Recreation, Greenways, and Open Space Planning

Section 3 of the Vision Holly Springs Comprehensive Plan is the Parks, Recreation, and Open Space element. This section incorporates the Town's Parks and Recreation Master Plan, Beyond the Green, adopted in August 2007 (Design Based Planning, 2007) and incorporates open space initiatives from the Town's 2002 Open Space Master Plan (Thompson & Associates, 2002). Additionally, the Town's Comprehensive Transportation Plan includes a bicycle and pedestrian component that aims to connect preserved open spaces (Kimley-Horn and Associates, 2013). These plans are discussed below and associated maps are included in Appendix G and discussed below.

Open Space Master Plan

The Town developed an Open Space Master Plan in 2002. It sets forth a plan of action to identify and protect the Town's natural resources, historic areas, and other special environmental and cultural features. The objectives of the Plan were as follows:

- Identify, evaluate, and prioritize important natural, constructed, and historic open space resources.
- Identify funding sources to develop and acquire open space.
- Identify parcels with significant resource value.
- Identify opportunities for open space connectivity with neighboring Towns and Wake County.
- Provide a resource for citizens and land owners interested in preservation opportunities.
- Serve as the foundation of a program to protect identified open space areas.
- Aid Town departments as a planning and management tool.
- Complement the UDO.

The open space planning process evaluated several attributes in given areas, including the location of rare, threatened, and endangered species; the location of significant forest communities; water quality protection; natural, greenway, and utility corridors; connectivity of open space; the location of farms; and the location of historic and cultural properties.

Beyond the Green Parks and Recreation Master Plan

The vision statement of the Beyond the Green Parks and Recreation Master Plan includes the following:

- Develop and preserve parks and open spaces.
- Develop a greenway system connecting parks and other points of interest. Link with other municipal and county systems.
- Develop a park system that addresses the needs of the residents while complementing the natural and historical resources of the community.

The Beyond the Green Parks and Recreation Master Plan recommends six Community Central Parks as an integral part of the future of Holly Springs. These parks are geographically distributed across the Town and function as the centerpiece of the community in which they are located. The Town also recommends the development of nine athletic fields. All sports fields should be integrated into the natural setting, minimizing environmental impacts (Design Based Planning, 2007).

Implementation of Open Space and Parks and Recreation Master Plans

Acquisition of targeted land areas is a long-term initiative in the implementation strategy of the Open Space and Parks and Recreation Master Plans. Many factors will influence the acquisitions, including market value and availability for sale. The Town has made several additional purchases and dedications of land recently, adding to the public parks listed in Table 6-4. These additions include the following:

- Woodcreek (50 acres) purchased in 2008
- Veterans Park (4 acres), purchased in 2007, opened in 2009
- Sunset Oaks (74 acres) purchased in 2010
- Jordan Property (46 acres) purchased in 2011(Adjacent to the Town of Cary's 48 acres of undeveloped property)
- Mims Property (17+ acres) purchased in 2011; recently completed master plan, which includes walking trails, gardens, and stormwater BMPs
- Sugg Farm Park (116 acres adjacent to Bass Lake Park) purchased in 2012
- North Main Athletic Complex (42 acres) purchased in 2013

Sugg Farm, primarily pasture and woodland, was purchased by the Town in 2012 as a location for outdoor festivals. The 116-acre property is located adjacent to Bass Lake Park; a master plan for the area is currently being developed by the Town. Bass Lake Park is the second largest Town-owned park, at 98 acres, and provides fishing, hiking, canoeing, and environmental programs. The Town restored Bass Lake after it was destroyed during Hurricane Fran; this restoration was completed in partnership with the CWMTF, The Nature Conservancy, and USFWS. The park has a natural mulch trail network on the site, boating and fishing facilities, and an environmental education center. The lake, which was designed and built to include fish habitat, is regularly stocked. The lake and park will be accessible through the Town's greenway system.

The Mims property is a historic home and acreage that is significant to the history of the Town. The Mims property is also the site of the springs, from which the Town gets its name.

The Town Hall and retail section in downtown Holly Springs were designed to complement the Mims house and springs. A draft master plan for the Mims property was developed in 2012 for the Town of Holly Springs (Alta Greenways, 2012).

Jones Park is located adjacent to Holly Springs Elementary School, providing environmental education facilities to students as well as athletic and playground facilities for the neighborhood. Veterans Park includes a 4.3-acre pond and has a trail to link to Jones Park. The Parish Womble Park includes synthetic turf soccer fields that provide stormwater infiltration. The Town additionally owns a 96-acre undeveloped property known as Sunset Oaks and a 50-acre undeveloped property known as Woodcreek. The Town was granted 46 acres of undeveloped land known as the Jordan property in 2011 that is adjacent to the Town of Cary's 48-acre tract in the Middle Creek watershed.

TABLE 6-4
Parks within the Planning Area

Park	Total Acres	Acres within Planning Area	Owner
Developed			
Veteran's Park	10	10	Town of Holly Springs
Hunt Community Center	11	11	Town of Holly Springs
Springs of Holly Springs Nature Trail	12	12	Privately Owned
Mims Property	17	17	Town of Holly Springs
Jones Park	24	24	Town of Holly Springs
North Main Athletic Complex	42	42	Town of Holly Springs
Parrish Womble Park	44	44	Town of Holly Springs
Bass Lake Park	98	98	Town of Holly Springs
Sugg Farm Park	116	116	Town of Holly Springs
Shearon Harris County Park	593	593	Wake County
Subtotal Developed	***967***	***967***	
Undeveloped			
Holly Glen Park	2	2	Town of Holly Springs
Trail linkage parks	6	6	Town of Holly Springs
Woodcreek	50	50	Town of Holly Springs
Jordan Property	46	46	Town of Holly Springs
Sunset Oaks	74	74	Town of Holly Springs
Subtotal Undeveloped	***178***	***178***	
Game Lands			
Shearon Harris Game Lands	6,994	5,184	Duke Energy
Total	***8,139***	***6,329***	

Comprehensive Transportation Plan

The Town's Comprehensive Transportation Plan (CTP), adopted in June 2011, incorporates planning efforts from the Beyond the Green Parks and Recreation Master Plan and includes pedestrian and bicycle facility recommendations. A questionnaire was distributed to the general public as part of the planning process, and the responses were used to identify concerns and priorities. These outreach efforts also helped identify improvements that potentially could lead to an increase in bicycling and walking opportunities. The CTP recommended a series of programs and policies to educate, enforce, and encourage non-vehicular transportation (Kimley-Horn and Associates, 2013). The Town has approximately 48 miles of sidewalk and 8 miles of greenway corridors, as noted in the Vision Holly Springs Comprehensive Master Plan (Design Based Planning, 2009).

The pedestrian plan network is based on the following concepts:

- To provide adequate pedestrian access and connectivity to Downtown, schools, and shopping areas
- To develop pedestrian facilities along arterial streets where no sidewalk or gaps in the existing sidewalk exist
- To design or retrofit crossings to improve the safety of pedestrians
- To take advantage of open space and hydrological resources to construct greenway trails to create a natural recreational experience for pedestrians

To ensure that the recommendations in the bicycle plan were consistent with those being developed for the CTP, these two planning efforts were coordinated at several points along the way. The recommended bicycle network creates a connected system to provide transportation and recreation-based bicycle travel throughout the Town. The recommended network is composed of numerous types of on-street and off-street bicycle facilities that serve to connect people and neighborhoods to local destinations. These facilities include bicycle lanes, multi-use trails/greenways, side paths, paved shoulders, signed bicycle routes, and shared-lane markings.

6.2.2.3 Bond Referendums

Wake County voters approved an open space preservation bond referendum in 2000 for $15 million. As a result of the 2000 referendum, the Town received funds to develop its Open Space Master Plan. The County passed a similar referendum for $26 million in November 2004. The focus of these bond monies was on open space preservation to continue the County's efforts to protect water quality throughout the County. The Town received funding from the County to help implement its Open Space Master Plan and also the purchase of a 9-acre addition to Bass Lake Park. The Town passed a $20 million open space bond in 2011. These funds were used for acquisition as well as the development of site-specific master plan, for the Sugg Farm.

In addition to the Town's effort to acquire funding for open space preservation, the UDO requires residential developers to contribute land, greenways, and/or fees for the development of parks and greenway trails. This has significantly increased open space preservation efforts.

6.2.2.4 Unified Development Ordinance

The Town has a UDO that consolidates development regulations into a single document to allow it 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 ordinances, such as Subdivision and Zoning, into one document. The UDO contains several provisions that preserve open space during the development process. The Town has created a Development Procedures Manual (DPM) to supplement the UDO and serve as a guide for the development community. It provides information about submittal requirements and scheduling for the various types of development petitions.

Section 7.06 F of the UDO requires that new development dedicate a portion of the land being developed to providing parks, recreation, or open space for future residents of the area. Developers are required to set aside 1/35-acre for each dwelling unit or lot. If lands are dedicated that lie within the floodplain, have slopes greater than 15 percent, or are included

in utility easements, 1/20-acre for each dwelling unit or lot must be set aside. Fees–in-lieu may also be provided. The Town Council determines whether dedication or a fee-in-lieu should apply to a given development site based on: recommendations of adopted Town plans; recommendations of the Planning Board; the topography and geology of the proposed development area; and the size and shape of the proposed subdivision. The Town Council also decides if dedicated lands will be designated as a park, recreation area, or open space. Staff recommendations based on the Vision Holly Springs Comprehensive Plan, which includes an element for parks, recreation, and open space and the project's natural features, are used to guide the Council's decisions.

Section 2.09 of the UDO helps encourage subdivisions that set aside higher amounts of open space but preserve the density allowed by the zoning. Cluster developments or conservation subdivisions result in higher amounts of open space and lower levels of imperviousness, which help protect water quality. Many towns require a variance process to develop a cluster or conservation subdivision. Section 2.09 of Holly Springs' UDO allows these subdivision designs without going through the variance process. The Town's goal for the cluster and conservation subdivisions is to have developers incorporate existing natural features, such as wooded areas and slopes, into the design of the development and to preserve the site's natural character.

Section 5 of the UDO discusses requirements for PUDs. PUDs are required to preserve 10 percent of the development as open space, and required landscape and riparian buffers cannot be included as part of this open space dedication. If this land is not suitable or accepted by the Town as part of the Park System, then the Town's fee-in-lieu must be paid in addition to the 10 percent open space dedication.

6.2.3 Riparian Buffers and Floodplain Protection

6.2.3.1 Riparian Buffers

The Neuse River NSW rules require that existing riparian buffer areas be protected and maintained on both sides of intermittent and perennial surface waters as discussed in Section 6.1. The Town has incorporated these rules for protecting riparian buffers in Section 7.06D of its UDO. In the Neuse River basin, 100-foot-wide riparian buffers are required along perennial streams and 50-foot-wide riparian buffers are required along intermittent streams. The inner 30 feet must be relatively undisturbed forested buffer, as described in the Neuse riparian buffer rules. The outer 70 feet for perennial streams or 20 feet for intermittent streams must be vegetated. In the Cape Fear River basin, 30-foot-wide riparian buffers are required along both perennial and intermittent streams and must be relatively undisturbed buffer as described in UDO Section 7.06.D. Some uses such as greenways are allowed within the buffers. Greenways in environmentally sensitive areas must have a more environmentally friendly design such as asphalt paths that provide diffuse flow and boardwalks. In the Bass Lake watershed, UDO Section 7.06.D.4.e(1) requires 100-foot undisturbed riparian buffers along all perennial streams. Appendix G includes a map of the Town's stream protection plan.

The perennial or intermittent stream classification is determined by the most recent version of a USGS quadrangle topographic map and/or Soil Survey for Wake County. In the event of a discrepancy, the classification requiring the most stringent buffer applies. NCDWR's methodology to determine whether a stream is present is followed if an appeal is made. In

the Neuse River basin, conflicts between actual field conditions and USGS and Wake County Soil Survey maps are appealed to NCDWR. In the Cape Fear River basin portion of the Town, appeals may be made to the Town's Engineering Department. The Town recognizes that its riparian buffer map (Figure 4-1) is not accurate in depicting streams, but is conservative on the side of more streams appearing than actually occur. The Town does not have the resources to delineate its streams, but the Town has committed the resources to oversee and require that developers delineate streams. The Environmental Appeal ordinance (UDO Chapter 8, Article VII) further establishes the appeals process.

The Town's UDO requires that the construction of new or substantial improvements to residential and non-residential uses be located outside the riparian buffer area. The ordinance also requires that the developer of any project or subdivision provide a riparian Homeowner Education Packet at the time of sale whenever a property is adjacent to any State- or Town-mandated buffer.

6.2.3.2 Floodplain Development Regulations

The Town has established rules for protecting floodplains in Town Code, Chapter 8, Article III, Flood Damage Prevention. The Town does not allow residential development (including manufactured housing) in the FEMA 100-year floodplain. No encroachments, including fill, are permitted in the floodplain for residential construction. The Town requires that the bottom floor be elevated 2 feet above base flood elevation on FEMA-mapped streams for commercial, industrial, or nonresidential structures. Non-residential development rarely occurs within the floodplain; since 1992, Town records indicate that there have been only three projects in which there was any encroachment of development within the FEMA floodplain in addition to road crossings through the floodplain. The Town policy is to extend these residential and commercial practices to the 500-year floodplain where information is available to do so. The Town requires that the 100-year floodplain, 100-year future floodplain and 500-year floodplain be recorded on all plats.

In addition to the FEMA-designated floodplains, the Town has established locally designated floodplains, starting at 20 acres of drainage that are identified during the development process. No residential development is allowed within these Town-regulated floodplains; non-residential development rarely occurs there as well (no occurrences since 1992).

The Town has a policy that requires developers to prepare hydrologic and hydraulic studies for development that occurs upstream or downstream of areas with known drainage problems or flooding and/or to demonstrate that they are not creating an unmitigated increase in base flood elevation. A new development cannot result in an increase in the 100-year base flood elevation.

In areas outside the Town current jurisdiction but within the Planning Area, floodplains are also protected. Wake County recently adopted a new ordinance that prohibits development, including fill in the 100-year floodplain. The County regulates streams outside FEMA's jurisdiction by not allowing development in flood hazard soils and through its buffer requirements.

FIRMs for the Neuse and Cape Fear River basins in Wake County, currently dated April 2007, are in the process of being updated and are expected to be available for public review in 2014.

6.2.4 Erosion and Sediment Control

The Town has been delegated authority for enforcement of the State's Soil Erosion and Sedimentation Control standards. Erosion and sediment control plans must be submitted for developments that disturb over 20,000 cumulative square feet. State law excludes agricultural land from erosion and sediment control. Agriculture is required to implement BMPs for nitrogen control in the Neuse River basin.

The erosion and sediment control program has eliminated a substantial volume of sediment transport to local streams. The erosion and sediment control process is regulated through the Soil Erosion & Sedimentation Control, Stream & Wetlands Protection, Land Disturbance Ordinance (Town Code, Chapter 8, Article 2), as well as by the State's NPDES General Permit NCG 010000 for construction activities.

The six basic control objectives for the Town's erosion and sediment control program are presented in Table 6-5.The Town's sediment and erosion control practices support an overall stream protection plan by limiting in-stream suspended sediment and sediment deposition. The erosion and sediment control strategy is discussed at a pre-construction conference as part of the permit and plan approval process. This conference is used to review the plans with the developer, identify potential risk areas, and make recommendations for plan changes. The Town may require more stringent controls than are outlined in its ordinance by making them a condition of plan approval. Land disturbance permits are issued at the pre-construction conference. The Town has used this authority to require shorter time frames for reseeding, phasing of construction, and the use of specific control devices.

TABLE 6-5
Six Basic Control Objectives of the Town's Erosion and Sediment Control Program

Objective	Comments
Identify especially vulnerable areas that are subject to severe erosion and ensure they receive special attention.	Avoid steep slope areas.
Limit time of exposure.	Maximum time of exposure is 7 calendar days for slopes (14 calendar days for non-slopes).
Limit exposed area.	Plan and conduct activities to minimize the size of the area to be exposed at any one time; during the plan review process, the Town may recommend or require that the development be phased; the Town does not allow fescue for reseeding in commercial areas.
Control surface water.	Control surface water originating upgradient of exposed areas to reduce erosion and sediment loss during the exposure period.
Control sedimentation.	Prevent offsite damage from sedimentation; the Town encourages or mandates, through the plan approval process, the use of control devices that are more restrictive when appropriate for the site.
Manage stormwater runoff.	Control the velocity at the point of discharge to minimize accelerated erosion of the site and increased sedimentation to streams.

The Town does not allow any land-disturbing activity in proximity to a lake or natural watercourse unless erosion and sedimentation control measures are present. An undisturbed buffer may be used, provided that the undisturbed zone shall be of sufficient width to confine visible siltation within the first 25 percent of the undisturbed zone. The Town also requires tree protection fencing and silt fencing as erosion and sediment control measures, along with perimeter ditches or swales, if necessary to protect downstream properties and waterways.

The possibilities for phased construction are reviewed in the erosion and sediment control plan submittal process on a site-specific basis. Site conditions, topography, soils, and type of construction determine the size of the phases. The Town requires all land-disturbing activities to be planned and conducted to limit exposure to the shortest time feasible. Soils are stabilized as rapidly as possible by establishing a grass cover and mulching and tacking. The NPDES General Permit NCG 010000 for construction activities requires that stabilization occur within 7 calendar days of the last land-disturbing activity for slopes steeper than 3 horizontal to 1 vertical (3: 1) and within 14 calendar days for non-slopes. The angle for graded slopes and fills shall be no greater than an angle that can be retained by vegetative cover.

The 10-year storm event is the minimum design standard for planning, designing, and construction of erosion and sediment control measures, structures, and devices. In high quality water zones, a 25-year storm event is the design standard.

Approvals are not issued to begin grading on a project in jurisdictional areas until written documentation of all required State and Federal permits for the project is provided. A first erosion control inspection and final site inspection is required prior to issuance of a Certificate of Occupancy (CO) for all residential and non-residential structures. At this inspection, environmental staff review the site for sufficient groundcover, stabilization, buffers, and installation of stormwater devices prior to approving a CO.

The Town requires the identification of especially vulnerable areas in the development plan, and these areas receive special attention in the permit and plan approval process. Steep slope areas are discussed in a pre-construction conference and avoided to the maximum extent possible.

The Town also works to train contractors that work within its jurisdiction. Training of contractors occurs at preconstruction meetings that are required for developments. Town staff have received training to be certified as Clear Water Contractor Trainers; this program was designed by NCDENR staff. The Town participates in regional contractor workshops annually, which includes regulatory and technology updates provided by the Town, State and other regional Local Programs.

Biannual reviews of the Town's program are performed by staff from NCDENR; the program has continually been found to meet the State's Local Program requirements. The Town received the North Carolina Sediment Control Commission's recognition as the Local Program Award winner for excellence in erosion and sediment control in 2003 and 2006.

6.2.5 Stormwater Programs

The Town has developed a stormwater management programs that are used to control the rate of stormwater runoff through the NPDES Phase II stormwater program. The Town's Phase II Federal NPDES Stormwater permit became effective December 1, 2005, and was renewed in 2011. The NPDES Phase II program regulates discharges of stormwater to surface waters and requires control of suspended solids, fecal coliform, and nutrients. NCDEMLR's NPDES Phase II regulations require that the overall runoff volume be controlled for the 1-year, 24-hour storm. The Town continues to implement its NPDES Phase II Stormwater Program to meet permit requirements.

As part of NPDES Phase II, the Town is required to implement post-construction stormwater controls that meet 85 percent TSS removal and maintain the pre-development hydrograph for the 1-year, 24-hour storm.

The Town developed its stormwater ordinance for new development in 2007 to meet NCDEMLR's NPDES Phase II requirements (Town Code, Chapter 8, Article V, NPDES Phase II Post-Construction Stormwater Ordinance). The Town's NPDES Phase II program was reviewed by NCDEMLR staff in February 2013 and received positive findings during the compliance inspection.

The Town was not named a community for stormwater controls in the Neuse Basin Rules; but requires these nitrogen export limitations throughout the Town's limits and ETJ for any new development or redevelopment that disturbs greater than 20,000 square feet. The Town's stormwater program includes a review of development plans for compliance, public education programs, and identification and removal of illegal discharges. In compliance with rules, the Town submits an annual report to NCDEMLR documenting progress and net changes to nitrogen load from its planning jurisdiction.

The Town reviews site plans to ensure compliance with the stormwater ordinance, which was recently updated to provide better guidance of the intent of private drainage easements and to update the performance and maintenance surety sections. For all stormwater controls, the Town requires a runoff volume drawdown time to be a minimum of 24 hours, but not more than 120 hours.

The Town has a stormwater policy which allows the Town to require hydrologic and hydraulic studies to be prepared or updated for development upstream. The studies are used to evaluate and minimize the impact of new development in drainage basins with existing stormwater problems. The Town currently has three drainage basins modeled within the Town limits and requires "no rise" in the 100-year surface water elevation for all new development projects in these basins.

The Town requires the establishment of financial sureties in the amount of 150 percent of the estimated construction cost (Performance Surety) and 35 percent of the actual cost of construction (Maintenance Surety), as outlined in Town Code Sections 8-263 and 8-264. In addition to the sureties, the owner of each stormwater control structure shall submit a Maintenance Inspection Report annually, conducted by a qualified professional, licensed in the State of North Carolina.

In 2008, the Town adopted an Illicit Discharge Detection and Elimination Ordinance (Town Code, Chapter 8, Article VI) as part of its NPDES Phase II Stormwater Program. The Town maintains a stormwater infrastructure map and other GIS layers to track resident stormwater concerns, storm drain markings, and illicit discharges. To support the updates to this mapping, the Town performs comprehensive outfall inspections and identifies illicit discharges within this watershed.

The Town generally supports development practices which maintain the hydrograph and The Town has seven staff members that are NC Low Impact Development (LID) Certified: 2 planners, 3 environmental stormwater staff, 2 Professional Engineers (PE) 1 that focuses on development plan review and 1 that focus on capital improvement projects.

The Town has several stormwater capital improvement projects planned, including a regional BMP to serve 28 acres in the Village District Area of downtown. This facility will provide required water quality treatment for both existing sites and future development in the basin, meeting federally mandated stormwater treatment requirements. The project will also include widening, sidewalks, and various streetscape features along Avent Ferry Road adjacent to the BMP. This is the first project for which the Town's Stormwater Nutrient Buy-down Fund (from stormwater treatment "fees in lieu" collected from past development projects) will be used for part of the construction costs (Town of Holly Springs, 2009d). Appendix G includes a map of the proposed downtown regional BMP. Additionally, the Parish Womble Park will include synthetic turf soccer fields that will provide stormwater infiltration.

Cooperative efforts related to the Neuse River Basin include the Regional Watershed Plan in the upper Neuse River Basin. This project, managed by EEP, encompasses 580 square miles across Wake and Johnston Counties, including the upper Middle Creek and Swift Creek Watersheds. The goal of this project is to identify and prioritize potential EEP mitigation projects in the Neuse 01 subwatershed. These projects may include traditional stream and wetland mitigation as well as buffer restoration; nutrient offset; urban stormwater and agricultural BMPs; regenerative stormwater conveyances; fish and aquatic organism passage; aquatic habitat improvements; removal of flow obstructions; and species habitats preservation or enhancement (NCDENR, 2013b).

6.2.6 Water Conservation

The Town purchases finished water from Harnett County, and the water supply agreement stipulates that the Town will enact water use restrictions at least as restrictive as those enacted by Harnett County in times of water shortage.

On April 1, 2008 the Town adopted an updated Water Shortage & Conservation Ordinance (Chapter 16, Article II of the Town Code); this ordinance is divided into various stages of water conservation and allows for the Town Manager to declare mandatory conservation measures by users of the Town's public water supply. The ordinance establishes an annual water conservation season, during which irrigation and other non-essential uses of water are restricted between May 1 and September 30. The ordinance sets forth both voluntary and mandatory irrigation restrictions, described in Table 6-5.

TABLE 6-6
Town of Holly Springs Five-Stage Conservation Measurement System

Stage	Requirements
0 – Water Conservation (permanent, year–round, and seasonal)	Unlawful to waste by overwatering landscape by having irrigation nozzles directed so that water sprays onto impervious surfaces; may be fined up to $100 per violation. Encourages odd/even watering. Properties with odd-numbered addresses are to be watered only on Tuesdays, Thursdays, and Sundays. Properties with even-numbered addresses are to be watered only on Mondays, Wednesdays, and Saturdays. Public property, golf courses, and businesses with plants for sale are not subject to these irrigation schedules; however, such users must keep nonessential watering to the minimum required to maintain safe recreational surfaces or to maintain plant inventory.
1 – Water Shortage Alert	Implement odd/even watering. Properties with odd-numbered addresses are to be watered only on Tuesdays, Thursdays, and Sundays. Properties with even-numbered addresses are to be watered only on Mondays, Wednesdays, and Saturdays. No irrigation shall occur on Fridays. Watering shall only occur between 6:00 a.m. and 10:00 a.m. and between 6:00 p.m. and 10:00 p.m. Public property, golf courses, and businesses with plants for sale are not subject to these irrigation schedules; however, such users must keep nonessential watering to the minimum required to maintain safe recreational surfaces or to maintain plant inventory. Hand-watering with containers or hoses, or with reclaimed water is not restricted. No introducing water into swimming pools except as necessary for existing pools to remain operational.
2 – Water Shortage Warning	Implement odd/even watering. Properties with odd-numbered addresses are to be watered only on Thursdays and Sundays. Properties with-even numbered addresses are to be watered only on Wednesdays and Saturdays. No irrigation shall occur on Mondays, Tuesdays, or Fridays. Watering shall only occur between 6:00 a.m. and 10:00 a.m. and between 6:00 p.m. and 10:00 p.m. Owner or occupant of any land or building which receives water from the Town and that also utilizes water from a well or other supply must post a clear notice of the use of a well or other source of water. No washing of automobiles, trucks, trailers, boats, airplanes, or any other type of mobile equipment except at commercial car wash facilities. No washing down of outside areas. No introducing water into swimming pools except as necessary for existing pools to remain operational. Water shall not be used from public or private fire hydrants for any purposes other than fire suppression or other public emergency. No use of water for dust control without written permission from the Town Manager. Industrial, manufacturing, and commercial enterprises shall aim to reduce non-essential consumption by 20%.
3 – Water Shortage Emergency	No watering of lawns, grass, shrubbery, trees, flowers, or vegetable gardens, except by hand watering. No introduction of water into swimming pools. Restaurants and other food serving establishments shall use single-serving utensils, plates, and cups and shall serve water only at the patron's request. Unlawful to use treated water outdoors for any reason other than fire suppression or other emergencies relating to health and safety issues. Industrial, manufacturing, and commercial enterprises shall aim to reduce non-essential consumption by 40%.

TABLE 6-6
Town of Holly Springs Five-Stage Conservation Measurement System

Stage	Requirements
4 –Water Shortage Crisis	No using water outside of structures for any purpose other than emergencies involving fire.
	No introducing water into swimming pools.
	Residential users shall reduce consumption to a level necessary to sustain life and minimum sanitation.
	Fire protection maintained, but tank trucks shall use untreated water where possible.
	No washing of automobiles, trucks, trailer, boats, airplanes, or any other type of mobile equipment.
	No nonessential use of treated water for commercial or public use.
	Industrial, manufacturing, and commercial enterprises shall aim to reduce non-essential consumption by 50%.
	Town Manager may declare additional measures of mandatory conservation controls such as larger percentage reductions in consumption, termination of service to specific areas in the water system on a rotating basis, and prohibition of all industrial users of treated water.

6.2.7 Water Reuse

In 2010, the Town completed the first phase of a reclaimed water system to help offset potable water usage, reducing the amount of water supply withdrawn from the Cape Fear River. Town Code Chapter 16, Article IV (Reclaimed Water Regulation) outlines the requirements for the Town's reclaimed water system, requiring all customers within the reclaimed water service area to connect irrigation systems (and potentially other secondary uses) to the reclaimed water system. It is the Town's policy to provide reclaimed water to meet non-potable water demands with the following objectives:

- Reduce potable water demand.
- Reduce wastewater discharges into Utley Creek.

The Town is currently permitted to distribute 1.5 MGD of reclaimed water and it has been delegated authority from NCDENR to issue permits for reclaimed water irrigation systems up to 5 acres for both residential and non-residential properties.

In 2010, the Town completed constructed of a 500,0000-gallon tank and installation of lines which supply reclaimed water for irrigation to public medians of Green Oaks Parkway, several lawns in the Holly Springs Business Park, and the Twelve Oaks Golf Course Community. The annual estimated reclaimed water usage for the past year is 0.16 MGD, with peak daily use around 0.55 MGD. In addition to the Town's reclaimed water distribution system, bulk reclaimed water is also available at the Utley Creek WRF to users for construction and irrigation uses.

Reclaimed water is currently available west of G.B. Alford Highway, with plans for future lines to extend service eastward. The Town will also be serving New Hill Place, a large mixed use development approved for construction (Town of Holly Springs, 2013).

The Town initially identified demand projections in a Reuse Master Plan (The Wooten Company, 2001), but revised these projections following updated future land use planning efforts. In 2013, a review of the planned land uses within the Town's current reclaimed

water service area identified the potential for annual average daily reclaimed water demands to grow to 0.9 MGD in 2030 and 1.2 MGD in 2060 (CH2M HILL, 2013).

6.2.8 Air Quality Protection

6.2.8.1 Town Air Quality Efforts

Section 7.09 of Holly Springs' UDO requires that developments maximize the connectivity of their streets, which reduces vehicle idling and emissions. Developers must also include walkways to open space, and provide direct links to greenways if they abut the development. These practices help encourage alternative methods of transportation to reduce emissions. The Town also has planned sidewalks and greenways to encourage walking and biking, as shown in Appendix G.

Trees and vegetation are integral to the improvement of air quality. The Town has a tree preservation ordinance in Section 7.01 of the UDO. Further information is provided on this ordinance in Section 6.2.

The Town's Comprehensive Transportation Plan is a multimodal plan that integrates the Town's transportation objectives for different modes, which can decrease impacts to air quality.

Within the Town's Planning Area, Wake County has a methane-to-power project at the South Wake landfill. This project will produce up to 9.5 megawatts, enough electricity for about 5,900 homes, and will reach its full capacity in 2022. The energy produced from this project will not only offset demand for fossil fuels, but will also benefit air quality by directly diverting methane, a greenhouse gas, from entering the atmosphere (Murawski, 2012).

6.2.8.2 Cooperative Efforts

There are several regional activities and planning efforts related to transportation that have the potential to improve air quality by reducing traffic congestion. The Town, in addition to local transportation activities, continues to be active in regional planning through NCDOT, the Capital Area Metropolitan Planning Organization (CAMPO), the Turnpike Authority for the Western Wake Freeway and the Southeast Connector, which refers to the extension of the Triangle Expressway for the completion of the 540 Outer Loop around the greater Raleigh area. This project will link the Towns of Apex, Cary, Clayton, Garner, Fuquay Varina, and Holly Springs and the City of Raleigh. The Triangle Expressway has already improved commuter mobility, accessibility, and connectivity to western Wake County and RTP on the existing north-south routes that serve the Triangle Region, primarily NC 55 and NC 54 (NCDOT, 2013). These regional efforts allow for decreased congestion and alternative transportation. This improved connectivity improves air quality.

A number of Triangle organizations were working on and/or funding Transportation Demand Management (TDM) projects in 2006 and 2007 to create a long-term plan for improving TDM initiatives. During that period, Triangle Transit, formerly Triangle Transit Authority, brought together those organizations, and one 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. The Triangle J Council of Governments (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).

TJCOG coordinated with CAMPO (of which the Town is a member) and other stakeholders to develop a 2040 Metropolitan Transportation Plan (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 the Towns of Cary, Morrisville, and RTP. 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 the State's Transportation Improvement Program (TJCOG, 2013). Triangle Transit also coordinates a ride-sharing program for regional commuters.

In September 2012, Wake 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 CAMPO, Triangle Transit, the RTA, and the City of Raleigh's Capital Area Transit. The Plan provides a dual approach to meet expanding transportation demands as the County continues to grow: (1) a core transit plan that broadens local and commuter bus service and includes rush-hour commuter rail service from Garner to Durham; and (2) an enhanced transit plan that includes a regional light rail service (Wake County, 2012).

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

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

The RTA, founded by the Cary, Chapel Hill-Carrboro, Durham, and Raleigh Chambers of Commerce in 1999, serves as a regional business voice for transportation initiatives. Currently the RTA's members include more than 100 businesses, along with two metropolitan planning organizations for transportation (MPOs), Triangle Transit, and Raleigh-Durham International Airport. The Town is an active member of this group, which 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 resident groups, to reduce dependence on petroleum by promoting alternative transportation fuels (TCCC, 2010).

In 2009, Wake County appointed a sustainability task force to address conservation and reduction goals for solid waste, water, and energy which are related to improved 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). Further information on this program is included in Appendix B.

6.2.9 Tree Protection Regulations

Trees and other vegetation are integral to habitat protection, air quality improvement, controlling surface water runoff, and moderating temperatures. The Town's tree protection regulations are found in Section 7.01.I of the UDO. Trees may be preserved on a development site in lieu of a requirement to plant new vegetation. Developers can provide a survey of vegetation and are given point values based on the quality of the vegetation. Depending on the number of points they receive, they may not need to plant new vegetation. The ordinance states that any vegetation designated for saving that is damaged or dies within 3 years of construction completion must be replaced at a minimum of 120 percent of the original plant unit value.

In addition, Section 7.11 of the UDO and other ordinances (Town Code, Chapter 8, Article IV) requires the submittal of a timbering plan prior to timbering and encourages the preservation of perimeter buffers. If the individuals who undertake timbering operations do not submit a timbering plan or provide for buffers, the Town has the ability to reject any development plans for a period of up to 3 years. The Town was one of the first towns in Wake County to obtain legislation and adopt such a regulation on timbering.

6.2.10 Fisheries and Wildlife Programs

The Town has undertaken several efforts to preserve both terrestrial and aquatic habitats and provide recreational opportunities. For example, the Bass Lake restoration project repaired a dam damaged by Hurricane Fran. Creation of habitat areas was included in the redesign of the lake. Such habitat included a 1-acre island in the middle of the lake for nesting birds. Holly Springs has implemented a community fishing program in which rods and reels are loaned. The Town works in cooperation with NC Wildlife Resources Commission to stock the lake with catfish from April to September.

The Town identified approximately 45 acres within the Middle Creek watershed directly upstream of Holly Springs Road as habitat for the state threatened eastern tiger salamander (*Ambystoma tigrinum*). The Town performed a habitat assessment (Robert J. Goldstein & Associates, 2000). Based on this assessment, the Town has incorporated the following protection elements into the development practices within this watershed:

- A 40-acre intended voluntary dedicated tiger salamander preserve
- Sewer lines that must traverse this area should avoid breeding pools and minimize land disturbance.
- Monitoring may be required for projects in or adjacent to the conservation easement.

The only development that will be allowed within the easement are utility crossings where there are no practicable alternatives. In addition, the Town leaves logs from any utility construction on the ground to enhance the habitat for salamanders.

6.2.11 Sanitary Sewer Installation

The Town adopted a Sewer Use Ordinance (Town Code, Chapter 16, Article III) in 2007 which includes provisions relating to the treatment, pretreatment, and collection of

grease and sand and requires grease interceptors. This ordinance sets forth uniform requirements for direct and indirect contributors to the wastewater collection and treatment system for the Town and applies to all users of the municipal wastewater system, through the issuance of permits to certain non-domestic users and through enforcement of general requirements for the other users. It authorizes monitoring and enforcement activities, requires user reporting, and provides for the setting of fees for the equitable distribution of costs resulting from the program. This program aids in the protection of water quality by limiting the potential for sewer blockages and overflows.