

# Draft Environmental Impact Statement

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## Western Wake Regional Wastewater Management Facilities

Prepared For:



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Town of Cary



Town of Holly Springs



Town of Morrisville

Prepared By:



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## **SECTION 2.0 SUMMARY AND PROPOSED PROJECT**

### **2.1 SUMMARY**

The Western Wake Partners (Partners) are the towns of Apex, Cary, Morrisville, and Holly Springs. The proposed Project has been designated the Western Wake Regional Wastewater Management Facilities Project (Project). The Project is comprised of the facilities listed below, and which are schematically represented on Figure 2-1:

- 1) West Cary Pump Station (PS)
- 2) Force Main (FM) – West Cary PS to Reedy Branch Gravity Sewer
- 3) West Reedy Branch Gravity Sewer – West Cary FM to Beaver Creek PS
- 4) Beaver Creek PS
- 5) Force Main – Beaver Creek PS to West Wake Water Reclamation Facility (WRF)
- 6) Western Wake WRF
- 7) Effluent PS, Pipeline, and Outfall

Wastewater flows from Cary, Morrisville, and the Wake County portion of Research Triangle Park (RTP South) will enter into the system at the West Cary Pump Station. Wastewater flow from Apex will enter the system along the alignment of the West Reedy Branch Gravity Sewer and at the Beaver Creek PS. Wastewater flow from Holly Springs will enter into the system at the Effluent PS located at the Western Wake WRF. The combined effluent from the Partners will be discharged to the Cape Fear River downstream of Buckhorn Dam.

The Project is being implemented by the Partners to provide wastewater service for planned growth and development and to comply with regulatory mandates issued by the North Carolina Environmental Management Commission (EMC) and the Department of Environment and Natural Resources (NC DENR). In accordance with the regulatory mandates, the proposed Project must be operational and discharging effluent to the Cape Fear River by January 1, 2011.

The proposed Project will be implemented in two phases:

- The Phase 1 facilities, which must be operational by January 1, 2011, will provide treatment capacity of 18 million gallons per day (mgd) at the WRF, and a discharge capacity of 24 mgd to the Cape Fear River below Buckhorn Dam. The capacity of these facilities will meet the needs of the Project Partners until 2020. The Phase 1 facilities include the following infrastructure:
  - 31 mgd peak flow capacity at West Cary PS
  - 36 inch force main from West Cary PS
  - 40 mgd peak flow capacity at Beaver Creek PS
  - 42 inch force main from Beaver Creek PS
  - 18 mgd maximum month capacity at WRF
  - 48 inch effluent force main
  - Effluent discharge structure and 60 inch diffuser in Cape Fear River
  
- The Phase 2 facilities, which are projected to be online by July 1, 2020, will provide treatment capacity of 30 mgd at the WRF and a discharge capacity of 38 mgd to the Cape Fear River below Buckhorn Dam. These flows will be sufficient as shown in the current land use plans but additional growth could occur. If wastewater discharge beyond the 38 mgd are required, the partners will request an NPDES permit modification in accordance with rules and regulations. The capacity of these facilities will meet the needs of the Project Partners until 2030. The Phase 2 facilities include the following infrastructure:
  - 44 mgd peak flow capacity at West Cary PS
  - Parallel 24 inch force main from West Cary PS
  - 58 mgd peak flow capacity at Beaver Creek PS
  - Parallel 36 inch force main from Beaver Creek PS
  - 30 mgd maximum month capacity at WRF
  - Parallel 42 inch effluent force main

This Environmental Impact Statement (EIS) will identify and discuss the direct impacts of the proposed Project and feasible alternatives on floodplains, soils, land use, wetlands, prime farmlands, public lands, cultural resources, air quality, noise, water resources, forest resources, shellfish and fish, wildlife and natural vegetation, and the introduction of toxic substances. Secondary and cumulative indirect impacts are addressed in separate Secondary and Cumulative Impact (SCI) Master Mitigation Plans developed by each Town. Agencies can require additional mitigation to address secondary and cumulative impacts for this project as part of the final permitting process. The discharge to the Cape Fear River is outside the Planning Areas of the Towns

addressed in the SCI Master Mitigation Plans. However, the WRF will not serve any populations outside the Planning Areas; thus, the infrastructure proposed as part of this project will not have secondary impacts outside the areas described in the SCI Master Mitigation Plans. Cumulative direct impacts are addressed in this document. The SCI Master Mitigation Plans prepared for each Town are included on CD in Appendix A. This EIS analyzes impacts associated with Phase 1 and 2 facilities that when operational will provide treatment and disposal capacity through 2030. The Record of Decision (ROD) will need to be reaffirmed prior to permit, design and construction of the Phase 2 facilities.

The EIS concludes that given the scope, scale and schedule of the regulatory mandates issued by the EMC and NC DENR, the Partners have evaluated all feasible and reasonable alternatives, and have selected a Project that minimizes direct impacts to the greatest extent practicable and demonstrates fiscal responsibility. The Project will continue to be planned, designed and constructed to avoid impacts to environmental resources, and where avoidance is not feasible, impacts will be minimized to the greatest extent practicable and mitigation measures will be implemented. The SCI Master Mitigation Plans include mitigation measures that have been implemented by each Town to address growth-related impacts in their planning areas as a result of this Project and other infrastructure projects.

The Project Partners and NC DENR anticipate that there will be considerable interest in the final site selection for the Western Wake WRF. The steps outlining the WRF site selection process are provided in the Preliminary Engineering Report (PER TM 05) in Appendix B.

## **2.2 PROJECT HISTORY AND BACKGROUND**

### **2.2.1 Interbasin Transfer**

The Towns of Apex, Cary and Morrisville obtain their drinking water from Jordan Lake in the Cape Fear River Basin and discharge treated effluent to locations within the Neuse River Basin. Obtaining water from one basin and discharging it to another river basin is known as an interbasin transfer (IBT), and it requires a permit from the EMC.

In 2000, the Towns of Apex, Cary and Morrisville, along with Wake County, completed an EIS which outlined the potential environmental impacts of transferring water from the Cape Fear River Basin to the Neuse River Basin to meet the water supply demands of the local governments. The EIS concluded that no direct impacts from the IBT were

expected, but there was potential for secondary impacts. The EIS outlined comprehensive environmental protection programs implemented by each of the local governments to mitigate these secondary impacts. In addition, the EIS included suggestions that proposed infrastructure be located and designed to minimize impacts to wetlands, forests, public land and sensitive species habitats. In addition, future infrastructure design and operation should prevent toxic spills to surface waters.

In July 2001, the EMC granted the communities their IBT certificate, but placed a requirement in it to return wastewater to the Cape Fear River Basin by January 1, 2011 (Appendix C). Thus, these communities must construct wastewater transmission, treatment and disposal facilities in order to comply with the terms and conditions of the IBT certificate issued by the EMC. The Phase 1 and Phase 2 facilities described and evaluated in this EIS are needed to comply with the IBT certificate; the Project will not result in any Neuse River Basin facilities being taken off line in the immediate future. The Town of Apex has indicated that at some point in the future, it will remove its WWTP from service, but this date is unknown. Figure 2-2 illustrates water movement in 2011 when Phase 1 is completed. This EIS addresses impacts to wetlands, forests, public lands, and sensitive species habitats; the PER (Appendix B) outlines spill prevention programs. Thus, recommendations included in the IBT EIS are addressed in this document.

### **2.2.2 Holly Springs WWTP Discharge to Utley Creek**

The Town of Holly Springs currently has a wastewater treatment plant (WWTP) that discharges to Utley Creek, which is a tributary to Harris Lake in the Cape Fear River Basin. Representatives from NC DENR have encouraged the Town of Holly Springs to remove the Town's wastewater discharge from Utley Creek due to nutrient enrichment issues in the creek and downstream in Harris Lake. Accordingly, NC DENR has encouraged Holly Springs to participate with Apex, Cary and Morrisville to review and evaluate alternatives to discharge wastewater to the Cape Fear River Basin, which might allow the Town of Holly Springs to remove the Town's discharge from Utley Creek.

### **2.2.3 Western Wake County Regional Wastewater Treatment Studies Project**

In May 2002, Apex, Cary, Fuquay-Varina, Holly Springs, Morrisville, and Wake County (Project Partners) formally agreed to jointly commission the Western Wake County Regional Wastewater Treatment Studies Project (Regional Wastewater Study). The Regional Wastewater Study was commissioned by the Project Partners to evaluate

alternative wastewater management strategies that could be implemented in order to comply with the regulatory mandates issued by the EMC for IBT, and NC DENR for removing the Town of Holly Springs' discharge from Utlely Creek.

#### **2.2.3.1 Phase I – Regional Wastewater Study**

The Regional Wastewater Study was conducted in two phases. The Phase I study effort was conducted from November 2002 to September 2003 and focused on the identification and evaluation of alternative wastewater management options (CDM and Hazen and Sawyer, 2004a). The Project Partners discussed various wastewater treatment options and met with representatives from NC DENR to discuss regulatory considerations for various options. After consideration of the alternatives, 24 preliminary options were selected for additional evaluation. The Project Partners then used a combination of economic and non-economic evaluation criteria and weighting factors to select seven options for more detailed technical and economic analysis. Four of these options were then selected for further evaluation as part of a Phase II study effort.

#### **2.2.3.2 Phase II – Regional Wastewater Study**

The Phase II study effort was conducted from October 2003 to July 2004 and focused on the evaluation of financial impacts and alternative organizational models for the four wastewater management options and selection of a preferred option. In general, the four options which were selected for additional study in Phase II were determined to be equal with respect to level of service, quality of service, regulatory review and approval requirements, and technical complexity (CDM and Hazen and Sawyer, 2004b). With each of these factors judged to be relatively equal, at the June 2004 meeting of the Project Partners, a consensus was reached to pursue the implementation of the proposed Project, which is the subject of this EIS, and which was previously identified as Option 10D during the Regional Wastewater Study. A description of each of the four options studied during Phase II of the Regional Wastewater Study is presented in the following sections.

#### **Option 1 – Independent Option**

Option 1 represents the “baseline” option, which corresponds with each of the local governments acting independently to address their respective wastewater capacity needs. Option 1 is considered as the independent option because it involves the least collaboration for wastewater collection and treatment among the Project Partners.

For Option 1, one new 19-mgd water reclamation facility (WRF) would be constructed at White Oak Creek (Jordan Lake) to serve the western Cary service area, part of the

North Cary service area, the Haw River portion of the Morrisville service area, and RTP South. A second new WRF with a capacity of 12 mgd would be constructed at White Oak Creek (Harris Lake) to treat all wastewater flows from Apex. The Apex Middle Creek WWTP would be decommissioned or used as a "scalping" plant for production of reclaimed water. The Town of Holly Springs would expand the Utley Creek WWTP to a capacity of 12 mgd. The two new WRFs and the Utley Creek WWTP would discharge to the Cape Fear River below Buckhorn Dam through separate force mains.

#### **Option 5 – Apex-Holly Springs Collaboration, New West Cary WRF**

Under this option, Apex and Holly Springs would collaborate for a new WRF on Little White Oak Creek. One new 16-mgd WRF would be constructed at White Oak Creek (Jordan Lake) to serve the western Cary service area, the Haw River portion of the Morrisville service area, the Haw River portion of the Apex service area, and RTP South. This WRF would discharge to the lower portion of Jordan Lake. A second new 20-mgd WRF would be constructed at Little White Oak Creek to serve the remainder of the Apex service area and the portion of the Holly Springs flow in excess of the current capacity of the existing Utley Creek WWTP (1.5 mgd). The second new WRF would have an effluent pump station and force main that would tie into the effluent force main from the new WRF at White Oak Creek (Jordan Lake). The Utley Creek WWTP would continue to discharge at its current permitted capacity to Utley Creek. The Apex Middle Creek WWTP would be decommissioned or used as a scalping plant.

#### **Option 9 – Apex-Cary-Holly Springs Collaboration**

Under this option, Apex and Cary would collaborate and Apex and Holly Springs would collaborate in separate water reclamation facilities to provide treatment and discharge for their service areas. One new 18-mgd WRF would be constructed at Beaver Creek to serve the western Cary service area, the portions of the Apex service area tributary to White Oak Creek (Jordan Lake) and Beaver Creek, the Haw River portion of the Morrisville service area and RTP South. The new WRF would have an effluent pump station and force main to discharge to the lower portion of Jordan Lake. A second new 20-mgd WRF would be constructed at White Oak Creek (Harris Lake) to serve the remainder of the Apex service area and all of the Holly Springs service area. This WRF would have an effluent pump station and force main to discharge to the Cape Fear River below Buckhorn Dam. The existing Holly Springs Utley Creek WWTP would be decommissioned for this option.

#### **Option 10D – Apex-Cary-Holly Springs Collaboration, Excess Holly Springs Flow to North Harnett Regional WWTP**

Under this option, Apex and Cary would collaborate in a single new WRF, Holly Springs would collaborate with Fuquay-Varina for treatment at the North Harnett Regional WWTP, and Holly Springs and Cary would collaborate for treatment at the South Cary WRF. A new 24- mgd WRF would be constructed at White Oak Creek (Jordan Lake) to serve the Cape Fear River portion of the Apex service area, the Haw River portion of the Morrisville service area, the western Cary service area, and RTP South. The new WRF would have an effluent pump station and force main to discharge to the lower portion of Jordan Lake.

The Town of Holly Springs would collaborate with Harnett County to expand the North Harnett Regional WWTP by approximately 7 mgd. The North Harnett Regional WWTP would provide treatment and discharge for the Cape Fear River portion of the Holly Springs wastewater flows in excess of the current capacity of the Utley Creek WWTP (1.5 mgd), along with the flows from the Cape Fear River portion of the Fuquay-Varina service area. The gravity sewer from the Kenneth Branch WWTP would not need to be paralleled for the additional flow from Holly Springs.

The Utley Creek WWTP would remain in service and would continue to discharge at its current permitted capacity to Utley Creek. Under this option, the North Cary WRF would also be expanded to 16 mgd to serve the North Cary service area, the Neuse River portion of the Morrisville service area, and RDU. The South Cary WRF would be expanded to 15 mgd to serve the South Cary service area, as well as the Neuse River portion of the Holly Springs service area. A new gravity sewer would be provided to convey Holly Springs' wastewater flow to the South Cary WRF.

The Middle Creek WWTP would remain in service under this option at its current capacity of 3.6 mgd to treat wastewater flow from the Neuse River portion of the Apex service area.

### **Modified Option 10D**

Near the conclusion of the Phase II Regional Wastewater Study, DWQ indicated that they would not permit a discharge to Jordan Lake and the outfall should be located on the Cape Fear River downstream of Buckhorn Dam. In addition, the Town of Holly Springs and the Town of Cary completed additional analyses for Option 10D. The Town of Holly Springs' analysis indicated that cost savings could be realized if the Town would continue to treat all of its wastewater at the Utley Creek WWTP and discharge treated effluent to the outfall serving the Western Wake WRF; rather than convey raw



wastewater to the South Cary WRF and the North Harnett County Regional WWTP for treatment and disposal.

For the Town of Cary, additional analyses were conducted to determine the technical and regulatory feasibility of expanding the North Cary WRF from 12 mgd to 16 mgd. Given the site constraints and steep terrain of the North Cary WRF site, as well as the nutrient loading restrictions associated with the Nutrient Sensitive Waters Management Strategy for the Neuse River Basin, the Town of Cary determined that the preferred option would be to transfer raw wastewater from the North Cary service area to the Western Wake WRF via a wastewater pumping station, force main and gravity sewer that would discharge at the West Cary Pumping Station.

Once it was determined that these modifications could be made to Option 10D without creating undue financial burdens for the remaining Project Partners, Option 10D was revised to include Holly Springs as a participant in the effluent discharge system and Cary would divert raw wastewater from the North Cary service area to the Western Wake WRF via a wastewater pumping station, force main and gravity sewer.

## **2.3 DESCRIPTION OF PROPOSED PROJECT**

### **2.3.1 Discharge Location and Speculative Discharge Limits**

In consideration of the regulatory mandates issued by the EMC and the Division of Water Quality (DWQ), the Partners have been consulting with representatives from DWQ on alternative wastewater discharge options since January 2003. The options discussed with DWQ representatives for new discharge locations included the following:

- 1) Cape Fear River below Buckhorn Dam
- 2) Lower Jordan Lake (above Jordan Lake Dam and below U.S. 64)
- 3) Cape Fear River/Haw River above Buckhorn Dam
- 4) Harris Lake/Utley Creek

The least favorable discharge options cited by DWQ are (2) Lower Jordan Lake (3) Cape Fear River/Haw River above Buckhorn Dam, and (4) Harris Lake/Utley Creek. DWQ staff indicated that these are the least favorable discharge locations because currently available water quality data, and/or recently completed water quality modeling, suggest that these water bodies have poor water quality or low assimilative capacity for additional pollutant loading. Additional wastewater effluent loadings of pollutants to any

of these three locations would exacerbate the existing poor water quality conditions, and DWQ indicated that they would not support a discharge to these waters of the state.

DWQ representatives indicated that the most favorable discharge option for the Partners is the Cape Fear River below Buckhorn Dam. The Cape Fear River below Buckhorn Dam was most favorable because recently completed water quality modeling suggests that this segment of the Cape Fear River can accommodate additional wastewater effluent loadings without creating unacceptably low dissolved oxygen conditions – a key criteria used by DWQ to evaluate the impact of new or increased wastewater discharges to a given water body.

On May 24, 2004, the Project Partners submitted to DWQ a request for speculative effluent limits based on this discharge area. To respond to this request, DWQ evaluated data collected on the Middle Cape Fear River immediately above Buckhorn Dam and behind Lock & Dam No. 3 as part of the Cape Fear River Basinwide Water Quality Management Plan update. Data indicate that there are exceedances of the chlorophyll *a* standard in these locations. If additional analysis conducted by DWQ during the Basinwide Planning process confirms that portions of the river are impaired, they will be included on the 303(d) list submitted to EPA in April 2006. Inclusion of these river segments on the EPA-approved 303(d) list will require consideration of a Total Maximum Daily Load (TMDL). DWQ requested that the Project Partners develop an interim nutrient management strategy to address these issues until the TMDL requirement is further evaluated.

Based on the interim nutrient strategy that was developed by the Partners, DWQ issued speculative effluent loading limits on December 15, 2004 based on 6 mg/L total nitrogen and 2 mg/L total phosphorus. In addition, DWQ issued speculative limits for oxygen-consuming wastes of 5/10 mg/L (Summer/Winter BOD<sub>5</sub>) and 1/2 mg/L (Summer/Winter NH<sub>3</sub>-N). The speculative limits letter also recommended that the Partners perform a dye study to determine dilution or construct a diffuser. The Partners plan on developing a diffuser as part of this project. The speculative limits letter is located in Appendix D.

### **2.3.2 Description of Project Components**

For the proposed Project, a single regional water reclamation facility will be constructed to provide wastewater treatment services for the towns of Apex, Cary, Morrisville, and RTP South. Holly Springs will continue to treat wastewater at the Utley Creek WWTP, and the entire discharge from the Utley Creek WWTP will be removed from Harris Lake and conveyed to a common outfall that will serve the Western Wake Regional WRF and

the Utleay Creek WWTP. The common outfall will discharge treated effluent to the Cape Fear River downstream of Buckhorn Dam. Facilities for the proposed Project are shown on Figure 2-1. Further description of the facilities follows:

### **2.3.2.1 New and Expanding Raw Wastewater Transmission Facilities**

Raw wastewater transmission facilities will be constructed to convey raw wastewater from RTP South, the Haw River basin portion of Morrisville, the west Cary service area and the Cape Fear River portion of the Apex service area to the new Western Wake WRF. The raw wastewater transmission facilities will consist of the following:

- 1) West Cary PS
- 2) West Cary FM – West Cary PS to Reedy Branch Gravity Sewer
- 3) West Reedy Branch Gravity Sewer – West Cary FM to Beaver Creek PS
- 4) Beaver Creek PS
- 5) Beaver Creek FM – Beaver Creek PS to Western Wake WRF

The West Cary Regional PS will have an initial peak flow (PF) capacity of approximately 31 mgd and a future (2030) capacity of 44 mgd (PF). The force mains from the West Cary Regional PS will consist of a single 36-inch force main constructed initially, and a parallel 24-inch force main constructed by 2020. The force mains will discharge to a single 54-inch gravity interceptor, which will convey the raw wastewater to the Beaver Creek PS.

The Beaver Creek PS will convey raw wastewater from the Apex White Oak Creek and Beaver Creek service areas, plus raw wastewater from the West Cary Pump Station and water treatment plant residuals from the Cary/Apex Water Treatment Plant (WTP), to the Western Wake WRF. The Beaver Creek PS will have an initial capacity of approximately 40 mgd (PF) and a future (2030) capacity of 58 mgd (PF). The force mains from the Beaver Creek Pump Station will consist of a single 42-inch force main constructed initially, and a parallel 36-inch force main constructed by 2020.

A later project will consist of a new raw wastewater pump station in the North Cary service area, the Upper Crabtree PS, and its associated force main and gravity interceptor, to convey flows in excess of the existing 12 mgd capacity of the North Cary WRF to the Western Wake WRF. The Upper Crabtree PS, force main and gravity interceptor to the West Cary Regional PS are expected to be constructed by 2020. These facilities are not addressed in this EIS and the environmental impacts of the

facilities will be addressed in a separate document that will be prepared in advance of facility permitting, design and construction.

#### **2.3.2.2 New Water Reclamation Facilities**

A new Western Wake WRF, with an initial maximum month average flow (MMF) capacity of 18 mgd and a future (2020) capacity of 30 mgd (MMF), will be constructed along U.S. 1 near New Hill to serve the Cape Fear River portion of the Apex service area, the Haw River portion of the Morrisville service area, the west Cary service area, and RTP South. In 2020, some flow from the North Cary WRF will be diverted to the new Western Wake WRF. The new Western Wake WRF will have an effluent pump station, and transmission mains will convey treated effluent to the Cape Fear River below Buckhorn Dam. The Western Wake WRF will be expanded to 30 mgd in 2020 to accommodate those flows. The total discharge to the Cape Fear River will include effluent from the new Western Wake WRF and the Town of Holly Springs Utle Creek WWTP. The 2030 discharge to the Cape Fear River from these two facilities is projected to be approximately 38 mgd at maximum month average conditions. The effluent force mains will consist of an initial single 48-inch force main in Phase I, and a second 42-inch parallel force main constructed by 2020.

#### **2.3.2.3 Expanded Wastewater Treatment Facilities**

The Town of Holly Springs will expand the Utle Creek WWTP to provide an initial expanded capacity of 6 mgd (MMF), and a future (2020) permitted capacity of 8.3 mgd (MMF). The 8.3 mgd capacity will meet the Town's needs until 2030. The treated effluent from the expanded Utle Creek WWTP will be conveyed to the Western Wake WRF and discharged with the treated effluent from the Western Wake WRF to the Cape Fear River below Buckhorn Dam. The effluent disposal system that will convey effluent from the Western Wake WRF and the Utle Creek WWTP is addressed in this EIS. However, the expansion of the Utle Creek WWTP and the conveyance system to deliver treated effluent from the Utle Creek WWTP to the Western Wake WRF are addressed in a separate environmental document being prepared by Holly Springs.

The Apex Middle Creek WWTP will remain in service at its current capacity of 3.6 mgd to treat wastewater flow from the Neuse River portion of the Apex service area. The North and South Cary WRFs will continue to treat wastewater flows from their tributary service areas, and will not be expanded beyond current permitted capacities.

#### **2.3.2.4 Other Facilities**

A later project will consist of a new effluent pump station at the South Cary WRF and associated force main to convey IBT return flows to the Western Wake WRF effluent

force main for discharge to the Cape Fear River below Buckhorn Dam. Based on the requirements of the interbasin transfer (IBT) certificate issued on July 12, 2001 to Cary, Morrisville, and Apex, plus Wake County (for RTP South), wastewater flows must be returned from the Neuse River Basin to the Cape Fear River Basin beginning in 2011. Sufficient wastewater flows must be returned to meet the requirements of the certificate for a maximum day transfer not-to-exceed 24 mgd and an average annual transfer (calculated as defined in the certificate) not to exceed 16 mgd. There are several feasible strategies to address IBT requirements, and the list of potential strategies includes, but is not limited to, the following:

- 1) Expand the use of reclaimed water in Apex, Cary, Morrisville and RTP South to reduce the rate of water withdrawal from Jordan Lake during maximum day water demand conditions;
- 2) Implement more aggressive water restrictions in Apex, Cary, Morrisville and RTP South to reduce the rate of water withdrawal from Jordan Lake during maximum day water demand conditions;
- 3) Purchase water on a temporary basis from a utility located in the Neuse River basin to reduce the rate of water withdrawal from Jordan Lake during maximum day water demand conditions;
- 4) Construct a water reclamation facility to serve Apex, Cary, Morrisville and RTP that discharges to the Cape Fear River.
- 5) Construct an effluent transfer pump station at the North Cary WRF, the South Cary WRF or the Apex Middle Creek WWTP to transfer additional flow from the Neuse River basin to the Cape Fear River basin during maximum day water demand conditions.

The Project Partners are currently working to address IBT requirements using all five strategies listed above. Based on current water consumption patterns for potable water and reclaimed water, long-term (2030) water demand forecasts suggest that there may be a need to transfer additional treated wastewater from the Neuse River Basin back to the Cape Fear Basin beyond the expected discharge from the Western Wake WRF. This additional transfer is projected to be about 2.5 mgd and is necessary to comply with the 24 mgd maximum day interbasin transfer limitation in approximately 2025. There are several possible locations for the IBT transfer pumping station, and for the purposes of this analysis, it is anticipated that the IBT transfer pumping station (2.5 mgd

capacity) will be located at the South Cary WRF. However, since the need for this pumping station can be eliminated through the expansion of existing reclaimed water programs; modifications in water restriction programs; or the purchase of water from Neuse River basin sources, the IBT transfer pumping facilities are not addressed in this EIS and the environmental impacts of the facilities will be addressed in a separate document that will be prepared in advance of facility permitting, design and construction.

Detailed descriptions of the proposed raw wastewater conveyance, treatment and discharge facilities are included in the PER (Appendix B).

## **2.4 REGULATORY REVIEW AND APPROVAL REQUIREMENTS**

The following permits or approvals will be required prior to the implementation of the Project.

- Record of Decision on the Environmental Impact Statement: The Record of Decision (ROD) documents the completion of the EIS and serves as a basis for further permitting decisions by DENR agencies
- National Pollution Discharge Elimination System (NPDES) Permit: Effluent discharges from the proposed WRF into the Cape Fear River will require a NPDES permit from NCDWQ. This permit will set effluent limits on the discharge and assure no significant effects on the water quality of the Cape Fear River.
- Gravity Sewers, Raw Wastewater Pump Stations and Wastewater Force Mains: NCDWQ will require plans and specifications prepared in accordance with 15A NCAC 2H .0200. Form PSFMGSA 10/99 and the watershed classification form WSCA 10/99 are to be filed with NCDWQ.
- Wastewater Irrigation Facilities: NCDWQ will require the Surface Irrigation System Form SIA 09-02.
- Authorization to Construct: The Project will require an Authorization to Construct (ATC) permit from NCDWQ.
- 404/401 Permit/Certification: Wetlands and surface waters are under the jurisdiction of the USACE through the Clean Water Act, Section 404. Impacts to jurisdictional wetlands are allowable if no practical alternative exists for the Project. Unavoidable impacts to streams and wetlands will require a permit

application to the USACE and NCDWQ. Mitigation will be required for stream impacts and possibly wetland impacts. These permits will likely be issued in mid-2007 after the EIS process is completed and a ROD is issued.

- Sediment and Erosion Control Permit: Plans and specifications for the Project will be submitted to the Wake County Erosion, Flood and Stormwater Division prior to land disturbing activities.
- Floodplain, Riparian Buffers, and Stormwater Regulations: Plans and specifications for the Project will be submitted to the Wake County Erosion, Flood and Stormwater Division prior to land disturbing activities which will ensure these regulations are met.
- Encroachment Agreements: Appropriate NC DOT and railroad encroachment agreements may be required for segments of the transmission line routes.
- Section 10 permit for aerial crossings of navigable waters or a letter from the USACE stating none is required for the project
- Real Estate Instrument from the USACE for transmission line crossing federal lands
- Construction easements and right-of-way (ROW) easements
- Plan review of Town of Apex waterlines by Division of Environmental Health

## **2.5 SCHEDULE AND PHASING**

The proposed WRF will be built in two phases. The permitted flow for Phase 1 will be 18 mgd, and the permitted flow for Phase 2 will be 30 mgd. In addition, the Town of Holly Springs will expand the Town's Utley Creek WWTP to accommodate a 2030 flow of approximately 8.3 mgd. This EIS does not address the direct impacts of expanding the Utley Creek WWTP or constructing the conveyance system to deliver treated effluent from the Utley Creek WWTP to the Western Wake WRF.

The EMC has placed a requirement on the Towns of Cary, Apex, and Morrisville and Wake County to return wastewater to the Cape Fear River Basin by January 1, 2011 as a condition of receiving an interbasin transfer certificate to transfer water from Jordan Lake (in the Haw River subbasin of the Cape Fear River Basin) and discharge the water to the Neuse River Basin. In addition, DWQ has encouraged Holly Springs to

participate with Apex, Cary and Morrisville on the effluent disposal system to the Cape Fear River and to remove the Town's discharge to Utley Creek by January 1, 2011.

The Project Partners have committed to completing construction of Phase 1 of the raw wastewater conveyance, treatment and discharge facilities by January 1, 2011. Phase 2 will be completed in 2020.

The schedule for implementation of Phase 1 of the Western Wake Regional Wastewater Management Facilities project is shown on Figure 2-3.

## **2.6 PROJECT FINANCING**

The Partners anticipate receiving low-interest loan funding for the Project through the Clean Water State Revolving Fund (SRF) Program. In accordance with the requirements for receiving this funding, the Partners have conducted a financial and rate impact analysis to forecast the expected wastewater user charge impact of the Project on a residential customer using 5,000 gallons per month. The user charge analysis was conducted to identify the rate adjustments that each local government will implement, as necessary, to generate sufficient user charge revenues to fund the Project and repay the SRF loan.

For the Phase 1 facilities, it is anticipated that each local government will use some combination of the following funding sources for land acquisition, permitting, design and construction:

- 1) Pay-As-You-Go (cash on-hand in capital reserve funds)
- 2) SRF Low-Interest Loan
- 3) Revenue or General Obligation Bonds

The User Charge Analysis is presented in Appendix J. The User Charge Analysis includes the forecasted user charge impact associated with each local government's allocated costs for the Project.

The estimated financial impact of the Western Wake Regional Wastewater Management Facilities project on residential customers in Apex, Cary, Morrisville, and Holly Springs is described in Table 2-1. The table lists current monthly charges and the estimated monthly charges in 2011, when the Western Wake Regional Wastewater Management Facilities project is scheduled to begin operation. As shown in the table,



monthly charges for 5,000-gallon customers in the participating towns are expected to increase by an amount ranging from \$5.00 to \$24.79.

**Table 2-1**  
**Estimated Impact of Program on Residential Customer**

<b>Description</b>	<b>Apex</b>	<b>Cary</b>	<b>Morrisville</b>	<b>Holly Springs</b>
Incremental Increase Per Thousand Gallons from 2005 to 2011 <sup>(a)</sup>	\$4.96	\$2.57	\$2.17	\$ -
Est. Current Monthly Charge for 5,000 Gal Residential Customer	\$27.76	\$21.27	\$30.30	\$27.00
Estimated Monthly Charge for 5,000 Gal Customer FY 2011	\$52.55	\$34.10	\$41.14	\$32.00
Total Monthly Increase Amount for Program	\$24.79	\$12.83	\$10.84	\$5.00
Median household income based on Census 2000 data	\$71,052	\$75,122	\$56,548	\$69,550
Annual Sewer Bill	\$630.62	\$409.24	\$493.68	\$384.00
Annual Sewer Bill as Percentage of MHI <sup>(a)</sup>	0.9%	0.5%	0.9%	0.6%

<sup>(a)</sup> First full year of Operation

<sup>(b)</sup> EPA Affordability Guidance 1.5%

The user charge calculations presented in Table 2-1 are based on expected revenue based on the first year's billable flow, the first year's principal and interest payments for the project, and the first year's operation and maintenance costs.

## **2.7 PURPOSE AND SCOPE OF EIS**

Based on the size and complexity of the proposed Project, the Partners have been encouraged by NC DENR staff to identify and address the direct environmental impacts of the proposed Project through the EIS process. Within this EIS, the Partners have attempted to conduct a thorough environmental review which includes an evaluation of reasonable, feasible and financially responsible alternatives that identifies the direct environmental impacts associated with each alternative; presents the reasoning for the selection of the proposed Project; and presents mitigation measures that will be implemented to minimize the impacts of the proposed Project. The Partners believe that the EIS process, which is governed by NC General Statutes and NC Administrative Code, will ensure that all interested individuals and groups receive a fair and balanced opportunity to comment on the alternatives analysis, the direct impact analyses, the reasoning for selecting the proposed Project, and the proposed mitigation measures.

In addition to this EIS, the Towns have developed individual SCI Master Mitigation Plans to address the growth-related impacts associated with each local government's planned and future infrastructure projects, including these proposed wastewater facilities. Figure 2-4 illustrates the Western Wake WRF and Utleigh Creek WRF service areas in relation to the Towns' Planning Areas. The Towns developed their SCI Master Mitigation Plans for their respective Planning Areas.

As illustrated in Figure 2-4, the majority of the WRF service areas are located within the Planning Areas. The only exceptions to this are the portion of RTP located in Wake County and the Raleigh-Durham airport. Each of these areas was addressed in the Town of Cary's SCI Master Mitigation Plan since the Town provides water and sewer utility services to these areas. The SCI Master Mitigation Plans for both Apex and Holly Springs address the unresolved area illustrated in Figure 2-4; most of this area is planned for residential development by both Towns. Thus, the SCI Master Mitigation Plans address all secondary and cumulative indirect impacts associated with the proposed Project. This EIS will therefore focus on direct impacts, as the secondary (growth-related) impacts are being addressed through the SCI Master Mitigation Plans (CH2M HILL, 2005).

This EIS will focus on the expanded West Cary Pump Station, the Beaver Creek Pump Station, raw wastewater force mains, the Western Wake WRF, treated effluent pump station, effluent transmission main, and an outfall structure at the Cape Fear River. The EIS will also evaluate the impacts of the discharge on the Cape Fear River. The EIS does not address the direct impacts of any improvements made to the Town of Holly Springs Utley Creek WWTP or its associated pump station and connection to the effluent pumping station at the Western Wake WRF. The direct impact of Holly Springs flow on the Cape Fear River is addressed in this EIS. Figure 2-5 illustrates the utility components addressed in this EIS.

## **2.8 REFERENCES**

CDM and Hazen and Sawyer. 2004a. Western Wake County Regional Wastewater Treatment Studies Project: Phase I.

CDM and Hazen and Sawyer. 2004b. Final Technical Memorandum 7.0: Final Report – Phase II: Western Wake County Regional Wastewater Treatment Studies Project.

CH2M HILL. 2005. Secondary and Cumulative Impacts Master Mitigation Plan: Apex, North Carolina.

CH2M HILL. 2005. Secondary and Cumulative Impacts Master Mitigation Plan: Cary, North Carolina.

CH2M HILL. 2005. Secondary and Cumulative Impacts Master Mitigation Plan: Holly Springs, North Carolina.

CH2M HILL. 2005. Secondary and Cumulative Impacts Master Mitigation Plan: Morrisville, North Carolina.