



# Section 1 - Introduction

## 1.1 Project Background

The wastewater collection system, owned and operated by the Town of Cary, consists of gravity sewer lines, pump stations and force mains that convey the wastewater flows to three water reclamation facilities (WRFs), the North Cary WRF, the South Cary WRF and Durham County's Triangle Wastewater Treatment Plant (WWTP) for treatment and disposal. Its existing service areas cover the Town of Cary, the Town of Morrisville, RDU International Airport, and the Wake County portion of Research Triangle Park.

The previous Wastewater Collection System Study and Master Plan was completed by Hazen and Sawyer in 2003. Significant changes, driven by an assortment of external factors, have subsequently taken place in the Town of Cary's wastewater collection system. Those factors include a robust population growth in the Towns of Cary and Morrisville, recent utility merger between the two towns, natural progression of the Western Wake Regional Water Reclamation Facility (WWRWRF) and continuous evolution/optimization of the wastewater collection system by the Town of Cary's staff.

Therefore, the Town of Cary retained Hazen and Sawyer to assess its wastewater collection system and to conduct a comprehensive system-wide master plan study to aid in the planning, scheduling, budgeting and design of future wastewater collection system expansions and improvements.

## 1.2 Objectives and Scopes

The Town of Cary contracted with Hazen and Sawyer, P.C. to update the Town's wastewater system master plan and to revise the existing wastewater system model. It is a logical response to the profound changes that have occurred in the Town's sewer service area with respect to its coverage and conveyance/treatment. This master plan update is primarily hinged upon hydraulic computer model simulations that used the Infoworks CS™ platform designed by Wallingford Software of U.K., now a subsidiary of Innovyze, Inc. of Broomfield, CO. The following major objectives are established for this report,

- Develop wastewater flow projections for the Cary service area, based on parcel level data furnished by the Town of Cary, for 2010, the 5-year (2015), the 15-year (2025) and build-out conditions
- Perform an infiltration/inflow (I/I) analysis and prioritize sub-basins with respect to I/I for further more detailed study
- Prepare a computer model that includes gravity sewer lines greater than or equal to 10 inches in diameter and reflects system improvements that have been implemented or will be completed in the short term



- Conduct a field pump station inspection and testing program to collect pump station field performance data including noise and odor characteristics
- Catalog system-wide permanent flow metering data and utilize them to calibrate the InfoWorks CS™ computer model
- Identify sewer segments that have insufficient hydraulic capacity to convey system flows or areas of the system that appear to be at risk for sewer overflows and prioritize improvements that would correct those deficiencies
- Identify system improvement that would serve future development and growth within the service areas
- Develop a detailed yearly capital improvement plan with phased budget allocation for each proposed improvement project on a system-wide basis. This would lead to a more informed decision-making process for budgeting and scheduling for the Town of Cary
- Evaluate regulatory considerations and odor control issues with regard to the collection system
- Evaluate collection system telemetry and SCADA issues, particularly associated with progress of the Western Wake Regional Water Reclamation Facility start-up

### **1.3 Organization of Report**

The remainder of this report is organized into the following sections:

Section 2 - Existing System

Section 3 - Pump Station Testing

Section 4 - Population and Flow Projection

Section 5 - Inflow and Infiltration Analysis

Section 6 - Hydraulic Model Analysis

Section 7 - Capital Improvement Program

Section 8 - Regulatory Considerations

Section 9 - SCADA system

Section 10 - Conclusion and Recommendation