

## Town of Cary – Regional System Optimization Study

### Scope of Services – DRAFT

#### Overview

Cary, Apex and Holly Springs have begun discussions to consider wastewater capacity options for Holly Springs. At this time, Cary understands that Holly Spring's wastewater flow request will be approximately 4.0 to 6.0 MGD of wastewater capacity by 2030 to 2032.

The two potential treatment locations considered for this analysis are the Western Wake Regional Water Reclamation Facility (WWRWRF) and South Cary Water Reclamation Facility (SCWRF).

#### Western Wake Regional Water Reclamation Facility

The WWRWRF was originally designed, permitted, and constructed as an 18.0 MGD facility. The plant became operational in August 2014 and is currently operating at an average daily flow of approximately 7.0 MGD, with growth occurring particularly in the Apex service area.

A Master Plan for the expansion of WWRWRF is currently underway, and paths forward for expansion include:

- The WWRWRF permit allows expansion to a maximum of 30.0 MGD
  - Expansion Option 1: WWRWRF, 18.0 MGD to 24.0 MGD
  - Expansion Option 2: WWRWRF, 18.0 MGD to 30.0 MGD
- WWRWRF effluent pump station and pipeline, designed for 30.0 MGD with increase in pump/motor capacity
- WWRWRF expansion will not be available to receive increased flow until 2031 or later

#### South Cary Water Reclamation Facility

- SCWRF is currently permitted to 12.8 MGD
- The SCWRF permit allows expansion to a maximum of 16 MGD
- No expansion at SCWRF is anticipated within the planning window of this evaluation.

#### Conveyance

Major conveyance infrastructure related to the two WRF's includes:

- Beaver Creek Pump Station (BCPS), no expansion planned
- Beaver Creek Force Main (BCFM), no expansion planned
- West Reedy Branch Interceptor, no expansion planned
- Camp Branch Interceptor, no expansion planned

Cary has requested that Jacobs Engineering Group Inc, (Jacobs) complete an analysis of the infrastructure that will be required to convey and treat the potential flow from Holly Springs. This is anticipated to include new pump station or expansion recommendations, conveyance pipeline recommendations, high-level pipeline route mapping, and planning collaboration with municipalities.

## Project Tasks

### Project Management

Project management activities include managing the project scope, budget, schedule, safety and quality control, and coordination among Jacobs team members.

#### *Kick-Off Workshop*

The purpose of the kick-off workshop is to plan and document the steps necessary to successfully deliver the project, to create a framework for the team that establishes collaborative working relationships between Project Partner's staff (Cary and Apex), the Holly Springs staff and the Jacobs team, and to develop a process which responds completely to the municipalities' needs.

Jacobs will facilitate the kick-off workshop which will include Team chartering to obtain commitment from the team members and agreement of the project objectives. During this kick-off meeting, Jacobs will facilitate a discussion on the approach, collaborate on strategic goals and critical success factors for the project, and agree on the time frame for the work. At the kick-off workshop, Jacobs will confirm team member roles and establish communication protocols and points of contact. A summary of the workshop will be developed and distributed to attendees within a week of the workshop. Jacobs will use the goals, objectives and decisions from this workshop as guidance while executing project tasks.

An initial request for information will be submitted to Cary no later than at the kick-off meeting. The data request will be revised after the kick-off if necessary.

#### **Meetings and Workshops:**

- Kick-Off workshop (Workshop 1)
- Monthly check-in meetings for Project Management

#### **Deliverables:**

- Meeting minutes (draft and final)
- Request for Information
- Monthly status reports and invoices

#### **Assumptions:**

- Kick-off meeting will be held at WWRWRF and will be attended by up to 4 members of the Jacobs team
- Kick-off meeting will last 2 hours
- Cary will coordinate requests for information

### Task 1 – Forecast of Future Flows

Jacobs will determine the potential flows that can be conveyed from Holly Springs to WWRWRF and SCWRF over the next 20 years. Jacobs will use the flow projections already developed for Cary and Apex, and which are currently being used as the basis for the WWRWRF Master Plan. This flow data will be added to with Holly Springs flow projection. The flow data will be presented in tabular and graphical format and will be used to help determine timeframes for the potential plant expansion and facility expansion.

#### **Task 1 Workshops:**

- Workshop 2 to discuss historic/current flows and loads, and future flows and loads

#### **Task 1 Deliverables:**

- Flow projection summary

- Workshop meeting notes (high level summary)

### **Task 1 Assumptions:**

- Flow projections for Cary and Apex will be as previously provided by HDR
- Holly Springs will provide a current flow projection, including how the flow is spatially assigned
- Holly Springs will provide a copy of the current wastewater master plan
- No analysis of projection or development method is required

## **Task 2 – Wastewater Characterization**

Historical influent and effluent wastewater data such as flows, pollutant concentrations, and operational data will be collected, and Jacobs will analyze these data to develop influent water quality parameters for use in the project. At a minimum, BOD5, TSS, TP, TN, NH3, NOx, TKN will be characterized.

Data will be tabulated for each partner including potential industrial loading from Holly Springs. The tabulated data will include:

1. Domestic Only wastewater characterization
  - a. Cary
  - b. Apex
  - c. Holly Springs domestic only
2. Holly Springs domestic and industrial characterization
  - a. Cary
  - b. Apex
  - c. Holly Springs domestic only
  - d. Holly Springs industrial

Jacobs may also recommend additional sampling. The results of the sampling would enable the development of a more robust model for predictions of future performance and identification of potential upgrades.

In addition to the load projection, Jacobs will work with staff to define and document the design and performance criteria that will be used throughout the project.

### **Task 2 Workshops:**

- Workshop 3: Discuss waste characterization for historic/current conditions, and future conditions. Discussion of forecasted future loads.

### **Task 2 Deliverables:**

- Summary of wastewater characterization to be provided with workshop notes.

### **Task 2 Assumptions:**

- Influent and effluent data from the Master Plan project will be used
- Holly Springs will provide influent and effluent data for Utley Creek WRF and that data is available in electronic format (MS excel preferred)
- Holly Springs will provide industrial characterization for use in the study

## **Task 3 – Forecast of Future Loads**

Jacobs will use the results of Tasks 1 and Task 2 to prepare a forecast of future loads. Jacobs will perform a headworks analysis for SCWRF and WWRWRF for the following flow scenarios:

1. Domestic Only wastewater characterization

- a. Cary: WWRWRF, SCWRF
  - b. Apex: WWRWRF
  - c. Holly Spring domestic only: WWRWRF, SCWRF
2. Holly Springs domestic and industrial characterization
  - a. Cary: WWRWRF, SCWRF
  - b. Apex: WWRWRF
  - c. Holly Spring domestic only: WWRWRF, SCWRF
  - d. Holly Spring industrial: WWRWRF, SCWRF

Jacobs will tabulate forecasts of future loads from each partner.

### **Task 3 Workshops:**

- No specific workshop for Task 3. Workshop 3 includes discussion of forecasted future loads.

### **Task 3 Deliverables:**

- Load projection technical memorandum (draft and final in PDF format) including design and performance criteria as well as flow projection and wastewater characterization from Tasks 1 and 2.

### **Task 3 Assumptions:**

- High-level mapping of the conveyance, pump stations, and easements will be presented for preliminary planning purposes.

## **Task 4 – Wastewater Infrastructure Conceptual Plan**

### **Treatment Facilities**

Jacobs will use existing wastewater process models to assess the expansion requirement to expand WWRWRF from 18.0 MGD to 30.0 MGD. It is assumed that MBR technology will be used.

Jacobs will prepare a high-level summary of the infrastructure required for expansion and cost estimates for liquids and solids expansion for the 30.0 MGD scenario.

For SCWRF. Jacobs will use the existing wastewater process model to assess the impact on the facility of receiving flow/load from Holly Springs.

### **Conveyance Facilities**

Additional conveyance infrastructure would be required to convey Holly Springs flow to either SCWRF or WWRWRF. Jacobs will review existing infrastructure for each partner and make recommendations for opportunities to connect the systems to allow flow to either WWRWRF or SCWRF.

Jacobs will determine the required wastewater infrastructure to convey Holly Springs flow to either WWRWRF or SCWRF, and will determine preliminary sizing and route option, and will develop preliminary cost estimates.

As part of this exercise, Jacobs will assess whether any local developer pump stations can be removed as more regional facilities are added.

The findings of the task will be documented in a conceptual plan. The conceptual plan will include high-level mapping, recommendations for routing and facility upgrades, and planning level cost estimation (

### **Task 4 Workshops:**

- Workshop 4 (if needed): Discussion of any existing infrastructure concepts from Holly Springs

- Workshop 5: Discussion of draft conceptual infrastructure plan, presentation of recommendations, collection of initial reactions and comments from participants.
- Workshop 6: Discussion of final conceptual infrastructure plan, collection of comments from Partners to finalize the recommendations

#### **Task 4 Deliverables:**

- Technical memorandum (draft and final) on options and recommendations, including route mapping and cost estimates.

#### **Task 4 Assumptions:**

- Existing model and cost estimates from the WWRWRF Master Plan will be used to the 24 MGD expansion.
- Conveyance route alignments will be high-level. Detailed evaluation of existing easements, and land ownership is not required.
- Cost estimates will be Class V as defined by the Association for the Advancement of Cost Engineering International.

### **Task 4 – Environmental Permitting**

Jacobs will identify potential environmental permitting requirements needed to accomplish the routing identified in Task 4. This will incorporate the buffer permits and USACE obligations at WWRWRF.

#### **Task 4 Meetings:**

- No separate meetings required as part of this task.

#### **Task 4 Deliverables:**

- List of potential permits, incorporated in the Technical Memorandum in Task 4.

#### **Task 4 Assumptions:**

- Permit considerations will be based on information provided by the partners or readily available databases, such as state GIS records.

## **OVERALL ASSUMPTIONS**

- The results of Tasks 1 through 5 will be compiled into an overall Technical Memorandum.
- All deliverables will be electronic (PDF) format.
- The workshop shall be held at Cary or Holly Springs facilities.
- Jacobs will reasonably rely upon the accuracy, and completeness of the information/data provided by the Client or other third parties.
- Cost estimates prepared in this scope are subject to changes in both technical detail and market conditions. As such, the Engineer does not warrant that construction costs will not vary from the prepared estimates. Cost estimates will be Class V as defined by the Association for the Advancement of Cost Engineering International and intended for alternative screening purposes.
- No services included for design, bidding, or construction for any of the facilities discussed within this evaluation.

## **SCHEDULE**

This project schedule is subject to Cary staff availability for meetings and workshops. All deliverables shall be completed within the review and feedback durations noted above. It is anticipated that this project will be completed within 6 months of written notice to proceed.

**TABLE 1**  
Preliminary Schedule

## COMPENSATION

Compensation by Cary to Jacobs will be on a time and materials with a not to exceed basis, for an amount of \$xxxxxx, inclusive of all labor and expenses fees for Task PM through 5, as summarized in Table 2. Jacobs shall not incur costs in excess of this fee without advance written authorization from the Town.

**TABLE 2**  
Compensation Summary Table

Task	Hours	Expenses	Estimated Fee
Project Management Tasks/Kick-off meeting			
Task 1 - Forecast of Future Flows and Loads			
Task 2 – Wastewater Characterization			
Task 3 – Forecast of Future Loads			
Task 4 – Wastewater Collection System Conceptual Plan			
Task 5 – Environmental Permitting			
<b>Total</b>			

The labor schedule for the job classifications of Jacobs personnel required to perform shall be in accordance with the rate table below.

**TABLE 3**  
Hourly Rate Table

Jacobs Job Classification	2025 Hourly Rate*
Principal Manager / Vice President / Subject Matter Expert - 5	\$310
Technologist / Subject Matter Expert - 4	\$285
Technologist / Subject Matter Expert - 3	\$270
Technologist / Subject Matter Expert - 2	\$250
Technologist / Subject Matter Expert - 1	\$240
Sr. Project Manager / Design Manager / Construction Manager - 5	\$255
Sr. Project Manager / Design Manager / Construction Manager - 4	\$230
Project Manager / Design Manager / Construction Manager - 3	\$215
Project Manager / Design Manager / Construction Manager - 2	\$190
Project Manager / Design Manager / Construction Manager - 1	\$170

Engineer / Architect / Consultant - 7	\$215
Engineer / Architect / Consultant - 6	\$205
Engineer / Architect / Consultant - 5	\$190
Engineer / Architect / Consultant - 4	\$175
Engineer / Architect / Consultant - 3	\$150
Engineer / Architect / Consultant - 2	\$130
Engineer / Architect / Consultant - 1	\$115
Engineer / Architect / Consultant - 0	\$95
Designer / RPR - 6	\$170
Designer / RPR - 5	\$150
Designer / RPR - 4	\$135
Designer / RPR - 3	\$120
Designer / RPR - 2	\$110
Designer / RPR - 1	\$100
Designer / RPR - 0	\$85
Project Coordinator / Admin Staff - 3	\$120
Project Coordinator / Admin Staff - 2	\$105
Project Coordinator / Admin Staff - 1	\$85

*\*Labor rates will be escalated 3% per year on January 1<sup>st</sup>, starting in 2025*

The labor schedule for the job classifications of Jacobs personnel required to perform the work on a time and materials basis is provided above. The codes and classifications are a representative sample of potential categories that may be utilized in the implementation of this scope of work. Each employee shall be billed in accordance with their designated job classification.

Direct expenses incurred by Jacobs' personnel as part of this scope of work, including – but not limited to – travel, postage, mileage (at IRS allowable rates), and printing will be billed at cost. The use of subconsultants is not anticipated as part of this Task Order. However, where applicable, subconsultant invoices submitted through Jacobs will be billed to the Town with a 10% markup.