



Date: August 21, 2018

To: Thomas J. Bonfield, City Manager
Through: W. Bowman Ferguson, Deputy City Manager
From: Donald F. Greeley, Director, Water Management
Subject: South Durham Phase III Hydraulic Model – Professional Services Contract Award to Freese and Nichols, Inc.

Executive Summary

In March 2018, the Department of Water Management (DWM) issued a Request for Qualifications (RFQ) for professional engineering services to update the City's hydraulic sewer model and evaluate the sewer collection system for efficiency and capacity improvements in the Farrington sewer basin. The project includes flow monitoring, surveying 1,600 manholes, evaluating 12 lift stations, developing flow projections, creating the hydraulic model, and calibration. Once the model is calibrated, the collection system's performance will be analyzed and a report prepared that makes recommendations for capital improvement projects.

The overall result of this project will assist the DWM in ongoing efforts to renew an aging sewer system, design for future sewer needs, reduce rain-derived inflow and infiltration (RDII), and restore capacity in mains and at lift stations. The project area, shown in Attachment 1, consists of roughly 52 square miles and 40% of the City's sewer system.

The DWM received four (4) responses to the RFQ. Freese and Nichols, Inc. was selected and a scope of services for the project has been negotiated in the amount of \$1,151,830.00

Recommendation

The DWM recommends that the City Council:

1. Authorize the City Manager to execute a contract with Freese and Nichols, Inc. for professional engineering services in the amount not to exceed \$1,151,830.00 for the South Durham Phase III Hydraulic Model.
2. Establish a contingency fund for the contract in the amount of \$34,000.00.
3. Authorize the City Manager to negotiate amendments to the contract provided that the total contract cost does not exceed \$1,185,830.00.

Background

The Farrington sewer basin drains to the South Durham Water Reclamation Facility (SDWRF). The SDWRF is currently permitted to treat an average daily flow of 20 MGD. Flow is conveyed to the SDWRF through 420 miles of gravity sewer mains ranging in size from 8-inches to 48-inches in diameter (approximately 38% of the City's sewer collection system), 15 sewer lift stations, and 11 miles of force main.

The City has previously modeled three (3) of the nineteen (19) sub-basins in the Farrington sewer basin. This project will incorporate these previously modeled sub-basins into a larger basin-wide model of the Farrington sewer basin. The new basin model will include any recently constructed infrastructure reflective of City CIP projects or new development. Field investigation

and flow monitoring will be performed to calibrate the model so that it accurately reflects the conditions of the existing sanitary sewer collection system.

The model will be used to perform a study of the sewer basin and will identify areas where improvements are needed in the existing system. The study will also identify projects needed to support future expansion in the basin. A capital improvements plan will be developed, addressing the City’s sewer collection needs in the Farrington sewer basin through the year 2040.

Issues and Analysis

In March 2018 The DWM advertised a RFQ for professional engineering services to update the City’s hydraulic sewer model and evaluate the sewer collection system for efficiency and capacity improvements in the Farrington Sewer Basin. The DWM received four (4) Statements of Qualifications (SOQs):

- CDM Smith, Inc.
- Freese and Nichols, Inc.
- Hazen and Sawyer, P.C.
- McKim & Creed, Inc.

Two (2) firms, CDM Smith, Inc. and Freese and Nichols, Inc., were short listed to present their proposals to the selection committee. The selection committee was comprised of staff from the DWM and the Equal Opportunity/Equity Assurance Department. Based on their SOQ and presentation the committee selected Freese and Nichols, Inc. for the project.

Alternatives

Alternative #1 – Do not move forward with the contract and perform all work in-house. The DWM staff does not have the resources or availability to update and calibrate a hydraulic sewer model the size of the Farrington sewer basin. This would result in delayed updates to the sewer basin model. The model is utilized in making decisions regarding improvements to the sewer collection system. Without updating, the model will not reflect the Farrington basin a whole and will limit the DWM’s ability to evaluate potential improvements to the system.

Alternative #2 – Do not move forward with the project. This alternative would result in no updates to the hydraulic sewer collection system model and no future flow projections. Developing a capital improvements plan to meet future capacity requirements in the Farrington basin would be very difficult and minimally effective or accurate without the project.

Financial Impact

Funding for this project is available in the following account:

Organization Code	Object Code	Project Code	Amount
4100 P002	731004	P28HY	\$1,151,830.00
4100 P002	731900	P28HY	\$34,000.00
TOTAL			\$1,185,830.00

The project includes the following task items:

Task A	Project Kickoff, Data Review, and Project Management	\$61,807.00
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Task B	Flow Monitoring and I/I Characterization	\$295,802.00
Task C	Field Location Survey	\$231,393.00
Task D	Lift Station Testing and Assessment	\$77,398.00
Task E	Population and Wastewater Flow Projections	\$39,180.00
Task F	Wastewater System Model Development	\$97,372.00
Task G	Wastewater System Performance Analysis	\$111,592.00
Task H	CIP and Hydraulic Modeling Services Report	\$60,644.00
Task I	Hydraulic Model Training	\$6,763.00
Basic Services		\$977,830.00
Task J	Additional Services	
	On Call Modeling	\$50,000.00
	Additional Pipeline Sonar	\$14,000.00
	Additional Flow Monitoring	\$110,000.00
Additional Services		\$174,000.00
TOTAL PROJECT		\$1,151,830.00

Equal Business Opportunity Summary

The Equal Opportunity/Equity Assurance Department reviewed the proposal submitted by Freese and Nichols of Raleigh, NC and determined that they are in compliance with the Ordinance to Promote Equal Business Opportunities in City of Durham Contracting.

M/W UBE REQUIREMENTS

There were no MUBE or WUBE goals for this project, as there were no subcontracting opportunities identified by the Water Management Department. Freese and Nichols will subcontract to the following certified firm:

Firm	ID	City/State	Amount	% of Contract
Stewart Engineering, Inc.	MUBE	Raleigh, NC	\$203,450.00	16%

WORKFORCE STATISTICS

Total Workforce:

Employment Category	Total Employees	Total Males	Total Females
Project Manager	0	0	0
Professional	22	17	5
Technical	0	0	0
Clerical	3	2	1
Labor	0	0	0
Total	25	19	6

Male:

Employment Category	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project Manager	0	0	0	0	0
Professional	15	0	0	1	1
Technical	0	0	0	0	0
Clerical	2	0	0	0	0
Labor	0	0	0	0	0
Total	17	0	0	1	1

Female:

Employment Category	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project Manager	0	0	0	0	0
Professional	5	0	0	0	0
Technical	0	0	0	0	0
Clerical	0	1	0	0	0
Labor	0	0	0	0	0
Total	5	1	0	0	0