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CITY OF DURHAM | NORTH CAROLINA

Date: **July 8, 2014**

To: Thomas J. Bonfield – City Manager

Through: W. Bowman Ferguson – Deputy City Manager

From: Marvin G. Williams – Director of Public Works

Subject: Stormwater Retrofit Project with North Carolina State University for Regenerative Stormwater Conveyance. (Agenda Item #9940)

Executive Summary

North Carolina State University (NCSU) has requested that the Public Works Department partner with them on a grant project to install a stormwater retrofit on City property. Researchers at NCSU were awarded funds from the North Carolina Section 319 Nonpoint Source Pollution Control Grant Program which seeks to fund innovative stormwater control practices and restore impaired streams. The City is being requested to provide 28% of the budgeted cost of the project in the amount of $66,066. The project will involve the design, construction, and monitoring of a regenerative stormwater conveyance device on an eroded channel. The channel is located on City property in a wooded-area at the Public Works Operations Center within the Third Fork Creek watershed (see attached project map). The site is experiencing erosion and sediment issues that affect water quality downstream. A regenerative stormwater conveyance is an in-stream device that is designed to stabilize eroded banks and allow filtration of stormwater. These devices improve water quality by reducing erosion, sediment, stormwater runoff, and nutrients in areas not suitable for other stormwater control measures.

The benefits to the City include: the installation of a stormwater retrofit in the City at a reduced cost; nutrient reduction credit towards the Jordan Lake Nutrient Management Strategy; the reduction of total suspended solids as required by a Total Maximum Daily Load (TMDL) for Third Fork Creek; and, results from this project will support the Upper Neuse River Basin Association (UNRBA) Nutrient Credit project to expand the types of practices and crediting available to meet the Jordan and Falls Lake nutrient reduction goals.

Recommendation

Authorize the City Manager to execute a contract with North Carolina State University to design, construct, and monitor a regenerative stormwater conveyance device for the amount of $66,066

Background

The Stormwater and GIS Services Division is responsible for ensuring that the City of Durham is in compliance with water quality regulations and for improving the health of local waterways. NCSU has requested that the Public Works Department partner with them on a North Carolina Section 319 Nonpoint Source Pollution Control Grant Program grant project to install a stormwater retrofit on City property (see attached project map). These funds are awarded for innovative stormwater control practices and projects that restore impaired streams in order to reduce nonpoint source pollution in local watersheds.

The City agreed to support the grant project to install and monitor a regenerative stormwater conveyance device in the City. A regenerative stormwater conveyance is an in-stream device that is designed to stabilize eroded banks and allow filtration of stormwater. This is achieved through a series of cascading step pools within the unstable channel that are filled with a mix of sand, mulch, and native vegetation. These devices improve water quality by reducing erosion, sediment, stormwater runoff, and nutrients in steep areas not suitable for other stormwater control measures. Evidence from their use in the Chesapeake Bay region and other parts of North Carolina demonstrates potential for this type of retrofit to be effective for reducing sediment and nutrients from runoff in Durham's unique Triassic Basin soils. This type of soil can be problematic for traditional stormwater control measures since stormwater runoff does not easily infiltrate into the ground.

The project location is an eroded channel in a wooded-area at the Public Works Operations Center (Parcel ID – 134659). High-volume stormwater flows from the area in and around Southern Boundaries Park are causing erosion and sediment issues that affect water quality downstream in Third Fork Creek. Third Fork Creek drains into Jordan Lake and the City is responsible for meeting nutrient reductions for existing development under the Jordan Lake Nutrient Management Strategy. Third Fork Creek is subject to two TMDL requirements; a TMDL for turbidity for a segment of Third Fork Creek requires a reduction of total suspended solids (TSS); a chlorophyll-a TMDL for Jordan Lake watershed requires reductions of nitrogen and phosphorus. The City is responsible for monitoring and evaluating progress toward meeting water quality standards and for implementing projects as needed to meet those standards.

The Department of Public Works has identified $66,066, or 28% of total project costs, to support design, construction, monitoring, and reporting for the project. Additionally, the City of Durham will allow for the installation and monitoring of the device on City-owned property. This partnership and grant funding allows for the City to install a stormwater retrofit at a reduced cost. Several benefits to the City are expected from this project. The stormwater retrofit will help the City comply with the TMDL for turbidity by providing a reduction of sediment. The stormwater retrofit can be credited toward the nitrogen and phosphorus reductions required for existing development under the Jordan Lake Nutrient Management Strategy. The results will support the UNRBA Nutrient Credit project to expand the types of practices and crediting available to meet the Jordan and Falls Lake nutrient reduction goals.

Alternatives
The alternative is to deny authorization to execute the contract with North Carolina State University. The stormwater retrofit is part of the City's effort to address water quality impairments in Third Fork Creek and to meet the nitrogen and phosphorous reduction goals for the Jordan Lake Nutrient Management Strategy. Financing the full project cost without supporting grant funds would cost $232,798.

Financial Impact
The City of Durham will pay North Carolina State University $66,066 from the Public Works Capital Improvement Plan project budget (Organization code 4300L045, Object code 725000, Project code LK109).

SDBE Summary
This is a grant agreement. It was not reviewed for compliance with the Ordinance to Promote Equal Opportunities in City Contracting.

Attachments
Draft City of Durham and North Carolina State Contract
Project Map