HYDROSTRUCTURES®

November 9, 2015

EXHIBIT A

Mr. Fred Royal, PE
Town of Pittsboro
635 East Street
PO Box 759
Pittsboro, NC 27312

Re: Proposal for Temporary Flow Monitoring & Inflow and Infiltration (I/I) Analysis Town of Pittsboro, North Carolina

Dear Mr. Royal:

Hydrostructures, P.A. is pleased to provide this proposal to perform an Inflow and Infiltration Analysis on the Town of Pittsboro's sewer collection system. The findings of the analysis will identify areas with above average levels of I/I.

Both Hydrostructures and the Town hope that the results of the flow monitoring will direct study efforts and maximize I/I reduction from the repairs funded by the CWSRF loan. The I/I analysis document will serve as a "road map" to guide the Town through future sewer evaluation and repair projects for years to come.

The proposed scope of work includes site evaluation, installation, calibration, maintenance, web-based data storage, and data processing of 10 electronic flow meters and preparation of an I/I Analysis document that will identify areas with excessive levels of I/I and prioritize the meter basins for additional study.

SCOPE OF SERVICES

Flow Monitoring

We propose to install ten (10) temporary electronic flow meters at strategic points within the Town's sewer collection system. Hydrostructures carefully selected these meter locations to maximize coverage while isolating suspect areas. The flow monitoring period will be one (1) month. One (1) rain gauge will also be installed because inflow and infiltration can only be analyzed in conjunction with rainfall and rainfall intensity.

We will install Hach FL900 series flow monitors with submerged level-velocity sensors. Level-velocity meters operate using a single sensor that translates pressure into depth of flow and uses

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Doppler to measure average velocity. The meters will continuously monitor the level and velocity within the pipe and calculate the corresponding rate of flow; a data point for level, flow, and velocity will be stored every fifteen (15) minutes. Combined with the Data Delivery System (DDS), the meters will continuously submit real-time data via a wireless cellular modem to a dedicated server where it can be viewed through an internet-connected web browser. The system will also include alarms to submit event notifications via SMS texts and emails in the event any problems occur with the meters.

Hydrostructures will provide a three-man, confined space entry certified crew to assess the proposed meter sites, install the meters, calibrate them to match the existing conditions encountered in the field, perform any necessary site visits for equipment replacement and maintenance, and remove the meters at the end of the monitoring period.

Hydrostructures Engineering Department will monitor meter operation and data via DDS on a daily basis. Any equipment malfunctions, sensor fouling, or other problems will be immediately apparent from the data. Field crews will be dispatched at our earliest convenience to troubleshoot and resolve the problems.

I/I Analysis

The data will be reviewed, processed, reconstructed (as needed), and analyzed. An I/I Analysis will be provided with all findings, estimated I/I per meter basin, rankings of meter basins according to I/I severity, and recommendations for additional study and I/I reduction. Data will also be provided in digital Microsoft Excel format and graphical form.

Smoke Testing

The Town has identified additional areas of immediate concern and wishes to smoke test these areas. The Town has requested that Hydrostructures budget 2 days of smoke testing in this proposal. We expect to smoke test between 12,000 – 15,000 LF of pipe over the course of 2 days.

Smoke testing enables field inspection staff to quickly identify direct sources of inflow and rain induced infiltration (stormwater, I/I) to enter the sanitary sewer system. Using a mechanical blower, smoke is forced into the sewer collection system through a manhole. The smoke exits the system through the same points where I/I enters the system. The location, type, and severity of the defect(s) are logged for future investigation and/or rehabilitation/repair. Specific tasks include:

1. Hydrostructures' Field Superintendent will visit Emergency Services and explain the smoke testing process and typical false alarms reported by the public. Emergency Services will be notified daily during the testing.

2. Door hangers will be utilized to notify the public at least one week in advance of any smoke testing activity. Schools, hospitals, and other critical areas will be visited in person to explain the process and testing schedule (as they are affected).

3. Smoke testing will detect specific inflow points such as storm-sewer cross connections and point source inflow leaks in drainage paths or ponding areas, roof leaders, cellars, yard and area drains, fountain drains, abandoned building sewers, and faulty service connections. If any of the smoke tests indicate cross-connections with the storm sewer system, dye testing can be performed to confirm the results.

4. During each test, field personnel will walk the line section to determine the location of any area where smoke is exiting the system, revealing defects or faulty connections. Defects will be photographed and documented to show their location relative to the closest manhole or other easily identifiable feature.

5. A standard form will be used to document all applicable information regarding the test, including the location by identifying upstream and downstream manhole numbers and providing two measured distances from the smoke to permanent, recoverable objects, the personnel performing the test, description of leak including address, and area and type of surface drained by the leak. Deliverables will include; 1) smoke test defect location maps and GIS shapefile illustrating the location and type of all defects identified. 2) Smoke Test Defect Report containing information about the defect including the location, address or area, type, estimated severity, photograph showing the defect location relative to adjacent ground cover, and applicable distance offset measurements. 3) Smoke Test Defect Log containing all defects (and types) and approximate address / area locations. This information will also be stored in a Microsoft Access database for easy incorporation into the Town's GIS system.

   Recommendations to repair these defects will be included in the sewer rehabilitation project.

FEE ESTIMATE

Our proposed fees include all labor, materials, equipment, leasing fees, software and other incidental costs needed to complete the scope of services discussed above.

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Base Proposal – 10 Meters and 1 Rain Gauge for a 1 Month Metering Period

1. Flow Monitoring (10 Meters @ $2,000/meter/month)	$	20,000.00
2. Rain Gauge (1 Gauges @ $500/gauge/month)	$	500.00
3. Data Processing and I/I Analysis	$	4,500.00
TOTAL BASE FLOW MONITORING COST	$	25,000.00
4. Smoke Testing (2 days)	$	5,000.00
TOTAL BASE SERVICES (Not-to-Exceed)	**$**	**30,000.00**

***Additional Items**

5. Extend Flow Monitoring (per meter per week)	$	500.00
6. Extend Rainfall Monitoring (per rain gauge per week)	$	100.00

Hydrostructures understands that the Town may elect to relocate meters if sufficient rainfall, and resulting I/I, is observed early in the monitoring period. Hydrostructures will relocate flow monitors based on our ½ day and full day rate of **$750.00 / $1,500.00.**

Additional Items shall not be performed without written approval from the Town of Pittsboro and shall **Not-to-Exceed $10,000.000*

PROJECT SCHEDULE

Time is of the essence. The Town of Pittsboro received a time extension delaying submittal of construction drawings until February 1, 2016. Hydrostructures will begin installations immediately upon receipt of a written notice to proceed. All data and recommendations will be delivered within 15 days from the date the meters are removed.

If these terms are acceptable, please indicate by signing in the space provided below. Keep one copy for your files and return the remaining copy to us. We very much appreciate the opportunity to assist you with this project. If you have any questions or need any additional information, please give me a call at (919) 542-5002, Ext. 235#.

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Sincerely,
HYDROSTRUCTURES, P.A.

Brandon A. Sykes, PE
Engineering Division Manager

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