



Town of Pittsboro, North Carolina

Engineering Department

Memorandum

To: Mayor Bill Terry and the Town Board of Commissioners

From: Fred Royal, PE, Town Engineer

Re: Sanitary Sewer Inflow and Infiltration (I&I) Rehabilitation Project Scope increase recommendation

Date: November 23, 2015

Background and Discussion

The Town of Pittsboro published a Request for Qualifications (RFQ) for the sanitary sewer inflow and infiltration project that was based on the NC Department of Environmental Quality, Revolving Loan Fund Program application package. The town received a loan approval to move forward. We received two qualification packages from engineering firms: Hydrostructures and WK Dickson. We determined that both firms have skills and experiences that will benefit the town and both firms now have limited contracts with the town.

Hydrostructures is performing the engineering/design work. WK Dickson is performing GIS data management, quality assurance, Asset Management Plan and prioritization tool development.

The initial Sanitary Sewer Evaluation Survey (SSES) of the selected project is completed with a cost estimate of approx. \$250k for sewer rehabilitation. Please see the attached *SSES Report*. The NC Revolving Loan Fund approval is for approximately \$450k, leaving a balance of approximately \$200k. Therefore staff began pursuing additional rehabilitation/replacement needs in the sewer collection system, taking advantage of the remaining loan balance at a zero percent APR financing rate.

After town staff had a conversation with NCDEQ staff, the NCDEQ has agreed to grant approval to extend the project design/bid package timeframe for bid documents delivery to February 1, 2016. This allows sufficient time to perform the additional SSES work, beginning with and including flow monitoring at 10 locations and 2 days of additional smoke testing. The results of this information will provide the town with additional location areas to pursue video camera work and perform the expanded SSES.

Flow monitors will be placed in strategic manhole locations to assess sewer-shed inflow/infiltration response to rainfall. We will insert flow monitors for 30 days and hope to capture at-least one significant rain event. If in the unlikely event this does not occur, we can expand our monitoring time-frame up to two more weeks. This data will be used to further locate sewer areas where system defects likely are. The SSES will follow this work in those identified locations.

This memorandum is to recommend the approval of *Exhibit A (attached)*, to perform additional smoke testing and comprehensive flow monitoring. With this information, the town will be informed for a follow-up SSES contract with Hydrostructures.

In addition to the on-going rehabilitation planning and engineering described above, a *Sanitary Sewer Asset Management Plan and Prioritization Tool* is currently being developed by WK Dickson. This will be a dynamic plan and tool to assist staff with rehabilitation/replacement prioritization. Prioritization has initially been limited to the current loan application project area however, it will be expandable to the more of the town's gravity sewer collection system as funds are made available. Currently, our GIS inventory data is being imported into the database and is under review for completeness and accuracy. The Town has previously invested in this GIS inventory. Now we can put this inventory investment to proactive use.

The Asset Management Plan and Prioritization Tool will utilize GIS and GPS digital technology. Staff will require training and budgets for software and hardware will be required. We believe that investments in this plan and tool will greatly assist with reducing the costly wet weather flows at the WWTP. Once developed and implemented, it will provide the town with valuable cost and benefit information for sewer rehabilitation decision-making. It will also assist staff with developing annual Capital Improvement Program budgets for sewer rehabilitation and it will provide the town with additional points in any future grant and loan applications to the State Revolving Loan Fund program. Next fiscal year's budget recommendation will likely have elements requiring funding for this new plan and tool.

Below is a summarized list of the project purpose and elements:

- Reduce total phosphorus (TP) limits to Robeson Creek
- Reduce total nitrogen (TN) limits to Jordan Lake
- Reduce wet weather flows entering the WWTP
- Stabilize reclaimed water treatment and sales to 3M and develop expanded sales/uses
- Minimize operational costs associated with emergency procedures at the WWTP
- Develop a more efficient method to assess and carry out system rehabilitation

The project elements completed to-date are listed below:

- ✓ Revolving Loan Program approval (*requires LGC approval prior to construction*)

- ✓ Planning, cost analysis, preliminary engineering report and Environmental Documentation (ER/EID) (*submitted and approved*)
- ✓ Begin SSES:
 - a. Develop a plan to investigate, identify and repair defective sanitary sewer pipes, junctions and manholes
 - b. Smoke testing, video camera detection
 - c. Assessment of type and location of defects
 - d. Cost Estimate to perform the defect repairs
- ✓ Prioritization tool development and Asset Management Plan (*data compilation phase on-going*)

Next Steps

Due to the Revolving Loan Fund approval balance of approximately \$200k, the project scope is recommended to expand to further find and fix the town gravity sewer defects. The town now has NCDEQ approval to extend the delivery date of sewer rehabilitation design and bid package to February 1, 2016. The defects in the original project scope area have been identified and prioritized, with a cost estimate. We recommend that we expand this scope during this time.

It will be necessary to execute a series of sequential contracts to have the required work recommended by staff performed. Items 1, 2, 3 and 7 below will require additional contracts in sequence. A majority of these engineering expenses are eligible for reimbursement by the loan, once it is formally approved by NCDEQ. A budget amendment is included in this item for the expenses associated with *Exhibit A*.

Sequential contracts with Hydrostructures anticipated are listed below:

1. Execute *Exhibit A, Scope of Work* to perform additional smoke testing and install 10 flow monitors, including an analysis of the flow data captured (*see Exhibit A for scope and fee*)
2. Assess the smoke and flow data and perform an expanded SSES (*contract proposal and approval will be required*) in the areas identified
3. Based on the original project and the expanded project area, develop and deliver a Bid and Design Package, due February 1, 2016 (*contract proposal and approval will be required*)
4. DEQ review and approval of bid and design package for the construction loan
5. LGC approval of the construction loan amount
6. Bid documents and contractor selection
7. Contract for rehabilitation and repairs (*contract proposal and approval will be required*)

A fee of two percent (2%) of the construction loan amount will be required upon construction plan approval.

The schedule is to deliver the Design and Bid package to NCDEQ no later than February 1, 2016. We anticipate that the construction project will begin in June 2016.

Please see the attached project SSES report (original area) and scope of work for Task A, to expand the project scope area.

Staff Recommendations

Staff recommends that the Town of Pittsboro Board of Commissioners (BOC) authorize the Town Manager to execute a contract with Hydrostructures per *Exhibit A*, for the expanded sewer area flow monitoring and smoke testing, in the not to exceed amount of \$40,000.00 and approve the attached budget amendment.

Follow-up staff recommendations anticipated will likely include sequential contracts to include: SSES in expanded scope areas, expanded Design and Bid Package, Bid Award and Construction Administration, Construction Contract. Each of the above must be reviewed and approved by the Town BOC.