Request for Qualifications
Town of Pittsboro, NC
Wastewater Treatment Plant Expansion & Upgrade

PRELIMINARY ENGINEERING REPORT (PER)

October 13, 2014

PURPOSE AND BACKGROUND:
The Town of Pittsboro, NC requires a Preliminary Engineering Report (PER) be prepared by a qualified Engineering Firm licensed to do business in the State of North Carolina, or a Professional Engineer licensed in the State of North Carolina through the request for qualifications (RFQ) process.

The Town of Pittsboro, NC desires to obtain professional services to develop a complete PER for the purpose of evaluating alternatives and associated cost estimates to increase its wastewater treatment capacity from 0.75 MGD to 1.249 MGD at the existing wastewater treatment plant (WWTP) facility located on Small Street. This PER will also evaluate providing additional treatment capability for the Town to the full permitted capacity of 3.22 MGD.

The Town of Pittsboro WWTP is 37 years old, and has undergone several up-grades as described below. The Town has obtained a Final NPDES Permit Modification, Permit Number NC0020354 from NCDENR to discharge up to 1.249 MGD into Robeson Creek, at the existing outfall. The Town also has obtained a Conjunctive Reclaimed Water System Permit, Permit Number WQ0024838 to treat and pump up to 300,000 gallons per day of conjunctive reclaimed water. Future development in the area will necessitate additional and more advanced treatment capability. The anticipated first step of the project will include studying the existing facility, analyzing options to include expansion & upgrade, examining construction of a new WWTP at a different location, pumping to another facility, determining preliminary design elements, meeting environmental permitting and other NCDENR requirements. Upon the decision of the Town of Pittsboro, one of the alternatives will be selected. Following this selection, the town will work to secure the required funding for design, permitting, bidding, and construction.

BACKGROUND INFORMATION:
1. Location: Town of Pittsboro, Chatham County
2. Present Population: approximately 4,100
3. Number of Water Customers: 1,918
4. Number of Sanitary Sewer Customers: 1,647
5. Sanitary Sewer System (when applicable):
   a. Collection Mains: 153,014 linear feet
   b. Number of Lift Stations: 6
   c. Treatment Process: Activated sludge, extended aeration, clarification, upflow deep bed sand filtration, UV disinfection, aerobic digestion for Class B biosolids land application.

Current Condition-The Pittsboro Wastewater Treatment plant was originally constructed in 1977 followed by upgrades in 1988 and 2010. The influent channel, influent wet well, and aeration

basins #1 are from the original construction date. In 1988 an additional aeration basin, clarifiers, filters, mechanical bar screen, and UV system were added. In 2010, EQ basins and a new UV system were added. The original concrete structures are showing signs of deterioration (aeration basins, junction boxes) as well as the steel and mechanical structures (clarifiers, sweep arms, air lifts, etc.). The EQ basins and UV system are in good condition. Also, in 2011 the mechanical bar screen was rebuilt, and in 2013 a new generator installed for the entire plant emergency power needs.

Liquid Treatment Train- The raw wastewater enters the WWTP, (100% domestic), at the influent channel and is screened with a mechanical bar screen. The wastewater gravity flows to the influent wet well supplying water to the influent pumps for delivery to the plant, as well as EQ pumps for delivery to the EQ basins. The water enters the treatment train via a splitter box providing equal flow to two parallel biological and clarification units. Excess peak flow is diverted to the EQ basins for storage and returned to the plant supplementing diurnal flow. The clarified water from both units is chemically treated for phosphorus removal and gravity flows to a three cell filtration unit followed by UV disinfection. The treated effluent is then either pumped to the 3M manufacturing facility as reclaimed water, or receives post cascade aeration and discharged to Robeson Creek.

Solids Treatment Train- Biological solids are removed from the plant on a daily basis via the WAS pumps, treated with polymer, and thickened with a rotary drum thickener. The solids are stored in two aerobic digesters until land applied.

Average daily Flow (ADF)
The current flow to the WWTP through August of 2014 is at an average daily flow of .413. This is considerably higher than the 2013 average of .327 MGD due to an excessive amount of rain fall this year, and issues with inflow in the collection system. The capacity is currently 55% of permitted flow.

The Town of Pittsboro has a permitted total discharge of 3.22MGD. The current treatment plant is designed to treat up to 0.75MGD. Following a planned expansion at the current location, the plant will be permitted to treat and discharge up to 1.249MGD at outfall #001, Robeson Creek. The balance of 1.971MGD remains for future expansion and discharge to outfall #002, Haw River.
The effluent limits page(s) are found in the appendix reflecting current (0.75MGD), expansion (1.249MGD), and future (1.971MGD) permitted flow.

Calendar Year	Effluent Flow Average Daily (MGD)
2010	.366
2011	.265
2012	.273
2013	.327

Existing Studies for evaluation:

1. Environmental Impact Statement – Proposed WWTP and Discharge into Robeson Creek and Haw River, January 26, 2010
2. Wastewater Alternatives Evaluation, August 8, 2012
3. Chatham Park Planned Development District Master Plan – Approved June 9, 2014
4. 2011 Water and Sewer Planning Up-date
5. Planning Report – Sewer Collection System Master Plan, 2007
6. Wet Weather Flow Improvements Project – August 2009
7. WWTP Operational Effectiveness Analysis Report, June 2008
8. PER Addendum to: Reclaimed Water Transmission and Storage Facility, November 2006

NOTE: All Studies/Reports will be available at Town Hall. Some will be available on-line.

SCOPE OF WORK:
The Scope of Work will be as outlined in the Agreement for Engineering Services.

Interaction and input from Town staff and other stakeholders will be required during the PER process. Stakeholder interviews and/or meetings will include Town staff and elected officials, Chatham County, Town of Sanford, and the local economic development community.

Three progress meetings with Town staff and stakeholders shall be held at project kickoff, fifty percent and eighty percent of PER development. The consulting engineer will present the draft and final PER to the Town Board of Commissioners (BOC).

PROJECT SCHEDULE:
- ✓ December 8, 2014 –RFQ's due to Town
- ✓ January, 2015 – Town Selection Committee to review RFQ's and selects up to three firms for interviews
- ✓ February, 2015 – Interviews and recommendations by Selection Committee to BoC.
- ✓ March, 2015 – Contract negotiations with selected engineer (alternative if necessary), contract execution and issuance of Notice to Proceed
- ✓ September, 2015 – Draft PER presented to Town BOC
- ✓ October, 2015 – Final PER presented to Town BOC

PROJECT CONTACT PERSON(S):
Fred Royal, PE
Town Engineer
635 East Street
PO Box 759
Pittsboro, NC 27312
(919) 542-2063
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WWTP Superintendent
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PO Box 759
Pittsboro, NC 27312
(919) 542-2444
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SUBMITTAL OF QUALIFICATIONS:
Qualifications must be submitted to the Town Engineer by 5:00 p.m. on December 8, 2014, at 635 East Street or mailed to: PO Box 759, Pittsboro, NC 27312. The proposal shall be placed in a sealed envelope marked clearly, "*Response to RFQ for WWTP PER*."

EVALUATION CRITERIA:
All responses will be evaluated on the following:

1. Technical and environmental qualifications.
2. Past experience with this type and scale of project: describe up to 4 previous projects.
3. Recommendations of previous clients.
4. Experience in working with local and state permitting and funding agencies.
5. Experience in working with innovative technologies, including re-claimed water systems.
6. Experience in designing facilities that reflect modest design, standardized operational requirements, and economical cost of operation.
7. Evidence of ability to design a project appropriate for the Town of Pittsboro's size, financial strength, and ability to repay loan funds and operation and maintenance cost.

RFQ SUBMITTALS:
RFQ's shall be bound documents, double-sided, with font text size no smaller than 11. Total number of pages (not including binder cover and back page) submitted shall not exceed 25.

SELECTION PROCESS:
Out of the qualifications received by the Town of Pittsboro, it is expected that the three best will be selected for final consideration. Interviews may be conducted in order for the selection committee to ask questions of each candidate and evaluate their responses. The engineering firm under consideration will be notified of the time, date, and location of these interviews (if required).

RESPONSIBILITIES OF THE TOWN OF PITTSBORO:
1. Make available to the Engineer associated studies, reports, and other available data pertinent to the assignment. Obtain or authorize the Engineer to obtain or provide additional reports and data as required.

2. The Town of Pittsboro will bear all costs related to its responsibilities described herein.

NPDES PERMIT EFFLUENT LIMITS:

A.(1.) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS – Outfall 001

Beginning upon the effective date of this permit and lasting until expiration or expansion to 1.249 MGD, the Permittee is authorized to discharge treated wastewater from Outfall 001 to Robeson Creek. Such discharges shall be limited and monitored[11] by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow	0.75 MGD			Continuous	Recording	Influent or Effluent
Total Monthly Flow (MG)	Monitor & Report			Monthly	Recording or Calculated	Influent or Effluent
BOD, 5-day, (20°C) [2] (April 1 – October 31)	5.0 mg/L	7.5 mg/L		3/Week	Composite	Influent & Effluent
BOD, 5-day, (20°C) [2] (November 1 – March 31)	10.0 mg/L	15.0 mg/L		3/Week	Composite	Influent & Effluent
Total Suspended Solids[2]	30.0 mg/L	45.0 mg/L		3/Week	Composite	Influent & Effluent
NH_3 as N	2.0 mg/L	6.0 mg/L		3/Week	Composite	Effluent
Total Residual Chlorine[4]			17 µg/L	3/Week	Grab	Effluent
pH [5]				3/Week	Grab	Effluent
Temperature (°C)				Daily	Grab	Effluent
Temperature (°C)				3/Week	Grab	Upstream & Downstream
Dissolved Oxygen[3]				3/Week	Grab	Effluent, Upstream & Downstream
Fecal Coliform (geometric mean)	200/100 mL	400/100 mL		3/Week	Grab	Effluent, Upstream & Downstream
Conductivity				3/Week	Grab	Effluent, Upstream & Downstream
TKN	Monitor & Report (mg/L)			Weekly	Composite	Effluent
NO_3-N + NO_2-N	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Nitrogen, TN[6]	Monitor & Report (mg/L)			Weekly	Composite	Effluent
TN Load [7,8]	Monitor & Report (lb/mo) Monitor & Report (lb/yr)			Monthly Annually	Calculated	Effluent
Total Phosphorus, TP	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Phosphorus, TP [9]	2.0 mg/L Quarterly Average			Weekly	Composite	Effluent
TP Load [7,8]	Monitor & Report (lb/mo) 322 lb (Apr. 1-Oct. 31)			Monthly Seasonally	Calculated	Effluent
Total Nickel		25 µg/L	261 µg/L	Weekly	Composite	Effluent
Total Copper				Monthly	Composite	Effluent
Total Zinc				Monthly	Composite	Effluent
Chronic Toxicity [10]				Quarterly	Composite	Effluent

A.(2.) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS – Outfall 001

Beginning upon expansion above 0.75 MGD and lasting until expiration, the Permittee is authorized to discharge treated wastewater from Outfall 001 to Robeson Creek. Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow	1.249 MGD			Continuous	Recording	Influent or Effluent
Total Monthly Flow (MG)	Monitor & Report			Monthly	Recording or Calculated	Influent or Effluent
BOD, 5-day, (20°C) [2] (April 1 – October 31)	5.0 mg/L	7.5 mg/L		3/Week	Composite	Influent & Effluent
BOD, 5-day, (20°C) [2] (November 1 – March 31)	10.0 mg/L	15.0 mg/L		3/Week	Composite	Influent & Effluent
Total Suspended Solids[2]	30.0 mg/L	45.0 mg/L		3/Week	Composite	Influent & Effluent
NH_3 as N (April 1 – October 31)	1.0 mg/L	3.0 mg/L		3/Week	Composite	Effluent
NH_3 as N (November 1 – March 31)	2.0 mg/L	6.0 mg/L		3/Week	Composite	Effluent
Total Residual Chlorine[4]			17 µg/L	3/Week	Grab	Effluent
pH [5]				3/Week	Grab	Effluent
Temperature (°C)				Daily	Grab	Effluent
Temperature (°C)				3/Week	Grab	Upstream & Downstream
Dissolved Oxygen[3]				3/Week	Grab	Effluent, Upstream & Downstream
Fecal Coliform (geometric mean)	200/100 mL	400/100 mL		3/Week	Grab	Effluent, Upstream & Downstream
Conductivity				3/Week	Grab	Effluent, Upstream & Downstream
TKN	Monitor & Report (mg/L)			Weekly	Composite	Effluent
NO_3-N + NO_2-N	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Nitrogen, TN[6]	Monitor & Report (mg/L)			Weekly	Composite	Effluent
TN Load [7,8]	Monitor & Report (lb/mo) Monitor & Report (lb/yr)			Monthly Annually	Calculated	Effluent
Total Phosphorus, TP	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Phosphorus, TP [9]	2.0 mg/L Quarterly Average			Weekly	Composite	Effluent
TP Load [7,8]	Monitor & Report (lb/mo) 322 lb (Apr. 1-Oct. 31)			Monthly Seasonally	Calculated	Effluent
Total Nickel		25 µg/L	261 µg/L	Weekly	Composite	Effluent
Total Copper				Monthly	Composite	Effluent
Total Zinc				Monthly	Composite	Effluent
Chronic Toxicity [10]				Quarterly	Composite	Effluent
Effluent Pollutant Scan	Monitor and Report			Footnote11	Footnote 11	Effluent

A.(3.) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS – Outfall 002

Beginning upon expansion above 1.249 MGD and lasting until expiration, the Permittee is authorized to discharge treated wastewater from Outfall 002 to the Haw River. Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow (MGD)	1.971 MGD			Continuous	Recording	Influent or Effluent
Total Monthly Flow (MG)	Monitor & Report			Monthly	Recording or Calculated	Influent or Effluent
BOD, 5-day, (20°C) [2] (April 1 – October 31)	5.0 mg/L	7.5 mg/L		Daily	Composite	Influent & Effluent
BOD, 5-day, (20°C) [2] (November 1 – March 31)	10.0 mg/L	15.0 mg/L		Daily	Composite	Influent & Effluent
Total Suspended Solids[2]	30.0 mg/L	45.0 mg/L		Daily	Composite	Influent & Effluent
NH3 as N (April 1 – October 31)	1.0 mg/L	3.0 mg/L		3/Week	Composite	Effluent
NH3 as N (November 1 – March 31)	2.0 mg/L	6.0 mg/L		3/Week	Composite	Effluent
Total Residual Chlorine[4]			28 µg/L	3/Week	Grab	Effluent
pH [5]				Daily	Grab	Effluent
Temperature (°C)				Daily	Grab	Effluent
Temperature (°C)				3/Week	Grab	Upstream & Downstream
Dissolved Oxygen[3]				3/Week	Grab	Effluent, Upstream & Downstream
Fecal Coliform (geometric mean)	14/100 mL	25/100 mL		Daily	Grab	Effluent, Upstream & Downstream
Conductivity				3/Week	Grab	Effluent, Upstream & Downstream
TKN	Monitor & Report (mg/L)			Weekly	Composite	Effluent
NO_3-N + NO_2-N	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Nitrogen, TN[6]	Monitor & Report (mg/L)			Weekly	Composite	Effluent
TN Load [7,8]	Monitor & Report (lb/mo) Monitor & Report (lb/yr)			Monthly Annually	Calculated	Effluent
Total Phosphorus, TP	Monitor & Report (mg/L)			Weekly	Composite	Effluent
TP Load [7,8]	Monitor & Report (lb/mo) Monitor & Report (lb/yr)			Monthly Annually	Calculated	Effluent
Total Nickel				Monthly	Composite	Effluent
Total Copper				Monthly	Composite	Effluent
Total Zinc				Monthly	Composite	Effluent
Chronic Toxicity [9]				Quarterly	Composite	Effluent
Effluent Pollutant Scan	Monitor and Report			Footnote 10	Footnote 10	Effluent

END OF REQUEST FOR QUALIFICATIONS