



# Town of Pittsboro, North Carolina

Engineering Department

## Memorandum

To: Mayor and Town Board of Commissioners

From: Fred Royal, PE, Town Engineer  
Randy Heard, WWTP Superintendent

Subject: FYI Item: WWTP Energy Audit Results

Date: December 9, 2013

## Background

Town staff (Randy Heard, Adam Picket and Fred Royal) attended a small municipal systems workshop presented by the UNC School of Government in June, 2013. The purpose of the workshop was to present to small water treatment and wastewater treatment plant operators methods and practices of achieving more efficient operations, reducing costs overall and more specifically for energy use reductions. As a result, staff pursued energy audits (at no cost other than staff time) for each treatment plant, performed by Waste Reduction Partners, Triangle J Council of Governments. The audits at both facilities were performed in August, 2013.

## Discussion

The energy assessment reports have been completed and submitted to the Town. The attached Energy Assessment report is for the WWTP facility on Small Street. The Water Treatment Plant report is under staff review and will be similarly presented to the BOC in January, 2014.

Staff has completed the review of the WWTP report and have the following recommendations and comments for further energy and cost reductions:

The plant is operating at a high energy efficiency level, or below a national average study of kilowatt-hours used per million gallons treated. While this is very good news, we believe that there exists additional action items the Town can take when it is prudent. (*see italic comments*):

1. Operate the 3M pumping station on off-peak hours. *This practice was put into place after staff attended a workshop in August, 2013. We will evaluate the impact on energy costs over time.*

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2. Replace lighting as needed with up-graded T-8 & LED bulbs. *This practice is currently in place where ever lights are replaced.*
3. Two of our four positive displacement blowers 20 HP, use a 3VX belt that is a cogged type belt. The other two 40 HP blowers use 5VX belts. We use different pulley combinations for these blowers for summer and winter needs. This is inefficient and costly. These blowers utilize up to eighty percent of all energy costs at the plant. They also produce significant noise pollution and emit CO2 at levels that can be reduced. At present, the cost to change blowers for new technology, more efficient blowers would be cost prohibitive as compared to the realized energy savings in the short-term period. *However, as a part of a plant up-grade, replacing the old blowers with new, efficient blowers is the prudent thing to do at that time.*
4. Installing cost-effective variable frequency drives (VFDs) would be beneficial. *Use VFDs with all new pumps and any pumps without a VFD as a part of a future plant up-grade.*
5. Change the Duke Power service from 230 volts, 3-phase to 480 volts, 3-phase underground. This up-grade will cause the power distribution to the motors to be more even and cause less motor stress, greater use time and more efficient operations. This will save the Town operations and maintenance costs. *Up-grade the power supply as described as a part of a planned plant up-grade.*

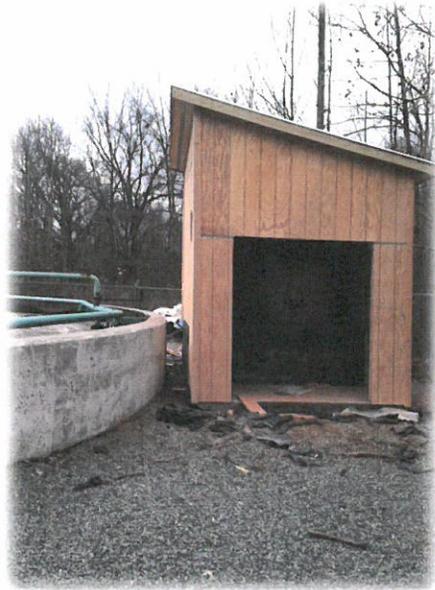
### **Summary**

The WWTP is running at a very high level of energy efficiency. Most of the recommended energy improvements should come when the plant is up-graded. WWTP staff are constantly working to make process improvements to meet regulations and to save the Town operational expenses at the plant.

The photos below are examples of the continuous plant up-grades being carried out by staff. These up-grades improve plant safety, efficiency and operations costs while meeting all regulatory standards.



*Figure 1 Old chemical storage and use shed*



*Figure 2 New chemical storage and use shed*

