



CORRECTIVE ACTION PLAN (CAP) MILESTONES

AFIN: 44-00018 NPDES Permit No. AR0022004

Huntsville WWTP

Huntsville AR 72740

June 25, 2019

McClelland Consulting Engineers (MCE) conducted a walk-through of the city of Huntsville Wastewater Treatment Plant (WWTP) alongside personnel of Huntsville Water Utilities on June 18, 2019. The city of Huntsville WWTP was built as a biological nutrient removal (BNR) system with a design capacity of 2.0 MGD. The BNR facility comprises two 2-inch bar screens and a fine screen, grit removal, anaerobic, anoxic and aerobic basins, secondary settling tank (SST), UV disinfection and cascade reaeration system.

The anaerobic basin constitutes multiple cells exhibiting both metabolic and kinetic selector characteristics. The aerobic unit is an oxidation ditch. After preliminary treatment, the influent wastewater first enters the anaerobic unit and then flows to a distribution box that also houses a recycle pump station. The pumps transport the return activated sludge (RAS) and the nitrified mixed liquor from the aerobic unit to the distribution box, where they mix with the flow from anaerobic basin. The mixed liquor then flows by gravity to anoxic basin, and then flows to the oxidation ditch. The mixed liquor from oxidation ditch flows to the SST.

The wastewater treatment plant also receives an industrial wastewater from Butterball Inc., a poultry processing facility. Because of the poultry processing wastewater, the WWTP had relatively consistent municipal wastewater characteristics with somewhat high strength carbonaceous biochemical oxygen demand (CBOD) resulting in a favorable ratio of CBOD: Nitrogen (N): Phosphorus (P). As a result, the WWTP somewhat consistently satisfied its permit limits during this period.

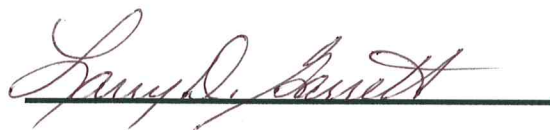
The poultry processing facility recently made significant improvements in its pretreatment program, which considerably reduced the CBOD strength of the wastewater it sends to the City WWTP. This, in turn, significantly reduced the municipal wastewater CBOD strength that resulted in unfavorable CBOD: N:P ratios. This scenario led to several excursions of its nitrite + nitrate-N permit limits. At present, the WWTP is attempting to make some operational and structural changes. The WWTP is being fed supplemental CBOD in the form of glycerin immediately after the headworks during weekends.

A review of the Discharge Monitoring Results (DMRs) from January 2017 to May 2019 was performed. Two violations of nitrate + nitrite-N were reported prior to the pretreatment improvements of the poultry processing facility that was completed at the end of August 2018. The reported values nitrite + nitrate-N were 10.6 and 10.1 mg/L-N and the permit limit was 10.0 mg/L-N. The 10.1 mg/L-N seems to be within the limits of the laboratory analytical errors, suggesting that only one violation might have truly occurred during the period the WWTP was having favorable CBOD: N: P ratio. Most of the nitrate + nitrite- N violations occurred after September 2018, when the food industry significantly reduced its wastewater strength. Thus, the paramount cause of nitrite + nitrate-nitrogen excursions can be attributed to the unfavorable ratio of CBOD:N:P that occurred when the poultry processing facility made improvements in its pretreatment program.

Based on the preceding, the following milestones that will assist in ushering the facility into compliance have been formulated.

Activity	Milestone Date
1. Reduction of air supply to the aerobic units and installation of horizontal mixers	Jun 27 to Aug 30, 2019
2. Optimization of BNR and determination of best operating CBOD: N ratio	Sep 2 to Nov 29, 2019
3. Possible addition of supplemental CBOD and determination of best point of addition within the WWTP	Oct 5 to Nov 29, 2019
4. Performance assessments of the instituted changes	Dec 2, 2019 to Feb 28, 2020
Final Compliance Deadline and Final Report	Mar 31, 2020

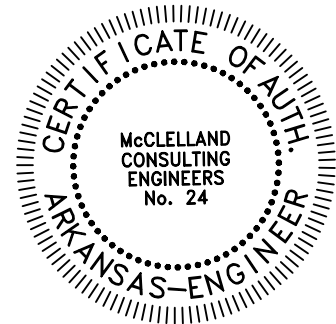
Quarterly report will be provided and would commence beginning the third quarter of 2019.



Larry Garret, Director



06-25-2019



McClelland Consulting Engineers, Inc.