



**TRE ACTIVITIES REPORT
TRUMANN WASTEWATER TREATMENT PLANT
OUTFALL 001 (AR0035602)
THIRD QUARTER 2016**

OCTOBER 31, 2016

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Prepared for:

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1.0 SUMMARY AND CONCLUSIONS

Testing conducted to date has not identified samples with sufficient toxicity to *Ceriodaphnia dubia* to justify follow-up toxicity identification evaluation (TIE) testing.

2.0 INTRODUCTION

The Trumann Wastewater Treatment Plant (TWWTP), Trumann, Arkansas, has implemented a TRE study per requirements of National Pollutant Discharge Elimination System (NPDES) Permit No. AR0035602. The TRE is being conducted according to the TRE Action Plan submitted to the Arkansas Department of Environmental Quality (ADEQ) on January 13, 2016, and approved by ADEQ on January 15, 2016. This document provides the results of TRE activities performed during the third quarter of 2016.

3.0 TRE ACTIVITIES TO DATE

3.1 Site Visit

On February 12, 2015, FTN Associates, Ltd. staff met with TWWTP operations staff to become more familiar with the available facilities and plant operations. The onsite laboratory is clean, well organized, and intended for routine measurement of dissolved oxygen, pH, total suspended solids (TSS), fecal coliform bacteria, and 5-day biochemical oxygen demand (BOD5). Inflow and discharge locations were observed and the possible impact of industrial/commercial inputs to the wastewater collection system was discussed. The industrial activity contributing non-domestic wastewater appears to be minor. However, the magnitude, frequency, duration, and makeup of the input are unknown and should be further reviewed.

The treatment system consists solely of diffused aeration and settling with no chemical additions. The facility has a large surface area of aerated ponds followed by a zone of sedimentation in the final pond. The air is provided by large blowers located in a building adjacent to the ponds. Air is transported from the blower house to the ponds via a system of piping. The treatment facility is surrounded by an area of intensive agriculture. Accordingly, the

potential for introduction of airborne contaminants such as pesticides and defoliants was discussed.

3.2 Routine Biomonitoring and Effluent Screening

Results of quarterly biomonitoring WET testing and effluent screening tests conducted during January through September 2016 are provided in Table 1.

3.3 Findings to Date

Statistically significant sub-lethal effects on *C. dubia* were noted in the routine biomonitoring test conducted on samples collected May 15 through 20, 2016 and on the screening test conducted on samples collected June 26 through 27, 2016.

Follow-up toxicity identification evaluation (TIE) procedures were not conducted on the May sample because it was the opinion of the testing laboratory (American Interplex Corp.; AIC) that the effects were due to foreign organisms present in the sample that interfered with the reproduction of the test organisms. Although the AIC test protocol includes filtering of samples through a #60 mesh screen per the USEPA (2002), the foreign organisms were small enough to pass through the #60 mesh screen and were apparently able to grow to larger sizes in the test cups. A follow-up test on a sample filtered through a 1 µm pore-size filter showed no lethal or sublethal toxicity but the test was inconclusive because the laboratory did not include an unfiltered baseline for comparison.

3.4 Third Quarter 2016 Findings

Follow-up tests were not conducted on the samples collected September 25 through 30 or on July 25-26 because there was not sufficient toxicity observed to justify further testing.

4.0 CONCLUSIONS

Testing conducted during the third quarter of 2016 did not identify samples with sufficient toxicity to *C. dubia* to justify follow-up TIE testing. TRE activities will include

continued screening of the effluent in an attempt to capture episodes of toxicity for further evaluation.

Table 1 Summary of chronic toxicity tests using *C. dubia* conducted on Outfall 001 samples collected during 2016.

% Effluent	Percent Survival (N = 10) on Sampling Date						
	2/14/2016 ¹	3/27/2016	5/15/2016	6/12/2016	6/26/2016	7/25/2016	9/25/2016
	2/19/2016 ²	3/28/2016	5/20/2016	6/17/2016	6/27/2016	7/26/2016	9/30/2016
Control	100	100	100	100	100	100	100
4	100	-	100	100		100	90
5	100	-	100	90		100	100
7	100	-	90	100		100	100
9	1400	100	90	90	90	100	100
12	100	-	70	100		88.9	90
100	-	100			100		
% Effluent	Mean Number of Neonates per Female						
	2/14/2016	3/27/2016	5/15/2016	6/12/2016	6/26/2016	7/25/2016	9/25/2016
	2/19/2016	3/28/2016	5/20/2016	6/17/2016	6/27/2016	7/26/2016	9/30/2016
Control	26.4	22.4	24.7	25.6	25.9	23.8	28.4
4	25.9	-	26.9	27.9		25.1	24.1
5	25.7	-	27.4	22.8		20.8	25.2
7	25.7	-	17.4	26.2		23.3	24.6
9	27.8	26.4	15.5 *	24.4	21.9	22.7	26.4
12	26.4	-	11.5 *	23.3		19.8	28.4
100	-	19.2			20.2 *		

¹ - First day of sampling period; ² - Last day of sampling period; *Statistically less than control (P < 0.05)

5.0 LITERATURE CITED

EPA. 2002. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. Fourth edition. EPA-821-R-02-013. Office of Water. Washington, DC.