

# BATESVILLE WASTEWATER TREATMENT PLANT

500 River Bank Road  
Batesville, Arkansas 72501  
Office (870) 698-2442 Fax (870) 698-2443  
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## **Introduction:**

Objective: To test for toxicity in the effluent discharge.

NPES Permit Number: AR0020702

Testing Requirements: Acute 48-hour static renewal definitive toxicity test using (*Daphnia pulex*) & (*Pimephales promelas*)

Plant Location: River Bank Road, Batesville, Arkansas  
Contract Lab:

American Interplex Corporation  
8600 Kanis Road  
Little Rock, Arkansas 72204-2322  
(501) 224-5060

Tests Conducted: January 13, 2014 through January 15, 2014.

## **Plant Operations:**

Type of Plant: Aerated Lagoon System followed by sand filters and chlorination.

Operating Schedule: 24 hours per day.

Raw and Final Products: Wastewater (domestic & industrial).

Schematic: File

Discharge Flows: January 05, 2014 5.258 MGD: January 13, 2014 and 5.258 MGD

Flow Rate Receiving Stream: Available U. S. Army Corp. of Engineers

## **Effluent and Dilution Water:**

Effluent:

- a. Source: Plant Discharge
- b. Collection (enclosed chain of custody)
- c. Sample collection: 24 hour composite flow proportion
- d. Chemical characteristics: (enclosed summary forms)

January 22, 2014

Test Results of  
First Quarter  
Acute 48 hour Renewal  
Biomonitoring Testing  
for  
Plant Effluent  
Batesville, AR

Control No. 174363-1

Prepared for:

Mr. Eugene Townsley  
Batesville Wastewater Treatment Plant  
500 River Bank Road  
Batesville, AR 72501

Prepared by:

AMERICAN INTERPLEX CORPORATION  
8600 Kanis Road  
Little Rock, AR 72204-2322



Batesville Wastewater Treatment Plant  
ATTN: Mr. Eugene Townsley  
500 River Bank Road  
Batesville, AR 72501

Re: Acute 48 hour Renewal Biomonitoring utilizing *Pimephales promelas* (Fathead Minnow) and *Daphnia pulex*  
Plant Effluent - Batesville, AR  
Client NPDES Permit No. NPDES AR0020702 AFIN 32-00044

Dear Mr. Eugene Townsley:

This report is the analytical results and supporting information for the samples submitted to American Interplex Corporation (AIC). The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the appropriate laboratory director or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" EPA-821-R-02-012, Fifth Edition, October 2002. Test results are summarized below:

Acute *Pimephales promelas* (Fathead Minnow) Survival Test: The No Observable Effects Concentration (NOEC) for survival was 25% effluent, and the LC-50 value was >25% effluent; the sample, therefore, **PASSED** at low flow of 19% effluent for lethal effects.

Acute *Daphnia pulex* Survival Test: The No Observable Effects Concentration (NOEC) for survival was 25% effluent, and the LC-50 value was >25% effluent; the sample, therefore, **PASSED** at low flow of 19% effluent for lethal effects.

AMERICAN INTERPLEX CORPORATION

John Overbey  
Laboratory Director

A handwritten signature in black ink is positioned above a horizontal line. Below the line, the name 'John Overbey' and title 'Laboratory Director' are printed in a standard font.

PDF cc: Batesville Wastewater Treatment Plant  
ATTN: Mr. Eugene Townsley  
wwsuper@cityofbatesville.com

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I. Introduction and Summary

Biomonitoring testing of 48-hour renewal definitive toxicity tests using *Daphnia pulex* and *Pimephales promelas* were performed.

The *Daphnia pulex* test was conducted from January 13, 2014 at 1500 to January 15, 2014 at 1520.

The *Pimephales promelas* test was conducted from January 13, 2014 at 1344 to January 15, 2014 at 1240.

The tests were performed in accordance with EPA-821-R-02-012. Statistical analyses were performed on the observed data.

The tests were conducted in temperature and light cycle controlled environmental chamber. The test temperature was 25 degrees C +/- 1 degree for the *Daphnia pulex* and 25 degrees C +/- 1 degree for the *Pimephales promelas*.

II. Control Acceptance Criteria

ORGANISM	CRITERIA	RESULTS	PASS/FAIL
<i>Daphnia pulex</i>	Control Survival >= 90%	100	PASS
<i>Pimephales promelas</i>	Control Survival >= 90%	100	PASS

III. Outlined Report

A. Introduction

1. Permit Number: NPDES AR0020702 AFIN 32-00044
2. Test Requirements: 48-hour renewal definitive toxicity test using:  
*Daphnia pulex*  
*Pimephales promelas*

B. Source of Effluent/Dilution Water

1. Effluent Samples:

- a. Sampling Point: Plant Effluent

January 13 to January 14

b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	9.5	7.1
pH (standard units)	7.8	8.0
Alkalinity (mg/l as CaCO <sub>3</sub> )	140	140
Hardness (mg/l as CaCO <sub>3</sub> )	130	130
Conductivity (umhos/cm)	600	640
Residual Chlorine (mg/l)	0.11	0.070

2. Dilution Water Samples: Synthetic Moderately Hard Water #4054  
 a. Dates Collected/Prepared: January 8 through January 22, 2014  
 b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	8.4	7.9
pH (standard units)	7.5	7.8
Alkalinity (mg/l as CaCO <sub>3</sub> )	61	61
Hardness (mg/l as CaCO <sub>3</sub> )	85	89
Conductivity (umhos/cm)	290	340
Residual Chlorine (mg/l)	<0.05	<0.05

C. Test Methods

1. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (Fifth Ed.), EPA-821-R-02-012, 48-hour acute definitive test.

a. Endpoints:

Death; the criteria employed to establish death are:

- i. No movement
- ii. No reaction to gentle prodding

Criteria	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Type and Volume of Test Chamber	500 ml disposable beaker	30 ml disposable beaker
Volume of Sample	250 ml	25 ml
Organisms per chamber	8	8
Replicates per dilution	5	5
Test Temperature	25 deg. C	25 deg. C
Test Initiated	January 13, 2014 at 1344	January 13, 2014 at 1500
Test Terminated	January 15, 2014 at 1240	January 15, 2014 at 1520
Feeding	None required	None required
Age of Test Organisms	7 days	<24 hours

2. Chemical Methods Employed:

Analysis	Method
Dissolved oxygen (mg/l)	SM 4500-O C
pH (standard units)	SM 4500-H+ B
Alkalinity (mg/l as CaCO <sub>3</sub> )	SM 2320 B
Hardness (mg/l as CaCO <sub>3</sub> )	EPA 200.7
Conductivity (umhos/cm)	EPA 120.1
Residual Chlorine (mg/l)	SM 4500-CL- F
Temperature (deg.C)	EPA 170.1

D. Test Organisms

1. Scientific Name

*Daphnia pulex*

*Pimephales promelas*

2. Acclimation of test organisms:

*Daphnia pulex*

Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.

*Pimephales promelas*

Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.

E. Quality Assurance

1. Toxicity Tests

a. Reference Toxicant: Sodium Chloride

b. Date of test:

*Daphnia pulex*: December 17, 2013 at 1425 to December 19, 2013 at 1530

*Pimephales promelas*: December 17, 2013 at 1555 to December 19, 2013 at 1420

c. Synthetic moderately hard dilution water used

Organism	LC50	Warning Limits
<i>Daphnia pulex</i>	1.88 g/l	1.31-2.55 g/l
<i>Pimephales promelas</i>	7.92 g/l	6.26-8.05 g/l

2. Chemical and Physical Analyses

Analysis	% Recovery	Relative % Difference
Alkalinity	NA	1.55
Hardness	102	1.76
pH	100	0.270
Conductivity	104	7.46

F. Organism History

*Daphnia pulex*

Date: January 13, 2014 at 1500

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

*Pimephales promelas* (Fathead minnow)

Date: January 13, 2014 at 1344

Age: 7 days

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

IV. Results Summary

*Daphnia pulex* and *Pimephales promelas* are exposed in a static renewal system to different concentrations of effluent and dilution water. Effluent dilutions for this test were 8%, 11%, 14%, 19%, 25%. The low-flow concentration was 19%. Test results were based on survival.

*Daphnia pulex*

The *Daphnia pulex* test was conducted from January 13, 2014 at 1500 to January 15, 2014 at 1520.

Statistical analyses:  
NOEC = 25%  
LC50 = >25%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
8%	100	100
11%	100	100
14%	100	100
19%	100	100
25%	100	100

*Pimephales promelas*

The *Pimephales promelas* test was conducted from January 13, 2014 at 1344 to January 15, 2014 at 1240.

Statistical analyses:  
NOEC = 25%  
LC50 = >25%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
8%	100	100
11%	100	100
14%	100	100
19%	100	100
25%	100	100



Appendix: A1

*Daphnia pulex*  
Survival Data

Number of organisms per chamber: 8  
Volume of test chamber: 30 ml

Age of organisms: <24 hours  
Volume of test solution: 25 ml

Effluent Concentration	Number of Survivors		% Survival	CV %
	24 Hours	48 Hours		
Control	rep. A	8	100	0.00
	rep. B	8		
	rep. C	8		
	rep. D	8		
	rep. E	8		
8%	rep. A	8	100	0.00
	rep. B	8		
	rep. C	8		
	rep. D	8		
	rep. E	8		
11%	rep. A	8	100	0.00
	rep. B	8		
	rep. C	8		
	rep. D	8		
	rep. E	8		
14%	rep. A	8	100	0.00
	rep. B	8		
	rep. C	8		
	rep. D	8		
	rep. E	8		
19%	rep. A	8	100	0.00
	rep. B	8		
	rep. C	8		
	rep. D	8		
	rep. E	8		
25%	rep. A	8	100	0.00
	rep. B	8		
	rep. C	8		
	rep. D	8		
	rep. E	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix: A1

*Pimephales promelas*  
Survival Data

Number of organisms per chamber: 8  
Volume of test chamber: 500 ml

Age of organisms: 7 days  
Volume of test solution: 250 ml

Effluent Concentration		Number of Survivors		% Survival	CV %
		24 Hours	48 Hours		
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
8%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
11%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
14%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
19%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
25%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix A2: Statistics

*Daphnia pulex*

Transformation of Data			Transform: Arc Sin(Square Root(Y))	
Group	Identification	Rep	Value	Transformed
1	Control	1	1.00000	1.39310
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	8%	1	1.00000	1.39310
2	8%	2	1.00000	1.39310
2	8%	3	1.00000	1.39310
2	8%	4	1.00000	1.39310
2	8%	5	1.00000	1.39310
3	11%	1	1.00000	1.39310
3	11%	2	1.00000	1.39310
3	11%	3	1.00000	1.39310
3	11%	4	1.00000	1.39310
3	11%	5	1.00000	1.39310
4	14%	1	1.00000	1.39310
4	14%	2	1.00000	1.39310
4	14%	3	1.00000	1.39310
4	14%	4	1.00000	1.39310
4	14%	5	1.00000	1.39310
5	19%	1	1.00000	1.39310
5	19%	2	1.00000	1.39310
5	19%	3	1.00000	1.39310
5	19%	4	1.00000	1.39310
5	19%	5	1.00000	1.39310
6	25%	1	1.00000	1.39310
6	25%	2	1.00000	1.39310
6	25%	3	1.00000	1.39310
6	25%	4	1.00000	1.39310
6	25%	5	1.00000	1.39310

Appendix A2: Statistics

*Daphnia pulex*

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
D = 0		
W = 0		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	
Data FAIL normality test (alpha = 0.01).		

Steel's Many-One Rank Test				Transform: Arc Sin(Square Root(Y))	
Ho: Control < Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	8%	27.50	16.00	5.00	
3	11%	27.50	16.00	5.00	
4	14%	27.50	16.00	5.00	
5	19%	27.50	16.00	5.00	
6	25%	27.50	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

*Pimephales promelas*

Transformation of Data			Transform: Arc Sin(Square Root(Y))	
Group	Identification	Rep	Value	Transformed
1	Control	1	1.00000	1.39310
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	8%	1	1.00000	1.39310
2	8%	2	1.00000	1.39310
2	8%	3	1.00000	1.39310
2	8%	4	1.00000	1.39310
2	8%	5	1.00000	1.39310
3	11%	1	1.00000	1.39310
3	11%	2	1.00000	1.39310
3	11%	3	1.00000	1.39310
3	11%	4	1.00000	1.39310
3	11%	5	1.00000	1.39310
4	14%	1	1.00000	1.39310
4	14%	2	1.00000	1.39310
4	14%	3	1.00000	1.39310
4	14%	4	1.00000	1.39310
4	14%	5	1.00000	1.39310
5	19%	1	1.00000	1.39310
5	19%	2	1.00000	1.39310
5	19%	3	1.00000	1.39310
5	19%	4	1.00000	1.39310
5	19%	5	1.00000	1.39310
6	25%	1	1.00000	1.39310
6	25%	2	1.00000	1.39310
6	25%	3	1.00000	1.39310
6	25%	4	1.00000	1.39310
6	25%	5	1.00000	1.39310

Appendix A2: Statistics

*Pimephales promelas*

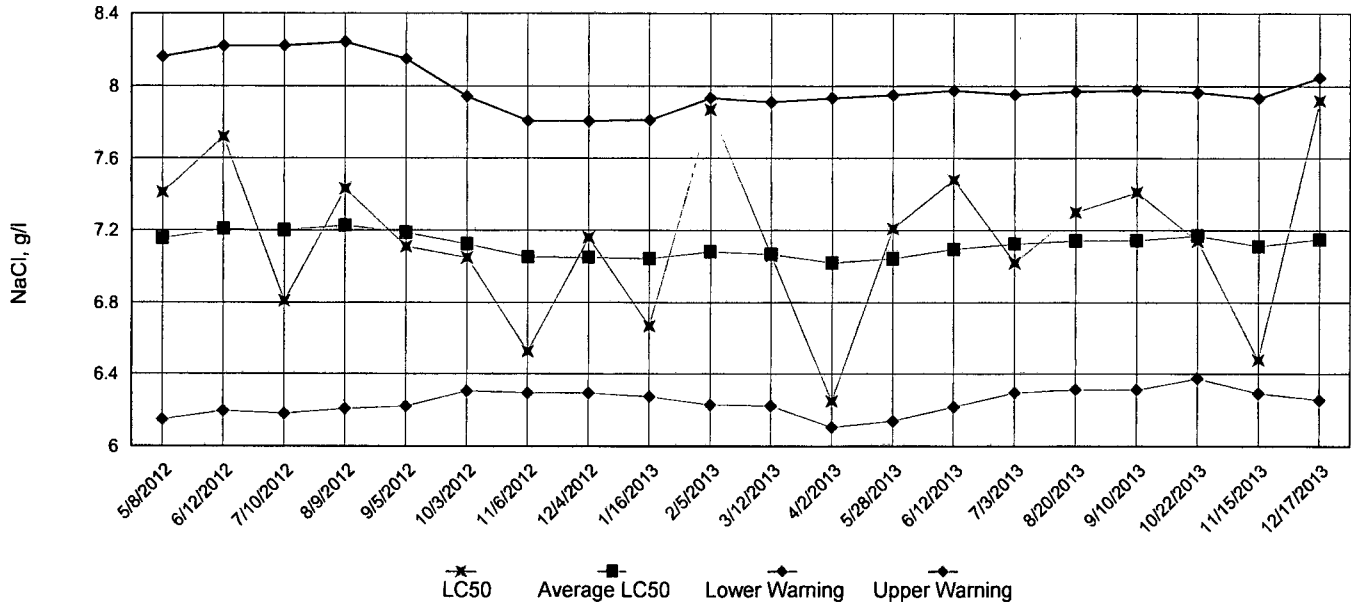
Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
<p>D = 0 W = 0 Critical W = 0.9 (alpha = 0.01, N = 30) Critical W = 0.927 (alpha = 0.05, N = 30)</p> <p>Data FAIL normality test (alpha = 0.01).</p>		

Steel's Many-One Rank Test				Transform: Arc Sin(Square Root(Y))	
Ho: Control < Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	8%	27.50	16.00	5.00	
3	11%	27.50	16.00	5.00	
4	14%	27.50	16.00	5.00	
5	19%	27.50	16.00	5.00	
6	25%	27.50	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix: A3

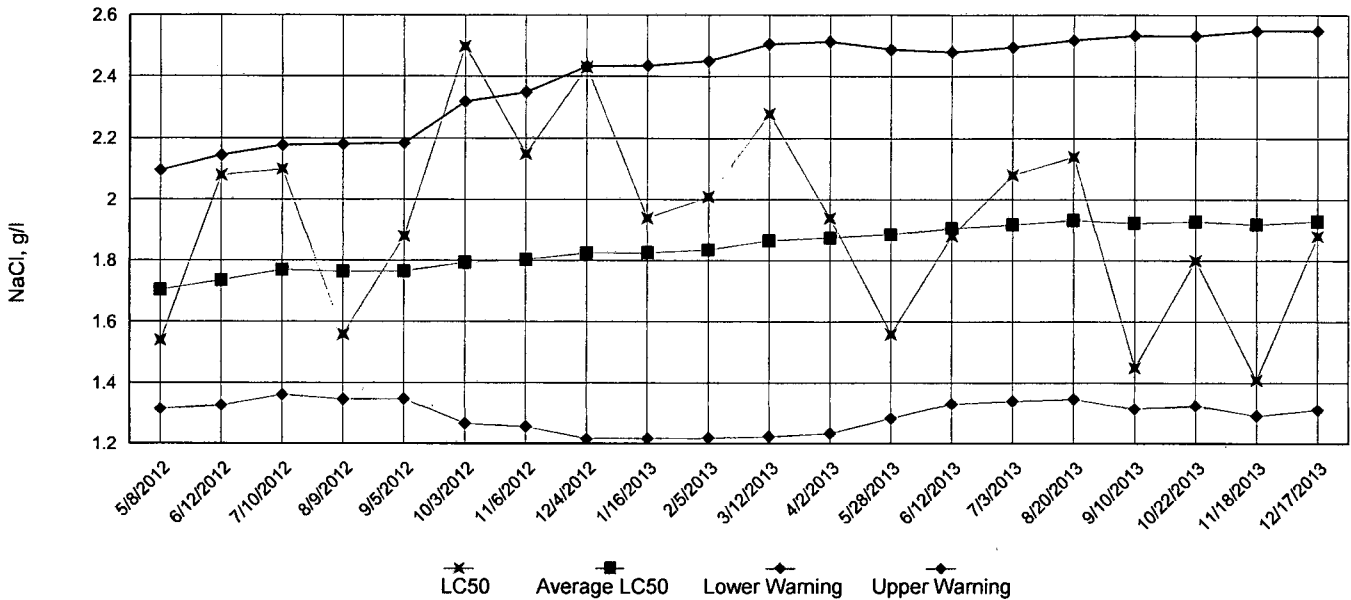
Acute Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data



Acute Reference Toxicant, *Daphnia pulex*

LC50 Survival Data



Appendix: A4

Chemical Data for  
*Pimephales promelas*  
and  
*Daphnia pulex*

Day 1		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	8.4	8.4	8.5	8.3	8.5	8.5
DO, mg/l	Final 1*	7.9	7.8	7.9	8.1	8.1	7.8
DO, mg/l	Final 2*	7.8	7.3	7.3	7.2	7.1	7.2
pH, su	Initial	7.5	7.6	7.6	7.7	7.7	7.7
pH, su	Final 1*	7.8	7.8	7.8	7.9	7.9	7.9
pH, su	Final 2*	7.8	7.7	7.7	7.7	7.8	7.8
Alkalinity, mg/l		61	NA	NA	NA	77	NA
Hardness, mg/l		85	NA	NA	NA	95	NA
Conductivity, umho/cm		290	310	320	330	350	370
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	7.9	7.4	7.5	7.4	7.1	7.2
DO, mg/l	Final 1*	8.1	7.9	7.8	8.0	7.4	7.6
DO, mg/l	Final 2*	8.1	7.7	7.9	7.7	7.9	7.7
pH, su	Initial	7.8	7.7	7.7	7.7	7.8	7.8
pH, su	Final 1*	7.8	7.8	7.8	7.8	7.8	7.9
pH, su	Final 2*	8.0	7.9	8.0	8.0	8.0	8.1
Alkalinity, mg/l		61	NA	NA	NA	78	NA
Hardness, mg/l		89	NA	NA	NA	94	NA
Conductivity, umho/cm		340	350	370	370	390	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

\*1 data from *Pimephales promelas*

\*2 data from *Daphnia pulex*



Appendix: B

*Daphnia pulex* Survival Data

Permittee:	Batesville Wastewater Treatment Plant	Critical Dilution:	19%
NPDES No:	NPDES AR0020702 AFIN 32-00044	Sample Source:	Plant Effluent
Contact:	Mr. Eugene Townsley	Species Age:	<24 hours
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 298, 304, 307
Dilution Water:	Synthetic Moderately Hard Water #4054		
Test Initiated:	January 13, 2014 at 1500		
Test Terminated:	January 15, 2014 at 1520		

PERCENT SURVIVAL

24 hours	Control	8%	11%	14%	19%	25%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	8%	11%	14%	19%	25%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different ( $p=0.05$ ) than the control survival for the % effluent corresponding to:

a) Low Flow 19%:	<u>          </u>	Yes	<u>  X  </u>	No
b) 1/2 Low Flow (NA):	<u>          </u>	Yes	<u>          </u>	No

If you answered No to 1a) enter [0], otherwise enter [1]:           0          

Enter response to item 2 on the DMR Form, parameter #TEM3D.

NOEL *Daphnia pulex* lethality #TOM3D:           25%          

Coefficient of variation for *Daphnia pulex* survival #TQM3D:           0          

Enter percent effluent corresponding to LC-50 below.

LC-50 effluent: >25%  
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on December 17, 2013 at 1425 to December 19, 2013 at 1530:

LC-50 effluent: 1.88 g/l  
Warning Limits: 1.31 to 2.55 g/l

Appendix: B

*Daphnia pulex* Chemical Parameters Chart

Permitee:	Batesville Wastewater Treatment Plant	Critical Dilution:	19%
NPDES No:	NPDES AR0020702 AFIN 32-00044	Sample Source:	Plant Effluent
Contact:	Mr. Eugene Townsley	Species Age:	<24 hours
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 298, 304, 307
Dilution Water:	Synthetic Moderately Hard Water #4054		
Test Initiated:	January 13, 2014 at 1500		
Test Terminated:	January 15, 2014 at 1520		

Day 1		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	8.4	8.4	8.5	8.3	8.5	8.5
DO, mg/l	Final	7.8	7.3	7.3	7.2	7.1	7.2
pH, su	Initial	7.5	7.6	7.6	7.7	7.7	7.7
pH, su	Final	7.8	7.7	7.7	7.7	7.8	7.8
Alkalinity, mg/l		61	NA	NA	NA	77	NA
Hardness, mg/l		85	NA	NA	NA	95	NA
Conductivity, umho/cm		290	310	320	330	350	370
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	7.9	7.4	7.5	7.4	7.1	7.2
DO, mg/l	Final	8.1	7.7	7.9	7.7	7.9	7.7
pH, su	Initial	7.8	7.7	7.7	7.7	7.8	7.8
pH, su	Final	8.0	7.9	8.0	8.0	8.0	8.1
Alkalinity, mg/l		61	NA	NA	NA	78	NA
Hardness, mg/l		89	NA	NA	NA	94	NA
Conductivity, umho/cm		340	350	370	370	390	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Appendix: B

*Pimephales promelas* Survival Data

Permittee:	Batesville Wastewater Treatment Plant	Critical Dilution:	19%
NPDES No:	NPDES AR0020702 AFIN 32-00044	Sample Source:	Plant Effluent
Contact:	Mr. Eugene Townsley	Species Age:	7 days
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 298, 304, 307
Dilution Water:	Synthetic Moderately Hard Water #4054		
Test Initiated:	January 13, 2014 at 1344		
Test Terminated:	January 15, 2014 at 1240		

PERCENT SURVIVAL

24 hours	Control	8%	11%	14%	19%	25%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	8%	11%	14%	19%	25%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different ( $p=0.05$ ) than the control survival for the % effluent corresponding to:

a) Low Flow 19%:	_____	Yes	_____ X	No
b) 1/2 Low Flow (NA):	_____	Yes	_____	No

If you answered No to 1a) enter [0], otherwise enter [1]: 0

Enter response to item 2 on the DMR Form, parameter #TEM6C.

NOEL *Pimephales promelas* lethality #TOM6C: 25%

Coefficient of variation for *Pimephales promelas* survival #TQM6C: 0

Enter percent effluent corresponding to LC-50 below.

LC-50 effluent: >25%  
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on December 17, 2013 at 1555 to December 19, 2013 at 1420:

LC-50 effluent: 7.92 g/l  
Warning Limits: 6.26 to 8.05 g/l

Appendix: B

*Pimephales promelas* Chemical Parameters Chart

Permittee:	Batesville Wastewater Treatment Plant	Critical Dilution:	19%
NPDES No:	NPDES AR0020702 AFIN 32-00044	Sample Source:	Plant Effluent
Contact:	Mr. Eugene Townsley	Species Age:	7 days
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 298, 304, 307
Dilution Water:	Synthetic Moderately Hard Water #4054		
Test Initiated:	January 13, 2014 at 1344		
Test Terminated:	January 15, 2014 at 1240		

Day 1		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	8.4	8.4	8.5	8.3	8.5	8.5
DO, mg/l	Final	7.9	7.8	7.9	8.1	8.1	7.8
pH, su	Initial	7.5	7.6	7.6	7.7	7.7	7.7
pH, su	Final	7.8	7.8	7.8	7.9	7.9	7.9
Alkalinity, mg/l		61	NA	NA	NA	77	NA
Hardness, mg/l		85	NA	NA	NA	95	NA
Conductivity, umho/cm		290	310	320	330	350	370
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	8%	11%	14%	19%	25%
DO, mg/l	Initial	7.9	7.4	7.5	7.4	7.1	7.2
DO, mg/l	Final	8.1	7.9	7.8	8.0	7.4	7.6
pH, su	Initial	7.8	7.7	7.7	7.7	7.8	7.8
pH, su	Final	7.8	7.8	7.8	7.8	7.8	7.9
Alkalinity, mg/l		61	NA	NA	NA	78	NA
Hardness, mg/l		89	NA	NA	NA	94	NA
Conductivity, umho/cm		340	350	370	370	390	410
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

### Batesville Wastewater Treatment Plant Chain of Custody

Sampled By: Michael McDaniel

Date Sampled: 1-12-14

①

Sample ID	Date/Time Collected	Temp	Grab pH	Time/pH Analyzed	Type G C	P GL	Analysis Required	Preserve	NC
Plant Effluent	1-12-14 / 2400				C	P	Acute Biomonitoring	4°C	2

**COMMENT:**

Effluent Flow: 5.258

Acute Biomonitoring

**Relinquished By:**

**Date/Time:**

*[Signature]*

1-13-14 / 0700

**Received By:**

**Date/Time:**

*[Signature]*

1-13-14 / 0700

**Relinquished By:**

**Date/Time:**

*[Signature]*

1-13-14 / 0937

**Received By:**

**Date/Time:**

*[Signature]*

1/12/14 0937

**COMMENT:**

0.9°C

174363

## Batesville Wastewater Treatment Plant Chain of Custody

Sampled By: Michael McDaniel

Date Sampled: 1-13-14

(2)

Sample ID	Date/Time Collected	Temp	Grab pH	Time/pH Analyzed	Type		P GL	Analysis Required	Preserve	NC
					G	C				
Plant Effluent	1-13-14 / 2400					C	P	Acute Biomonitoring	4°C	2

**COMMENT:**

Effluent Flow: 5.258

Acute Biomonitoring

**Relinquished By:**

[Signature]

**Date/Time:**

1-14-14 / 0400

**Received By:**

[Signature]

**Date/Time:**

1-14-14 / 0700

**Relinquished By:**

[Signature]

**Date/Time:**

1-14-14 / 0932

**Received By:**

[Signature]

**Date/Time:**

1/14/14 0932

**COMMENT:**

0.3°C

Batesville Wastewater Treatment Plant

500 River

Batesville, AR 72505



ADEQ  
Water Division-Enforcement Branch  
5301 North Shore Drive  
North Little Rock, AR 72118-5317