

Nashville Public Works

426 North Main, Nashville, AR 71852
PH (870) 845-4015, FAX (870) 845-7409

May 12, 2014

STATE OF ARKANSAS
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Attn: Mr. Allen Anderson
Administrative Assistant, NPDES Enforcement

Re: NPDES Permit #AR0021776, AFIN # 31-00036
Bio-monitoring Results First Quarter - 2014

Dear Mr. Anderson:

Please find enclosed our results for the first quarter of 2014. Results have indicated that we passed both tests for fathead minnow. Due to the synthetic water control failure to meet the acceptance requirements of 15 or more neonates per surviving test, the test was invalid and we had to retest. Retest has indicating passing for both lethal and sub-lethal tests for the ceriodaphnia-dubia for our first quarter.

If you have any questions of concern, please contact me at 870-845-4015.

Sincerely,



Larry Dunaway
Public Works Director

cc: Pretreatment File 2014

March 7, 2014

Test Results of
First Quarter
Chronic
Biomonitoring Testing
for
Outfall 001

Control No. 175739-1

Prepared for:

Mr. Ed Carlyle
City of Nashville
426 North Main
Nashville, AR 71852

Prepared by:

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



March 7, 2014
Control No. 175739-1
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City of Nashville
ATTN: Mr. Ed Carlyle
426 North Main
Nashville, AR 71852

Re: Chronic utilizing *Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
Outfall 001
NPDES Permit No. NPDES AR0021776 AFIN 31-00036

Dear Mr. Ed Carlyle:

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 laboratory director or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" EPA-821-R-02-013, Fourth Edition, October 2002. Test results are summarized below:

Method 1000.0 Chronic *Pimephales promelas* (Fathead minnow) Survival and Growth Test: The No Observable Effects Concentration (NOEC) for survival occurred at 97 % effluent, which is above the critical dilution of 73 %. The NOEC for growth occurred at 97 % effluent, which is above the critical dilution of 73 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the Fathead minnow test.**

Method 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The laboratory synthetic water control failed to meet the acceptance requirements of 15 or more neonates per surviving female. Therefore, the test is invalid and will need to be repeated.

AMERICAN INTERPLEX CORPORATION

John Overbey
Laboratory Director

PDF cc: City of Nashville
ATTN: Mr. Ed Carlyle
mredcarlyle@yahoo.com

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I. Control Acceptance Criteria

Pimephales promelas (Fathead minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.337	PASS
Control Growth CV < or = 40%	9.34	PASS
Growth Minimum Significant Difference 12 to 30%	12.4	PASS
Critical Dilution CV < or = 40%	10.5	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	14.3	FAIL
Control CV < or = 40% per Surviving Female	13.2	PASS
Reproduction Minimum Significant Difference 13 to 47%	29.2	PASS
Critical Dilution CV < or = 40%	9.72	PASS

II. Outlined Report

A. Introduction

1. Permit Number: NPDES AR0021776 AFIN 31-00036
2. Test Requirements: Test Methods 1000.0 and 1002.0
3. Receiving Stream: Ouachita River Basin

B. Source of Effluent/Dilution Water

1. Effluent Samples:
 - a. Sampling Point: Outfall 001
 - b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.0	7.9	8.5
pH (standard units)	7.1	7.1	7.2
Alkalinity (mg/l as CaCO ₃)	44	51	49
Hardness (mg/l as CaCO ₃)	23	28	31
Conductivity (umhos/cm)	280	290	300
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	4.8	5.1	5.0

2. Dilution Water Samples: Synthetic Soft Water #4073

- a. Dates Prepared: February 25 through March 11, 2014
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.3	8.2	8.0
pH (standard units)	7.4	7.4	7.6
Alkalinity (mg/l as CaCO ₃)	31	31	31
Hardness (mg/l as CaCO ₃)	44	44	44
Conductivity (umhos/cm)	150	150	160
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05

C. Test Methods

1. Test methods used:

Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Methods 1000.0 and 1002.0, Fathead Minnow Survival and Growth and *Ceriodaphnia dubia* Survival and Reproduction.

2. Endpoint: No Observable Effects Concentration (NOEC)

3. Test Conditions:

Pimephales promelas (Fathead minnow) Survival and Growth Method 1000.0

Date & Time Test Initiated: February 25, 2014 at 1515
Date & Time Test Terminated: March 4, 2014 at 1325
Type & Volume of Test Chamber: 500 ml disposable beaker
Volume of Sample: 250 ml
Number of Organisms per replicate: 8
Number of Replicates per dilution: 5

Ceriodaphnia dubia Survival and Growth Method 1002.0

Date & Time Test Initiated: February 25, 2014 at 1520
Date & Time Test Terminated: March 4, 2014 at 1635
Type & Volume of Test Chamber: 30 ml disposable beaker
Volume of Sample: 15 ml
Number of Organisms per replicate: 1
Number of Replicates per dilution: 10

4. Acclimation of test organisms: Obtained from in-house cultures

5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms

1. Scientific Name

- a. Test 1000.0 *Pimephales promelas*
- b. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

The data was analyzed using American Interplex Corporation's Laboratory Information Management Software based on Toxstat.

Pimephales promelas (Fathead minnow) survival data was transformed using the Arc Sine transformation. Normality and homogeneity of variance were checked using Shapiro-Wilk's. The survival data was then analyzed using Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC).

Fathead minnow growth data was analyzed for normality and homogeneity of variance using Shapiro-Wilk's and Bartlett's test. Dunnett's Test was used to determine the No Observable Effects Concentration (NOEC) for growth.

Ceriodaphnia dubia survival data was analyzed with Fisher's Exact Test. Reproduction data was analyzed using Kolmogorov's Test for Normality and analyzed with Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC) for Reproduction. Dunnett's Test was used to calculate the PMSD.

IV. Standard Reference Toxicants

American Interplex Corporation has an ongoing test organism culturing program. The sensitivity of the offspring is determined by performing a standard reference toxicant test with each effluent test. Sodium chloride in synthetic moderately hard water is used as prescribed in EPA-821-R-02-013.

Pimephales promelas (Fathead minnow)

Chronic reference tests are performed monthly.

A chronic reference test was performed on February 21, 2014 at 1730 to February 28, 2014 at 1530

The results were as follows: (Control No. 175677-1.)

Survival LC-50: 2002 mg/l

Growth IC-25: 2684 mg/l

Growth PMSD: 7.17

Ceriodaphnia dubia

Chronic reference tests are performed monthly.

A chronic reference test was performed on February 21, 2014 at 1730 to February 28, 2014 at 1600

The results were as follows: (Control No. 175677-2.)

Survival LC-50: 1913 mg/l

Growth IC-25: 1484 mg/l

Growth PMSD: 17.1

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.00
Hardness	EPA 200.7	100	1.20
pH	SM 4500-H+ B	101	0.271
Conductivity	EPA 120.1	103	3.24

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: February 25, 2014

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

Ceriodaphnia dubia

Date: February 25, 2014

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

VII. Results Summary *Pimephales promelas*, Fathead minnow Larval Survival and Growth Test -- Method 1000.0

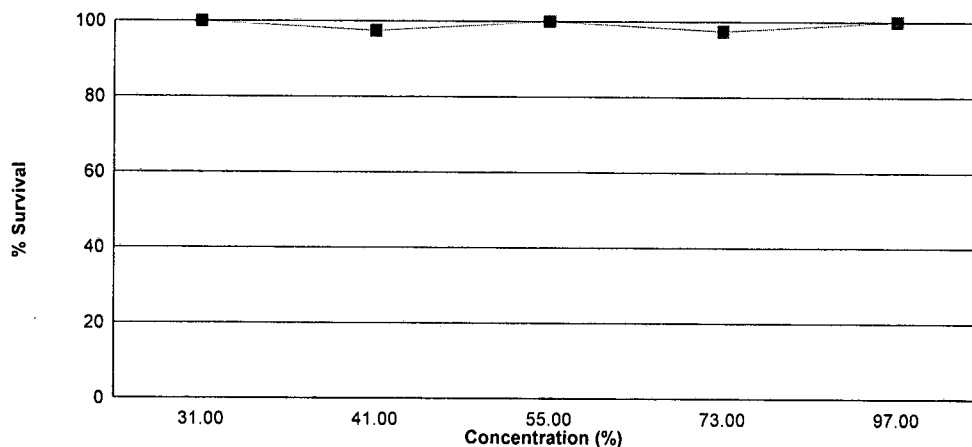
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

Effluent dilutions for this test were 31 %, 41 %, 55 %, 73 %, 97 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 73 % effluent.

The test was initiated on February 25, 2014 at 1515 and continued through March 4, 2014 at 1325. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

- a.) NOEC survival = 97 % effluent
- b.) NOEC growth = 97 % effluent



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	100	0.337
31 %	100	0.374
41 %	97.5	0.353
55 %	100	0.382
73 %	97.5	0.322
97 %	100	0.323

VII. Results Summary *Ceriodaphnia dubia*, Cladoceran Survival and Reproduction Test -- Method 1002.0

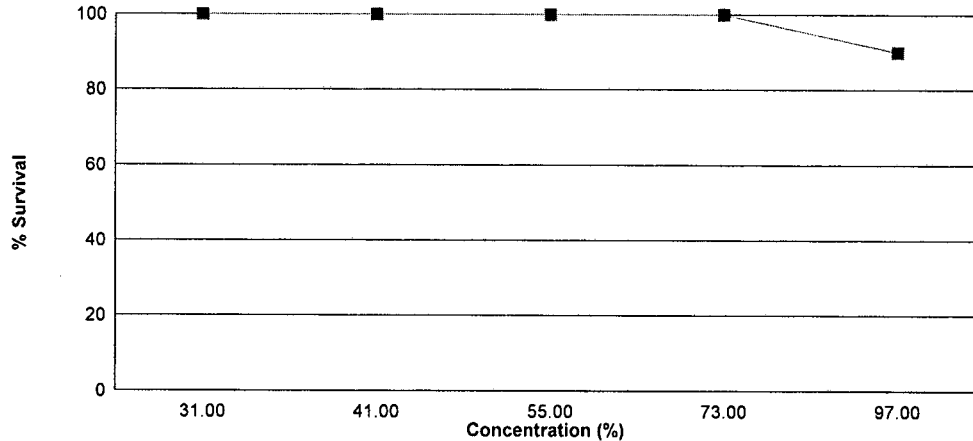
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 31 %, 41 %, 55 %, 73 %, 97 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 73 % effluent.

The test was initiated on February 25, 2014 at 1520 and continued through March 4, 2014 at 1635. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

- a.) NOEC survival = 97 % effluent
- b.) NOEC reproduction = 97 % effluent



Summary of the 7-day <i>Ceriodaphnia dubia</i> Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	14.3
31 %	100	23.6
41 %	100	24.8
55 %	100	28.8
73 %	100	30.3
97 %	90.0	28.3

Appendix B: Test 1000.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead Minnow)
SURVIVAL AND GROWTH

Permittee: City of Nashville

NPDES No.: NPDES AR0021776 AFIN 31-00036

Date and Time Test Initiated: February 25, 2014 at 1515

Date and Time Test Terminated: March 4, 2014 at 1325

Dilution water used: Synthetic Soft Water #4073

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in replicate chambers					Mean percent survival			CV%
	A	B	C	D	E	24 hr	48 hr	7 days	
Control	100	100	100	100	100	100	100	100	0.00
31 %	100	100	100	100	100	100	100	100	0.00
41 %	100	100	100	87.5	100	100	100	97.5	5.73
55 %	100	100	100	100	100	100	100	100	0.00
73 %	100	100	87.5	100	100	100	100	97.5	5.73
97 %	100	100	100	100	100	100	100	100	0.00

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers					Mean dry weight, mg	CV%
	A	B	C	D	E		
Control	0.294	0.315	0.349	0.360	0.368	0.337	9.34
31 %	0.364	0.359	0.370	0.385	0.391	0.374	3.67
41 %	0.324	0.306	0.370	0.359	0.405	0.353	11.0
55 %	0.396	0.371	0.382	0.380	0.379	0.382	2.38
73 %	0.289	0.328	0.285	0.349	0.359	0.322	10.5
97 %	0.285	0.318	0.334	0.361	0.316	0.323	8.60

CV = Coefficient of variation = standard deviation * 100 / mean

Appendix B: Test 1000.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead Minnow)
SURVIVAL AND GROWTH

1. Steel's Many-One Rank Test:

Is the mean survival significantly different ($p=0.05$) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(73 %)	<u> </u> YES	<u> X </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u> </u> YES	<u> </u> NO

2. Dunnett's Test:

Is the mean dry weight (growth) significantly different ($p=0.05$) than the control's dry weight (growth) for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(73 %)	<u> </u> YES	<u> X </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u> </u> YES	<u> </u> NO

- 3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP6C)
- 4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP6C)
- 5. NOEC Pimephales Lethality: 97 % (TOP6C)
- 6. LOEC Pimephales Lethality: 97 % (TXP6C)
- 7. NOEC Pimephales Sublethality: 97 % (TPP6C)
- 8. LOEC Pimephales Sublethality: 97 % (TYP6C)
- 9. Coefficient of variation for Pimephales growth: 10.5 (TQP6C)

Appendix B: Test 1000.0

CHRONIC TOXICITY SUMMARY FORM
Pimephales promelas (Fathead minnow)
CHEMICAL PARAMETERS CHART

PERMITTEE: City of Nashville SAMPLE No. 1 COLLECTED ending: DATE: February 25, 2014 TIME: 0800
 NPDES NO.: NPDES AR0021776 AFIN 31-000 SAMPLE No. 2 COLLECTED ending: DATE: February 27, 2014 TIME: 0800
 CONTACT: Mr. Ed Carlyle 1700
 ANALYST: 280, 304, 307, 310 Test Initiated: DATE: February 25, 2014 TIME: 1515
 Test Terminated: DATE: March 4, 2014 TIME: 1325

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.3	8.3	8.2	8.4	8.0	8.3	8.3
Final	7.8	7.8	7.6	7.7	7.0	7.2	7.5
pH Initial	7.4	7.6	7.4	7.9	7.6	7.5	7.4
Final	7.5	7.4	7.4	7.2	7.3	7.3	7.2
Alkalinity	31	NA	31	NA	31	NA	NA
Hardness	44	NA	44	NA	44	NA	NA
Conductivity	150	140	150	150	160	180	150
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 31 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.3	8.1	8.1	8.3	7.8	7.9	8.1
Final	7.7	7.5	7.3	7.0	6.5	6.9	7.2
pH Initial	7.2	7.3	7.3	7.5	7.6	7.4	7.2
Final	7.4	7.4	7.4	7.2	7.2	7.1	7.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	190	180	190	200	210	220	200
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 41 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.1	7.9	8.1	8.3	7.8	7.7	8.0
Final	7.8	7.8	7.0	7.2	6.9	6.8	7.4
pH Initial	7.2	7.2	7.2	7.4	7.5	7.4	7.2
Final	7.4	7.4	7.2	7.3	7.3	7.1	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	200	190	210	210	220	240	210
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 55 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	7.9	7.9	8.0	7.8	7.8	8.0
Final	7.6	7.4	7.0	7.0	6.8	6.5	7.1
pH Initial	7.2	7.2	7.2	7.4	7.5	7.4	7.1
Final	7.4	7.3	7.3	7.2	7.3	7.1	7.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	220	210	230	230	240	260	240
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 73 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	7.8	7.8	7.8	7.8	7.5	7.8	7.7
Final	7.3	7.4	6.8	6.7	6.8	6.9	7.5
pH Initial	7.1	7.1	7.2	7.4	7.5	7.3	7.1
Final	7.4	7.3	7.3	7.3	7.3	7.1	7.4
Alkalinity	45	NA	48	NA	44	NA	NA
Hardness	29	NA	31	NA	27	NA	NA
Conductivity	250	240	250	260	260	290	260
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 97 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	7.3	7.4	7.5	7.3	7.0	7.6
Final	7.0	7.0	6.3	6.7	7.1	7.0	7.4
pH Initial	7.1	7.1	7.2	7.3	7.5	7.2	7.0
Final	7.3	7.3	7.3	7.3	7.4	7.2	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	280	270	300	290	290	320	300
Chlorine	NA	NA	NA	NA	NA	NA	NA

Appendix B: Test 1002.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: City of Nashville

NPDES No.: NPDES AR0021776 AFIN 31-00036

Date and Time Test Initiated: February 25, 2014 at 1520

Date and Time Test Terminated: March 4, 2014 at 1635

Dilution water used: Synthetic Soft Water #4073

PERCENT SURVIVAL

Time of Reading	Control	Percent Effluent				
		31 %	41 %	55 %	73 %	97 %
24 hour	100	100	100	100	100	90.0
48 hour	100	100	100	100	100	90.0
7 day	100	100	100	100	100	90.0

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Replicates	Control	Percent Effluent				
		31 %	41 %	55 %	73 %	97 %
A	14	29	24	28	29	31
B	14	27	25	30	32	30
C	14	6	24	27	29	31
D	18	27	25	27	29	21
E	14	28	23	30	33	35
F	14	26	25	31	32	31
G	17	28	25	30	27	0
H	14	22	28	25	33	34
I	12	21	19	28	25	32
J	12	22	30	32	34	38
Mean per Adult	14.3	23.6	24.8	28.8	30.3	28.3
Mean per Surviving Adult	14.3	23.6	24.8	28.8	30.3	31.4
CV %	13.2	28.9	11.7	7.47	9.72	14.8

CV = Coefficient of variation = standard deviation * 100 / mean
(calculated based on young produced by surviving females)

Appendix B: Test 1002.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

1. Fisher's Exact Test:

Is the mean survival significantly different ($p=0.05$) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(73 %)	_____ YES	_____ X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____ YES	_____ NO

2. Steel's Many-One Rank Test:

Is the mean number of young produced per female significantly different ($p=0.05$) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(73 %)	_____ YES	_____ X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____ YES	_____ NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP3B)
4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP3B)
5. NOEC *Ceriodaphnia* Lethality: 97 % (TOP3B)
6. LOEC *Ceriodaphnia* Lethality: 97 % (TXP3B)
7. NOEC *Ceriodaphnia* Sublethality: 97 % (TPP3B)
8. LOEC *Ceriodaphnia* Sublethality: 97 % (TYP3B)
9. Coefficient of variation for *Ceriodaphnia* Reproduction: 13.2 (TQP3B)

Appendix B: Test 1002.0
CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: City of Nashville SAMPLE No. 1 COLLECTED ending: DATE: February 25, 2014 TIME: 0800
 NPDES NO.: NPDES AR0021776 AFIN 31-000 SAMPLE No. 2 COLLECTED ending: DATE: February 27, 2014 TIME: 0800
 CONTACT: Mr. Ed Carlyle 1700
 ANALYST: 280, 304, 307, 310 Test Initiated: DATE: February 25, 2014 TIME: 1520
 Test Terminated: DATE: March 4, 2014 TIME: 1635

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.3	8.3	8.2	8.4	8.0	8.3	8.3
Final	8.0	7.8	7.9	8.1	8.1	7.7	7.8
pH Initial	7.4	7.6	7.4	7.9	7.6	7.5	7.4
Final	7.8	7.7	7.8	7.7	7.9	7.5	7.7
Alkalinity	31	NA	31	NA	31	NA	NA
Hardness	44	NA	44	NA	44	NA	NA
Conductivity	150	140	150	150	160	180	150
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 31 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.3	8.1	8.1	8.3	7.8	7.9	8.1
Final	8.1	7.7	7.9	7.6	8.0	8.0	7.7
pH Initial	7.2	7.3	7.3	7.5	7.6	7.4	7.2
Final	7.7	7.5	7.6	7.6	7.7	7.5	7.7
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	190	180	190	200	210	220	200
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 41 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.1	7.9	8.1	8.3	7.8	7.7	8.0
Final	8.1	7.7	8.0	8.0	8.2	7.9	8.0
pH Initial	7.2	7.2	7.2	7.4	7.5	7.4	7.2
Final	7.8	7.5	7.7	7.6	7.7	7.5	7.7
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	200	190	210	210	220	240	210
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 55 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	7.9	7.9	8.0	7.8	7.8	8.0
Final	8.1	7.7	7.8	7.9	8.3	7.9	7.8
pH Initial	7.2	7.2	7.2	7.4	7.5	7.4	7.1
Final	7.8	7.5	7.6	7.6	7.7	7.5	7.7
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	220	210	230	230	240	260	240
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 73 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	7.8	7.8	7.8	7.8	7.5	7.8	7.7
Final	8.1	7.6	8.0	7.9	8.2	7.6	7.8
pH Initial	7.1	7.1	7.2	7.4	7.5	7.3	7.1
Final	7.8	7.5	7.7	7.6	7.7	7.6	7.6
Alkalinity	45	NA	48	NA	44	NA	NA
Hardness	29	NA	31	NA	27	NA	NA
Conductivity	250	240	250	260	260	290	260
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 97 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	7.3	7.4	7.5	7.3	7.0	7.6
Final	8.0	7.4	7.9	7.9	8.2	7.8	7.9
pH Initial	7.1	7.1	7.2	7.3	7.5	7.2	7.0
Final	7.8	7.5	7.8	7.7	7.8	7.6	7.6
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	280	270	300	290	290	320	300
Chlorine	NA	NA	NA	NA	NA	NA	NA

426 NORTH MAIN STREET
NASHVILLE, AR 71852
870-845-4015

WASTE TREATMENT PLANT
LABORATORY ANALYSIS
FOR BIOMONITORING REPORTS

COLLECTION DATE: 2-25-14

COLLECTION TIME: 0800 - 0800

COLLECTION PLACE: OUTLOOK 001

CBOD	<u>10.94</u>	mg/L	#5210B
TSS	<u>4</u>	mg/L	#2540D
AMMN	<u>5.23</u>	mg/L	#4500-NH3 A-B
FECAL COL.	<u>98</u>	mg/L	#9222D
CHLORINE	<u>.08</u>	mg/L	#4500-CI D
pH	<u>7.10</u>	mg/L	#4500 - H
DO	<u>10.86</u>	mg/L	#4500 - OG

ANALYST: EDC COLLECTED BY: EDC

Analysis include 10% replication
Test performed as required in Standards Methods
Samples are iced at time of collection

426 NORTH MAIN STREET
NASHVILLE, AR 71852
870-845-4015

WASTE TREATMENT PLANT
LABORATORY ANALYSIS
FOR BIOMONITORING REPORTS

COLLECTION DATE: 2-27-14

COLLECTION TIME: 0800-0800

COLLECTION PLACE: OUTLET 001

CBOD	<u>8.35</u>	mg/L	#5210B
TSS	<u>12</u>	mg/L	#2540D
AMMN	<u>5.32</u>	mg/L	#4500-NH3 A-B
FECAL COL.	<u>53</u>	mg/L	#9222D
CHLORINE	<u>.03</u>	mg/L	#4500-CI D
pH	<u>7.43</u>	mg/L	#4500 - H
DO	<u>11.89</u>	mg/L	#4500 - OG

ANALYST: ED COLLECTED BY: CE

Analysis include 10% replication
Test performed as required in Standards Methods
Samples are iced at time of collection

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: CITY OF NASHVILLE		PO No. _____		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 175739				
Project Reference: BIOMONITORING 1st Quarter		SAMPLE MATRIX			<input type="checkbox"/> FAT HEAD <input type="checkbox"/> MINNOW <input type="checkbox"/> CECIDOPHYNIA <input type="checkbox"/> DUBIA										AIC PROPOSAL NO: _____				
Project Manager: Chip Colston		GRA	COMP	WATER	SOIL	SEWA	BOTTLES	FAT HEAD	MINNOW	CECIDOPHYNIA	DUBIA							Carrier: _____	
Sampled By: Chip Colston	Received Temperature C: 0.7 C																		
AIC No.	Sample Identification	Date/Time Collected																	Remarks
(1)	NASHV8101014	2/24/14-2/25						X		X									
		0800-0800				X	3												
		Container Type																	Field pH calibration
		Preservative																	on _____ @ _____
																			Buffer: _____

**NORMAL TURNAROUND
 CONTACT: ED CARLYLE, JR.
 870-557-3143 FAX: 870-845-7409
 REPORT TO: ED CARLYLE, JR.
 426 NORTH MAIN
 NASHVILLE, AR 71852**

Relinquished By: <i>Ed Carlyle</i>	Date/Time: 11:15	Received By: _____	Date/Time: _____
Relinquished By: _____	Date/Time: 2/25/14	Received in Lab By: <i>[Signature]</i>	Date/Time: 2/25/14
Comments: HAND DELIVERED TO LAB ON ICE			

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: <i>CITY OF NASHVILLE</i>			PO No.			NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: <i>175739</i>											
Project Reference: <i>Biomonitoring 1st District</i>			SAMPLE MATRIX				FATHEAD	MINNOW	CERIODANINIA	DUBIA											AIC PROPOSAL NO:							
Project Manager: <i>ED CARLYLE JR</i>			WATER	SOIL	WASTE																Carrier:							
Sampled By: <i>Ed Carlyle Jr</i>						GRA					COMP											Received Temperature C <i>0.9°</i>						
AIC No.	Sample Identification	Date/Time Collected																										
<i>3</i>	<i>NASHV1016</i>	<i>2/28/14</i>																										
		<i>0800-1500</i>																										

NORMAL TURNAROUND
CONTACT: ED CARLYLE, JR.
870-557-3143 FAX: 870-845-7409
REPORT TO: ED CARLYLE, JR.
426 NORTH MAIN
NASHVILLE, AR 71852

Relinquished By: <i>Ed Carlyle Jr</i>	Date/Time: <i>2/28/14 5:30 pm</i>	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received in Lab By: <i>[Signature]</i>	Date/Time: <i>2-28-14 5:30pm</i>
Comments: <i>HAND DELIVERED TO LAB ON ICE</i>			



March 21, 2014
Control No. 176158-1
Page 1 of 20

March 21, 2014

Test Results of
First Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
Outfall 001

Control No. 176158-1

Prepared for:

Mr. Ed Carlyle
City of Nashville
426 North Main
Nashville, AR 71852

Prepared by:

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



March 21, 2014
Control No. 176158-1
Page 2 of 20

City of Nashville
ATTN: Mr. Ed Carlyle
426 North Main
Nashville, AR 71852

Re: Chronic 7-Day Renewal utilizing *Ceriodaphnia dubia*
Outfall 001
NPDES Permit No. NPDES AR0021776 AFIN 31-00036

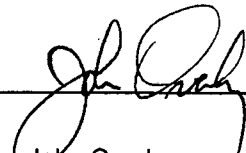
Dear Mr. Ed Carlyle:

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 laboratory director or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" EPA-821-R-02-013, Fourth Edition, October 2002. Test results are summarized below:

Method 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The No Observable Effects Concentration (NOEC) for survival occurred at 73 % effluent, which is equal to the critical dilution of 73 %. The NOEC for reproduction occurred at 73 % effluent, which is equal to the critical dilution of 73 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the *Ceriodaphnia dubia* test.**

AMERICAN INTERPLEX CORPORATION



John Overbey
Laboratory Director

PDF cc: City of Nashville
ATTN: Mr. Ed Carlyle
mredcarlyle@yahoo.com

I. Control Acceptance Criteria

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	17.0	PASS
Control CV < or = 40% per Surviving Female	8.32	PASS
Reproduction Minimum Significant Difference 13 to 47%	20.6	PASS
Critical Dilution CV < or = 40%	17.9	PASS

II. Outlined Report

A. Introduction

1. Permit Number: NPDES AR0021776 AFIN 31-00036
2. Test Requirements: Test Method 1002.0
3. Receiving Stream: Ouachita River Basin

B. Source of Effluent/Dilution Water

1. Effluent Samples:
 - a. Sampling Point: Outfall 001
 - b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.6	8.6	6.9
pH (standard units)	7.3	7.1	7.0
Alkalinity (mg/l as CaCO ₃)	43	56	53
Hardness (mg/l as CaCO ₃)	21	21	24
Conductivity (umhos/cm)	300	310	300
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	7.4	6.7	6.6

2. Dilution Water Samples: Synthetic Soft Water #4075

- a. Dates Prepared: February 26 through March 12, 2014
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.6	7.8	7.9
pH (standard units)	7.3	7.3	7.3
Alkalinity (mg/l as CaCO ₃)	34	34	34
Hardness (mg/l as CaCO ₃)	43	46	44
Conductivity (umhos/cm)	160	180	160
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05

C. Test Methods

1. Test methods used:

Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Method 1002.0, *Ceriodaphnia dubia* Survival and Reproduction.

2. Endpoint: No Observable Effects Concentration (NOEC)

3. Test Conditions:

Ceriodaphnia dubia Survival and Growth Method 1002.0

Date & Time Test Initiated: March 11, 2014 at 1415
Date & Time Test Terminated: March 18, 2014 at 1420
Type & Volume of Test Chamber: 30 ml disposable beaker
Volume of Sample: 15 ml
Number of Organisms per replicate: 1
Number of Replicates per dilution: 10

4. Acclimation of test organisms: Obtained from in-house cultures

5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms

1. Scientific Name

a. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

The data was analyzed using American Interplex Corporation's Laboratory Information Management Software based on Toxstat.

Ceriodaphnia dubia survival data was analyzed with Fisher's Exact Test. Reproduction data was analyzed using Shapiro-Wilk's and analyzed with Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC) for Reproduction. Dunnett's Test was used to calculate the PMSD.

IV. Standard Reference Toxicants

American Interplex Corporation has an ongoing test organism culturing program. The sensitivity of the offspring is determined by performing a standard reference toxicant test with each effluent test. Sodium chloride in synthetic moderately hard water is used as prescribed in EPA-821-R-02-013.

Ceriodaphnia dubia

Chronic reference tests are performed monthly.

A chronic reference test was performed on February 21, 2014 at 1730 to February 28, 2014 at 1600

The results were as follows: (Control No. 175677-2.)

Survival LC-50: 1913 mg/l

Growth IC-25: 1484 mg/l

Growth PMSD: 17.1

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.00
Hardness	EPA 200.7	101	0.450
pH	SM 4500-H+ B	100	0.135
Conductivity	EPA 120.1	100	2.68

VI. Organism History

Ceriodaphnia dubia

Date: March 11, 2014

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

VII. Results Summary *Ceriodaphnia dubia*, Cladoceran Survival and Reproduction Test -- Method 1002.0

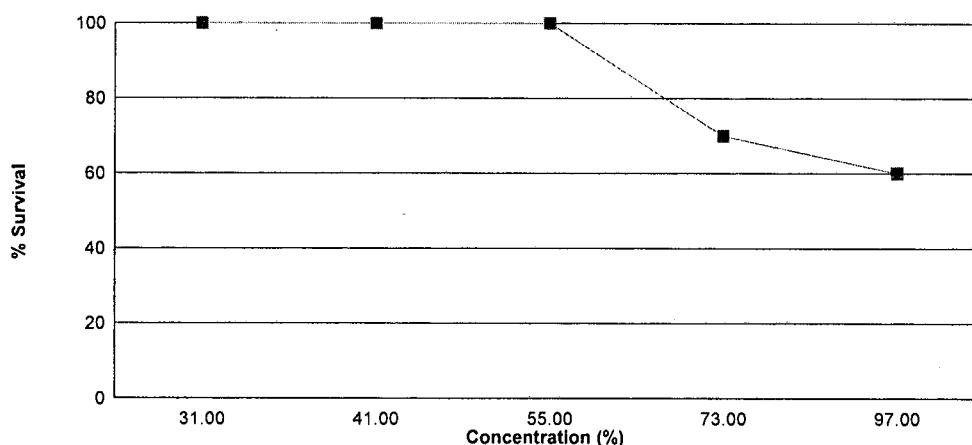
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 31 %, 41 %, 55 %, 73 %, 97 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 73 % effluent.

The test was initiated on March 11, 2014 at 1415 and continued through March 18, 2014 at 1420. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

- a.) NOEC survival = 73 % effluent
- b.) NOEC reproduction = 73 % effluent



Summary of the 7-day <i>Ceriodaphnia dubia</i> Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	17.0
31 %	100	22.4
41 %	100	23.0
55 %	100	21.7
73 %	70.0	15.6
97 %	60.0 *	--

*Significant difference when compared to the control (p=0.05)

Appendix B: Test 1002.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: City of Nashville

NPDES No.: NPDES AR0021776 AFIN 31-00036

Date and Time Test Initiated: March 11, 2014 at 1415

Date and Time Test Terminated: March 18, 2014 at 1420

Dilution water used: Synthetic Soft Water #4075

PERCENT SURVIVAL

Time of Reading	Control	Percent Effluent				
		31 %	41 %	55 %	73 %	97 %
24 hour	100	100	100	100	100	70.0
48 hour	100	100	100	100	70.0	60.0
7 day	100	100	100	100	70.0	60.0

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Replicates	Control	Percent Effluent				
		31 %	41 %	55 %	73 %	97 %
A	15	18	20	18	18	17
B	18	14	18	28	27	26
C	17	23	27	21	19	23
D	18	25	21	17	0	0
E	19	24	26	18	0	0
F	16	23	20	22	23	18
G	16	26	25	23	0	0
H	19	23	23	26	27	17
I	16	24	25	23	24	19
J	16	24	25	21	18	0
Mean per Adult	17.0	22.4	23.0	21.7	15.6	12.0
Mean per Surviving Adult	17.0	22.4	23.0	21.7	22.3	20.0
CV %	8.32	16.2	13.3	16.3	17.9	18.4

CV = Coefficient of variation = standard deviation * 100 / mean
(calculated based on young produced by surviving females)

Appendix B: Test 1002.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

1. Fisher's Exact Test:

Is the mean survival significantly different ($p=0.05$) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(73 %)	<u> </u> YES	<u> X </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u> </u> YES	<u> </u> NO

2. Steel's Many-One Rank Test:

Is the mean number of young produced per female significantly different ($p=0.05$) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(73 %)	<u> </u> YES	<u> X </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u> </u> YES	<u> </u> NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP3B)
4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP3B)
5. NOEC *Ceriodaphnia* Lethality: 73 % (TOP3B)
6. LOEC *Ceriodaphnia* Lethality: 97 % (TXP3B)
7. NOEC *Ceriodaphnia* Sublethality: 73 % (TPP3B)
8. LOEC *Ceriodaphnia* Sublethality: 97 % (TYP3B)
9. Coefficient of variation for *Ceriodaphnia* Reproduction: 17.9 (TQP3B)

426 NORTH MAIN STREET
NASHVILLE, AR 71852
870-845-4015

WASTE TREATMENT PLANT
LABORATORY ANALYSIS
FOR BIOMONITORING REPORTS

COLLECTION DATE: 03-11-2014

COLLECTION TIME: 0800 - 0800

COLLECTION PLACE: OUTLET 001

CBOD	<u>2.55</u>	mg/L	#5210B
TSS	<u>3</u>	mg/L	#2540D
AMMN	<u>7.20</u>	mg/L	#4500-NH3 A-B
FECAL COL.	<u>3</u>	mg/L	#9222D
CHLORINE	<u>.02</u>	mg/L	#4500-CI D
pH	<u>6.73</u>	mg/L	#4500 - H
DO	<u>10.08</u>	mg/L	#4500 - OG

ANALYST: EAC COLLECTED BY: CC

Analysis include 10% replication
Test performed as required in Standards Methods
Samples are iced at time of collection

426 NORTH MAIN STREET
NASHVILLE, AR 71852
870-845-4015

WASTE TREATMENT PLANT
LABORATORY ANALYSIS
FOR BIOMONITORING REPORTS

COLLECTION DATE: 03-13-2014

COLLECTION TIME: 0800 - 0800

COLLECTION PLACE: OUTLET 001

CBOD	<u>3.58</u>	mg/L	#5210B
TSS	<u>8</u>	mg/L	#2540D
AMMN	<u>6.92</u>	mg/L	#4500-NH3 A-B
FECAL COL.	<u>3</u>	mg/L	#9222D
CHLORINE	<u>.03</u>	mg/L	#4500-CI D
pH	<u>6.62</u>	mg/L	#4500 - H
DO	<u>10.26</u>	mg/L	#4500 - OG

ANALYST: etc COLLECTED BY: cc

Analysis include 10% replication
Test performed as required in Standards Methods
Samples are iced at time of collection

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: CITY OF NASHVILLE			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 176158				
Project Reference: BIOMONITORING			SAMPLE MATRIX			CERIODA PHW 1A DUBIA														AIC PROPOSAL NO:
Project Manager: ED CARLYLE JR			WATER	SOIL			WASTE													Carrier:
Sampled By: Ed Carlyle Jr								GRAM	COMP											
AIC No.	Sample Identification	Date/Time Collected																	Remarks	
2	NASHV_B101Q	3/12-13/14	24		X	3	X													
	CERIO	0800-0800	HR																	
						1														
						G														
						A														
						L														
						S														
						P													Field pH calibration	
			Container Type			NO													on @	
			Preservative																Buffer:	
G = Glass NO = none			P = Plastic S = Sulfuric acid pH2		V = VOA vials N = Nitric acid pH2		H = HCl to pH2 B = NaOH to pH12			T = Sodium Thiosulfate Z = Zinc acetate										
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN _____ DAYS						Relinquished By: Ed Carlyle Jr		Date/Time: 3/13/14 1149		Received By:		Date/Time:								
Expedited results requested by: _____						Relinquished By: _____		Date/Time: _____		Received in Lab By: Lige Hopta		Date/Time: 3-13-14 1149								
Who should AIC contact with questions: Phone: 870-557-3143 Fax: 870-846-1409						Comments:														
Report Attention to: ED CARLYLE JR																				
Report Address to: 426 NORTH MAIN NASHVILLE, AR 71852																				

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: CITY OF NASHVILLE			PO No.		No of BOTTLES	Analyses Requested												AIC Control No: 176155										
Project Reference: BIOMONITORING			Sample Matrix			CERIODAPHNIA	DUBIA													AIC Proposal No:								
Project Manager: ED CARLYLE, JR			WATER	SOIL				WASTE													Carrier:							
Sampled By: Ed Carlyle Jr.									GRA	COMP													Received Temperature °C 1.6					
AIC No.	Sample Identification	Date/Time Collected																										
3	NASHUB10	0800-1600		X				X																				
	IQ CER	3/14/14																										
				8																								
				AR																								
		Container Type																										Field pH calibration on _____ @ _____
		Preservative																										Buffer:
			G = Glass	P = Plastic	V = VOA viats	H = HCl to pH2			T = Sodium Thiosulfate			NO = none			S = Sulfuric acid pH2			N = Nitric acid pH2			B = NaOH to pH12			Z = Zinc acetate				
TURNAROUND CONTACT: ED CARLYLE, JR. 870-557-3143 FAX: 870-845-7409 REPORT TO: ED CARLYLE, JR. 426 NORTH MAIN NASHVILLE, AR 71852				Relinquished By: Ed Carlyle Jr.				Date/Time: 3/14/14 1900				Received By:				Date/Time:												
				Relinquished By:				Date/Time:				Received in Lab By: <i>[Signature]</i>				Date/Time: 0800												
																3-15-14												
																3-15-14												
				Comments: hand delivered on ice to Little Rock, AR																								

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: NASHVILLE, CITY OF
ADDRESS: WASTEWATER TREATMENT PLANT
NASHVILLE, AR 71852
FACILITY: NASHVILLE WW TREATMENT PLANT
LOCATION: 743 HWY 27 SOUTH
NASHVILLE, AR 71852

AR0021776	TX1-Q
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
01/01/2014	03/31/2014

DMR Mailing ZIP CODE: 71852
MAJOR

001-QUARTERLY-W.E.T. TESTING
External Outfall

No Discharge

ATTN: LARRY DUNAWAY, PUBLIC WKS DIR

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Whole effluent toxicity	SAMPLE MEASUREMENT	*****	*****	*****	97	97	*****	%	0	1/4	Comp24
22414 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	73 MO AV MN	73 7 DA MIN	*****	%		Quarterly	COMP24
Pass/Fail Static Renewal 7 Day Chronic Ceriodaphnia	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****		0	1/4	Comp24
TGP3B 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	pass=0/fail=1		Quarterly	COMP24
Pass/Fail Stare 7Day Chronic Pimephales Promelas	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****		0	1/4	Comp24
TGP6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	pass=0/fail=1		Quarterly	COMP24
Low Flow Pass/Fail Survival Test Static Renewal 7 Day Chronic	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****		0	1/4	Comp24
TLP3B 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	pass=0/fail=1		Quarterly	COMP24
Low Flow Pass/Fail Survival Test Static Renewal 7 Day Chronic	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****		0	1/4	Comp24
TLP6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	pass=0/fail=1		Quarterly	COMP24
NOEC Lethal Static Renewal 7 Day Chronic Ceriodaphnia dubia	SAMPLE MEASUREMENT	*****	*****	*****	*****	73	*****	%	0	1/4	Comp24
TOP3B 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24
NOEC Lethal Static Renewal 7 Day Chronic Pimephales promelas	SAMPLE MEASUREMENT	*****	*****	*****	*****	97	*****	%	0	1/4	Comp24
TOP6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24

LARRY DUNAWAY
PUBLIC WORKS DIRECTOR
426 NORTH MAIN
NASHVILLE, AR 71852

penalty of law that this document and all attachments were prepared under my direction or accordance with a system designed to assure that qualified personnel properly gather and information submitted. Based on my inquiry of the person or persons who manage the so persons directly responsible for gathering the information, the information submitted is, my knowledge and belief, true, accurate, and complete. I am aware that there are alites for submitting false information, including the possibility of fine and imprisonment for ons.

TELEPHONE: 870-845-4015
DATE: 05-12-2015
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT: *Larry Dunaway*
AREA Code: NUMBER: MM/DD/YYYY

(all attachments here)

(PASS=0/FAIL=1) IF THE NOEC VALUE IS LESS THAN THE CRITICAL DILUTION, REPORT "1"; OTHERWISE, REPORT "0". SEE PART II, CONDITION #10. 31-00036

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: NASHVILLE, CITY OF
ADDRESS: WASTEWATER TREATMENT PLANT
NASHVILLE, AR 71852
FACILITY: NASHVILLE WW TREATMENT PLANT
LOCATION: 743 HWY 27 SOUTH
NASHVILLE, AR 71852
ATTN: LARRY DUNAWAY, PUBLIC WKS DIR

AR0021776	TX1-Q
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
01/01/2014	03/31/2014

DMR Mailing ZIP CODE: 71852
MAJOR

001-QUARTERLY-W.E.T. TESTING
External Outfall

No Discharge

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
NOEC Sub-Lethal Static Renewal 7 Day Chronic Ceriodaphnia dubia	SAMPLE MEASUREMENT	*****	*****	*****	*****	97	*****	%	0	1/4	Comp 24
TPP3B 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24
NOEC Sub-Lethal Static Renewal 7 Day Chronic Pimephales promelas	SAMPLE MEASUREMENT	*****	*****	*****	*****	97	*****	%	0	1/4	Comp 24
TPP6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24
Coef Of Var Statre 7Day Chronic Ceriodaphnia	SAMPLE MEASUREMENT	*****	*****	*****	*****	17.9	*****	%	0	1/4	Comp 24
TQP3B 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24
Coef Of Var Statre 7Day Chronic Pimephales	SAMPLE MEASUREMENT	*****	*****	*****	*****	16.5	*****	%	0	1/4	Comp 24
TQP6C 10 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24

AMERICAN INTERPLEX
8600 KANIS ROAD
LITTLE ROCK, AR
72204

LARRY DUNAWAY
PUBLIC WORKS DIRECTOR
426 NORTH MAIN
NASHVILLE, AR 71852

under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and report the information submitted. Based on my inquiry of the person or persons who manage the operation or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for such violations.

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		TELEPHONE	DATE
<i>Larry Dunaway</i>		870-845-1015	05-12-2015
AREA Code	NUMBER	MM/DD/YYYY	

(reference all attachments here)

(PASS=0/FAIL=1) IF THE NOEC VALUE IS LESS THAN THE CRITICAL DILUTION, REPORT "1"; OTHERWISE, REPORT "0". SEE PART II, CONDITION #10. 31-00036

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: NASHVILLE, CITY OF
ADDRESS: WASTEWATER TREATMENT PLANT
NASHVILLE, AR 71852
FACILITY: NASHVILLE WW TREATMENT PLANT
LOCATION: 743 HWY 27 SOUTH
NASHVILLE, AR 71852
ATTN: LARRY DUNAWAY, PUBLIC WKS DIR

AR0021776	TX1-Q
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
01/01/2014	03/31/2014

DMR Mailing ZIP CODE: 71852
MAJOR

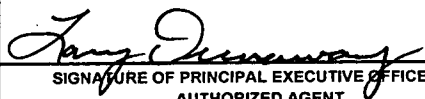
001-QUARTERLY-W.E.T. TESTING
External Outfall

No Discharge

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Whole effluent toxicity	SAMPLE MEASUREMENT	*****	*****	*****	97	97	*****	%	0	1/4	Comp24
22414 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	73 MO AV MN	73 7 DA MIN	*****	%		Quarterly	COMP24
Pass/Fail Static Renewal 7 Day Chronic Ceriodaphnia	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****	0	0	1/4	Comp24
TGP3B 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	pass=0/fail=1		Quarterly	COMP24
Pass/Fail Statre 7Day Chronic Pimephales Promelas	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****	0	0	1/4	Comp24
TGP6C 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	pass=0/fail=1		Quarterly	COMP24
Low Flow Pass/Fail Survival Test Static Renewal 7 Day Chronic	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****	0	0	1/4	Comp24
TLP3B 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	pass=0/fail=1		Quarterly	COMP24
Low Flow Pass/Fail Survival Test Static Renewal 7 Day Chronic	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****	0	0	1/4	Comp24
TLP6C 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	pass=0/fail=1		Quarterly	COMP24
NOEC Lethal Static Renewal 7 Day Chronic Ceriodaphnia dubia	SAMPLE MEASUREMENT	*****	*****	*****	*****	73	*****	%	0	1/4	Comp24
TOP3B 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24
NOEC Lethal Static Renewal 7 Day Chronic Pimephales promelas	SAMPLE MEASUREMENT	*****	*****	*****	*****	97	*****	%	0	1/4	Comp24
TOP6C 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24

LARRY DUNAWAY
PUBLIC WORKS DIRECTOR
426 NORTH MAIN
NASHVILLE, AR 71852

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 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	TELEPHONE	DATE
	870-845-4015	05-12-2015
	AREA Code	NUMBER
		MM/DD/YYYY

(PASS=0/FAIL=1) IF THE NOEC VALUE IS LESS THAN THE CRITICAL DILUTION, REPORT "1"; OTHERWISE, REPORT "0". SEE PART II, CONDITION #10. 31-00036

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

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AR0021776	TX1-Q
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DMR Mailing ZIP CODE: 71852
MAJOR


001-QUARTERLY-W.E.T. TESTING
External Outfall

No Discharge

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
NOEC Sub-Lethal Static Renewal 7 Day Chronic Ceriodaphnia dubia	SAMPLE MEASUREMENT	*****	*****	*****	*****	97	*****	%	0	1/4	Comp 24
	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24
NOEC Sub-Lethal Static Renewal 7 Day Chronic Pimephales promelas	SAMPLE MEASUREMENT	*****	*****	*****	*****	97	*****	%	0	1/4	Comp 24
	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24
Coef Of Var Statre 7Day Chronic Ceriodaphnia	SAMPLE MEASUREMENT	*****	*****	*****	*****	17.9	*****	%	0	1/4	Comp 24
	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24
Coef Of Var Statre 7Day Chronic Pimephales	SAMPLE MEASUREMENT	*****	*****	*****	*****	16.5	*****	%	0	1/4	Comp 24
	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 7 DA AVG	*****	%		Quarterly	COMP24

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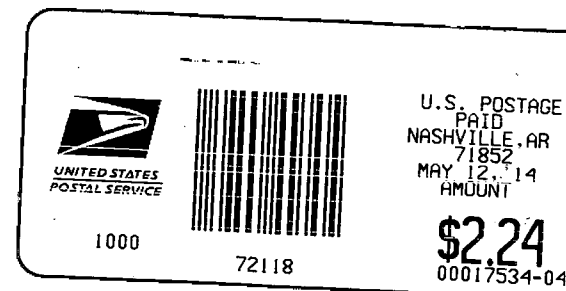
<small>I, under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and report the information submitted. Based on my inquiry of the person or persons who manage the facility, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are administrative and criminal penalties for submitting false information, including the possibility of fine and imprisonment for such violations.</small>	 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		TELEPHONE	DATE
	AREA Code	NUMBER	MM/DD/YYYY	

870-845-1015 05-12-2015

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**CITY OF NASHVILLE
LARRY DUNAWAY
PUBLIC WORKS
DIRECTOR
426 NORTH MAIN STREET
NASHVILLE, AR 71852**



**Arkansas Department of
Environmental Quality
Attn: Mr. Allen Anderson
Enforcement Assistant, NPDES
5301 Northshore Drive
Little Rock, AR 72118-5317**

