

Bio-Analytical Laboratories (BAL)
ADEQ Certificate #88-0630
Project X4905

Bio-Analytical Laboratories' Executive Summary

Permittee: Magnolia Wastewater System
P.O. Box 666
Magnolia, AR 71753

Project #: X4905

Outfall: 001

Permit #: AR0043613/ AFIN #14-00059

Contact: Russell Thomas

Dates: October 22 - 30, 2012

Test Type: Chronic Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia* (EPA Method 1002.0)
Chronic Static Renewal Survival and Growth Test using *Pimephales promelas* (EPA Method 1000.0)

Results:

For *Ceriodaphnia dubia*:

1. If the NOEC for survival is less than the critical dilution (100%), enter a "1"; otherwise, enter a "0" for Parameter TLP3B - 1
2. If the NOEC for reproduction is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter TGP3B - 1 ✓
3. Report the NOEC value for survival, Parameter TOP3B - 80%.
4. Report the NOEC value for reproduction, Parameter TPP3B - 80%.
5. Report the largest % coefficient of variation between the control and the critical dilution, Parameter TQP3B - 27.00%.

For *Pimephales promelas*:

1. If the NOEC for survival is less than the critical dilution (100%), enter a "1"; otherwise, enter a "0" for Parameter TLP6C - 1
2. If the NOEC for growth is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter TGP6C - 1
3. Report the NOEC value for survival, Parameter TOP6C - 80%.
4. Report the NOEC value for reproduction, Parameter TPP6C - 80%.
5. Report the largest % coefficient of variation between the control and the critical dilution, Parameter TQP6C - 8.14%.

This report contains a total of 42 pages, including this page. The results contained within pertains only to the samples listed on the chain of custody documents in Appendix A. The information meets the standards set forth by ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.

APPENDIX E
AGENCY FORMS

**SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING**

Ceriodaphnia dubia Survival and Reproduction

Permittee: **Magnolia Wastewater System**
Outfall 001

NPDES No.: **AR0043613**
AFIN: **14-00059**

	Time	Date	Time	Date
Composite 1 Collected From	0700	10/21/12 To	0700	10/22/12
Composite 2 Collected From	0700	10/23/12 To	0700	10/24/12
Composite 3 Collected From	0700	10/25/12 To	0700	10/26/12
Test initiated:	1245 am/pm		10/23/12	date
Test terminated:	1235 am/pm		10/30/12	date
Dilution water used:	Receiving	X	Reconstituted	

PERCENT SURVIVAL

Time of Reading	Percent Effluent					
	0	32	42	56	80	100
24h	100	100	100	100	90	70
48h	100	100	100	100	90	60
End of test	100	100	100	100	90	50

NUMBER OF YOUNG PRODUCED PER FEMALE @ END OF TEST

Rep	0	32	42	56	80	100
A	30	28	17	18	15	D
B	25	28	25	28	16	D
C	28	31	26	21	28	D
D	33	32	25	25	21	19
E	27	25	26	27	27	18
F	29	21	15	28	27	18
G	12	22	16	22	26	D
H	32	21	21	20	19	D
I	18	20	20	2	0	18
J	19	26	19	22	D	16
Surv. Mean	25.3	25.4	21.0	21.3	19.9	
Total Mean	25.3	25.4	21.0	21.3	17.9	
CV%*	27.00	17.03	20.33	35.76	45.00	

*coefficient of variation = standard deviation x 100/mean. D=dead adult

PMSD = 27.9%

Ceriodaphnia dubia
Survival and Reproduction (cont)

1. Fisher's Exact Test:

Is the mean survival at the end of the test significantly different ($p=.05$) than the control survival for the % effluent corresponding to (lethality):

- | | | | |
|--|---|-----|----|
| a) LOW FLOW OR CRITICAL DILUTION (100%): | X | YES | NO |
| b) ½ LOW FLOW DILUTION (N/A%): | | YES | NO |

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

Is the mean number of young produced per female significantly different ($p=.05$) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

- | | | | |
|--|---|-----|----|
| a) LOW FLOW OR CRITICAL DILUTION (100%): | X | YES | NO |
| b) ½ LOW FLOW DILUTION (N/A%): | | YES | NO |

3. If you answered NO to 1. a) and 2. a) enter (0) otherwise enter (1): 1
4. If you answered NO to 1. b) and 2. b) enter (0) otherwise enter (1): N/A
5. Enter response to item 3 on DMR Form, parameter #TEP3B.
6. Enter response to item 4 on DMR Form, parameter #TFP3B.
7. Enter percent effluent corresponding to each NOEC below and circle lowest number:
 - a) NOEC survival: 80% effluent
 - b) NOEC reproduction: 80% effluent
 - c) LOEC survival: 100% effluent
 - d) LOEC reproduction: 100% effluent

Monitoring Form
Chronic Toxicity Summary Form
Ceriodaphnia dubia
Chemical Parameters Chart

Permittee: Magnolia Wastewater System
NPDES No.: AR0043613/ APIN 14-00059
Contact: Russell Thomas
Analyst: Haughton, Callahan

Sample No. 1 Collected: Date: 10/23/12 Time: 0700
Sample No. 2 Collected: Date: 10/24/12 Time: 0700
Sample No. 3 Collected: Date: 10/26/12 Time: 0700
Test Begin: Date: 10/23/12 Time: 1245
Test End: Date: 10/30/12 Time: 1235

Dilution: 0 Day:									Dilution: 56 Day:								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.5	24.4	24.4	24.3	24.4	24.6		Temp (C)	24.6	24.5	24.4	24.4	24.3	24.4	24.6	
DO Initial	8.3	8.2	8.1	8.3	8.1	8.2	7.9		DO Initial	8.2	8.2	8.1	8.4	8.0	8.2	8.1	
DO Final	8.3	8.4	8.4	8.5	8.6	8.5			DO Final	8.6	8.5	8.6	8.3	8.4	8.3		
pH Initial	7.9	7.7	7.7	7.6	7.8	7.8	7.9		pH Initial	7.3	7.2	7.4	7.3	7.5	7.0	7.2	
pH Final	7.9	7.8	7.8	7.9	8.0	8.0			pH Final	7.2	7.0	7.2	7.0	6.8	7.1		
Alkalinity	32.0								Alkalinity								
Hardness	44.0								Hardness								
Conductivity	174.1	178.0	175.3	174.1	172.6	173.4			Conductivity	310	317	312	315	318	307		
Chlorine	<.01								Chlorine								
Dilution: 32 Day:									Dilution: 80 Day:								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.5	24.4	24.4	24.3	24.4	24.6		Temp (C)	24.6	24.5	24.4	24.4	24.3	24.4	24.6	
DO Initial	8.3	8.2	8.1	8.3	8.0	8.2	8.0		DO Initial	8.2	8.2	8.2	8.3	8.0	8.2	8.1	
DO Final	8.5	8.4	8.5	8.3	8.5	8.4			DO Final	8.6	8.6	8.6	8.2	8.2	8.2		
pH Initial	7.8	7.6	7.6	7.6	7.7	7.7	7.4		pH Initial	7.3	7.1	7.0	7.1	7.10	6.5	6.8	
pH Final	7.6	7.3	7.4	7.4	7.5	7.5			pH Final	6.9	6.5	6.8	6.5	6.5	6.7		
Alkalinity									Alkalinity								
Hardness									Hardness								
Conductivity	254	260	254	258	259	249			Conductivity	367	376	371	390	384	375		
Chlorine									Chlorine								
Dilution: 42 Day:									Dilution: 100 Day:								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	24.6	24.5	24.4	24.4	24.3	24.4	24.6		Temp (C)	24.6	24.5	24.4	24.4	24.3	24.4	24.6	
DO Initial	8.2	8.2	8.1	8.3	8.0	8.2	8.0		DO Initial	8.2	8.2	8.2	8.5	8.1	8.2	8.1	
DO Final	8.5	8.5	8.5	8.3	8.4	8.3			DO Final	8.7	8.6	8.6	8.1	8.2	8.1		
pH Initial	7.6	7.5	7.4	7.6	7.6	7.4	7.3		pH Initial	6.8	6.9	6.0	6.3	6.1	6.2	6.3	
pH Final	7.4	7.2	7.3	7.2	7.3	7.3			pH Final	5.2	4.5	5.1	4.5	4.4	4.6		
Alkalinity									Alkalinity	4.0	4.0		4.0				
Hardness									Hardness	64.8	68.0		64.8				
Conductivity	276	282	277	280	282	278			Conductivity	422	434	432	451	457	433		
Chlorine									Chlorine	<.01	<.01		<.01				

**SUMMARY REPORTING FORMS CHRONIC BIOMONITORING
FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL
(Pimephales promelas)**

Permittee: Magnolia Wastewater System
Outfall 001

NPDES No.: AR0043613
AFIN: 14-00059

	Time	Date	Time	Date
Composite 1 Collected from:	0700	10/21/12 To	0700	10/22/12
Composite 2 Collected from:	0700	10/23/12 To	0700	10/24/12
Composite 3 Collected from:	0700	10/25/12 To	0700	10/26/12

Test initiated: 1540 am/pm 10/22/12 date
 Test terminated: 0945 am/pm 10/29/12 date
 Dilution water used: Receiving X Reconstituted

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in Replicate Chambers					Mean Percent Survival			CV%*
	A	B	C	D	E	24h	48h	7 days	
0	100	100	100	100	100	100	100	100	0.00
32	100	100	100	87.5	100	100	97.5	97.5	6.06
42	100	100	100	100	100	100	100	100	0.00
56	100	87.5	87.5	87.5	62.5	100	97.5	85.0	14.58
80	75.0	100	100	75.0	100	100	97.5	90.0	15.10
100	0	0	0	0	0	82.5	40.0	0.0	0.00

DATA TABLE FOR GROWTH

Effluent Conc. %	Average Dry Weight in milligrams in replicate chambers					Mean Dry Weight mg	CV*
	A	B	C	D	E		
0	0.450	0.400	0.363	0.388	0.388	0.398	8.14
32	0.463	0.400	0.425	0.313	0.400	0.400	13.80
42	0.438	0.438	0.500	0.438	0.500	0.463	7.40
56	0.338	0.363	0.475	0.388	0.275	0.368	19.92
80	0.350	0.425	0.475	0.338	0.475	0.413	16.04

*coefficient of variation = standard deviation x 100/mean.

PMSD = 20.0%

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL (cont)
(Pimephales promelas)

1. Dunnett's Procedure or Steels Many-One Rank Test as appropriate:

Is the mean survival at 7 days significantly different ($p=.05$) than the control survival for the % effluent corresponding to:

a) LOW FLOW OR CRITICAL DILUTION (100 %)	X	YES	NO
b) 1/2 LOW FLOW DILUTION (N/A %)		YES	NO

2. Dunnett's Procedure (or appropriate test):

Is the mean dry weight (growth) at 7 days significantly different ($p=.05$) than the control's dry weight for the % effluent corresponding to (significant non-lethal effects):

a) LOW FLOW OR CRITICAL DILUTION (100%)	X	YES	NO
b) 1/2 LOW FLOW DILUTION (N/A%)		YES	NO

3. If you answered NO to 1. a) and 2. a) enter (0) otherwise enter (1): 1

4. If you answered NO to 1. b) and 2. b) enter (0) otherwise enter (1): N/A

5. Enter response to item 3 on DMR Form, parameter #TEP6C.

6. Enter response to item 4 on DMR Form, parameter #TFP6C.

7. Enter percent effluent corresponding to each NOEC below and circle lowest number:

a.) NOEC survival	80% effluent.
b.) NOEC growth	80% effluent.
c.) LOEC survival	100% effluent
d.) LOEC growth	100% effluent

Biomonitoring Form
Chronic Toxicity Summary Form
Pimephales promelas
Chemical Parameters Chart

Permittee: Magnolia Wastewater System
NPDES No.: AN0043613/AFIN 14-00059
Contact: Russell Thomas
Analyst: Houghton, Ziegler, Callahan

Sample No. 1 Collected: Date: 10/22/12 Time: 0700
Sample No. 2 Collected: Date: 10/24/12 Time: 0700
Sample No. 3 Collected: Date: 10/26/12 Time: 0700
Test Begin: Date: 10/22/12 Time: 1540
Test End: Date: 10/29/12 Time: 0945

Dilution: 0 Day:									Dilution: 56 Day:								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	16.0	15.7	16.0	16.0	15.2	16.1	16.2		Temp (C)	16.0	15.7	16.0	16.0	15.2	16.1	16.2	
DO Initial	7.4	7.2	7.4	6.6	7.4	6.7	6.0		DO Initial	7.5	7.2	7.1	7.0	7.5	6.6	6.0	
DO Final	8.4	8.3	8.4	8.4	8.5	8.6			DO Final	8.4	8.6	8.5	8.6	8.3	8.4		
pH Initial	7.5	7.6	7.5	7.4	7.6	7.6	7.4		pH Initial	7.3	7.2	7.1	7.1	7.2	7.2	6.9	
pH Final	7.8	7.9	7.8	7.8	7.9	8.0			pH Final	7.1	7.2	7.0	7.2	7.0	6.8		
Alkalinity	32.0								Alkalinity								
Hardness	44.0								Hardness								
Conductivity	176.1	174.1	178.0	175.3	174.1	172.6			Conductivity	313	310	317	312	315	318		
Chlorine	<.01								Chlorine								
Dilution: 32 Day									Dilution: 80 Day								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	16.0	15.7	16.0	16.0	15.2	16.1	16.2		Temp (C)	16.0	15.7	16.0	16.0	15.2	16.1	16.2	
DO Initial	7.3	7.2	7.1	7.0	7.5	6.7	5.8		DO Initial	7.6	7.2	7.1	7.0	7.5	6.6	6.1	
DO Final	8.4	8.5	8.4	8.5	8.3	8.5			DO Final	8.4	8.6	8.6	8.6	8.2	8.2		
pH Initial	7.3	7.4	7.2	7.3	7.5	7.4	7.1		pH Initial	7.2	7.0	6.7	6.8	6.9	7.0	6.7	
pH Final	7.5	7.6	7.3	7.4	7.4	7.5			pH Final	6.7	6.9	6.5	6.8	6.5	6.5		
Alkalinity									Alkalinity								
Hardness									Hardness								
Conductivity	257	254	260	254	258	259			Conductivity	373	367	376	371	390	384		
Chlorine									Chlorine								
Dilution: 42 Day									Dilution: 100 Day								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	16.0	15.7	16.0	16.0	15.2	15.1	16.2		Temp (C)	16.0	15.7	16.0	16.0	15.2	16.1	16.2	
DO Initial	7.3	7.2	7.1	6.8	7.5	6.5	5.8		DO Initial	7.7	7.4	7.2					
DO Final	8.4	8.5	8.5	8.5	8.3	8.4			DO Final	8.4	8.7	8.6					
pH Initial	7.3	7.3	7.1	7.1	7.4	7.2	7.0		pH Initial	6.9	5.7	5.3					
pH Final	7.3	7.4	7.2	7.3	7.2	7.3			pH Final	4.7	5.2	4.5					
Alkalinity									Alkalinity	4.0		4.0		4.0			
Hardness									Hardness	64.0		68.0		64.0			
Conductivity	281	270	282	277	280	282			Conductivity	439	422	434					
Chlorine									Chlorine	<.01		<.01					

APPENDIX F
REPORT QUALITY ASSURANCE FORM



Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM (v. 31612)

Client: Magnolia Wastewater

Project#: X4905

Chain of Custody Documents Checked by: AH 11/1/12
Technician/Date

Raw Data Documents Checked by: AH 11/1/12
Technician/Date

Statistical Analysis Package Checked by: EGB 11/10/12
Quality Manager/Date

Quality Control Data Checked by: EGB 10/10/12
Quality Manager/Date

Report Checked by: EGB 11/12/12
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Curtis H. Burgett, BS 11/12/12
Quality Manager Date

No part of this work may be altered in any form or by any means without written permission from Bio-Analytical Laboratories.

MAGNOLIA WASTEWATER SYSTEM

P.O. BOX 666
MAGNOLIA, ARKANSAS 71754-066
(870) 234-2955
mwws@sbcglobal.net

Non- Compliance Report

Arkansas Department of Environmental Quality
NPDES Enforcement Section
5301 Northshore Drive
North Little Rock, AR 72118


RE: NPDES Permit No. AR0043613 AFIN No. 14-00059 Discharge Number: 001
Facility: City of Magnolia-Big Creek WWTP
Physical Address: 72 Columbia Road 300 Magnolia, AR 71753
Mailing Address: P.O. Box 666 Magnolia, AR 71754-0666
Contact: Russell Thomas Phone: 870-234-2955 Fax: 870-234-2203
Email: mwws@sbcglobal.net

Violations: Failed fourth quarter WET testing.

In keeping with our voluntary TRE we have determined that we have been receiving a batch discharge containing a low pH. We have not been able to establish a set time or date pattern. We have placed portable samplers at our two main lift stations to determine which side of the City the problem is being generated from. As of date we still have not determined which area the low pH is being generated from. In the mean time we have been performing spot inspection of the known facilities and industries that have the capability of handling and storing that volume of water.

If you have any questions, feel free in contacting me at 870-234-2454

Sincerely



Russell W. Thomas

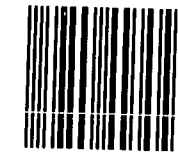
01/25/2013
Date

City of Magnolia
Big Creek WWTP
P.O. Box 666
Magnolia, AR 71754
Permit # AR0043613 AFIN # 14-00059

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NPDES Enforcement Section
Water Division
Arkansas Department of Environmental Quality
5301 N. Shore Dr.
North Little Rock, Arkansas 72118-5317

