

City of Berryville

Public Works Department

P.O. Box 227
305 East Madison
Berryville, Arkansas 72616

Office of the Director, Kirby Murray

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October 5, 2012

Arkansas Department of Environmental Quality
Enforcement Section
5301 Northshore Dr.
N. Little Rock, AR
72118-5317

RE: Permit No.: AR0021792. AFIN No.: 08-00034, 3rd Quarter Biomonitoring Results

To Whom It May Concern:

Please find the enclosed biomonitoring results and lab reports, I have included a second copy for your convenience.

Everything is in order and Berryville's plant has passed all tests for the 3rd quarter of 2012.

Sincerely,



Kirby Murray

c. Mr. Darrell Backs, Chief Operator



ENVIRONMENTAL TESTING & CONSULTING, INC.

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440

September 21, 2012

Mr. Darrell Backs,
City of Berryville WWTP
P.O. Box 227
Berryville, AR 72616

Dear Permittee,

The results of this WET (Whole Effluent Toxicity) test are acceptable according to test review criteria. There were no significant deficiencies found in sample handling, test performance, or reporting. The test results are within the limits established by your NPDES permit and were entered into the permittee's records in the database.

Results: CV/NOEL > 100% Permit Limit: 100%

Report #: 12-241-0190 BERRYVILLE_AR - AR0021792

All statistical interpretations generated by CETIS - Comprehensive Environmental Toxicity Information System (v.1.8.6.1). CETIS created by Tidepool Scientific Software

Respectfully,

Connie Cook, Manager, Biological Sciences

Enclosure(s)

cc

CETIS Summary Report

Report Date: 21 Sep-12 10:47 (p 1 of 2)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test Environmental Testing and Consulting, Inc.

Batch ID: 07-7925-2725	Test Type: Reproduction-Survival (7d)	Analyst: Ava Davis
Start Date: 28 Aug-12 13:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Perrier Water
Ending Date: 03 Sep-12 12:30	Species: Ceriodaphnia dubia	Brine:
Duration: 5d 23h	Source: In-House Culture	Age: < 24

Sample ID: 18-0827-8886	Code: 12-241-0190	Client: City of Berryville WWTP
Sample Date: 27 Aug-12 12:01	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)
Receive Date: 28 Aug-12 08:55	Source: BERRYVILLE_AR - AR0021792 (AR00217)	
Sample Age: 25h (1 °C)	Station:	

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	12-241-0190	29 Aug-12 12:01	30 Aug-12 08:48	30 Aug-12 00:00	1
2	12-241-0190	30 Aug-12 12:01	31 Aug-12 09:37	01 Sep-12 00:00	1

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-6183-2101	6d Survival Rate	100	>100	NA	NA	1	Fisher Exact/Bonferroni-Holm Test
03-5933-1274	Reproduction	100	>100	NA	15.8%	1	Dunnett Multiple Comparison Test

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
03-5933-1274	Reproduction	Control Resp	19.5	15 - NL	Yes	Passes Acceptability Criteria
03-5933-1274	Reproduction	PMSD	0.1578	0.13 - 0.47	Yes	Passes Acceptability Criteria

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	1	1	1	1	1	0	0	0.0%	0.0%
32		10	1	1	1	1	1	0	0	0.0%	0.0%
42		10	1	1	1	1	1	0	0	0.0%	0.0%
56		10	1	1	1	1	1	0	0	0.0%	0.0%
75		10	1	1	1	1	1	0	0	0.0%	0.0%
100		10	1	1	1	1	1	0	0	0.0%	0.0%

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	19.5	17.91	21.09	16	22	0.7032	2.224	11.4%	0.0%
32		10	19.1	16.08	22.12	10	24	1.337	4.228	22.14%	2.05%
42		10	19.9	18.57	21.23	18	24	0.5859	1.853	9.31%	-2.05%
56		10	17.6	15.54	19.66	13	22	0.9092	2.875	16.34%	9.74%
75		10	20.4	18.32	22.48	16	25	0.9214	2.914	14.28%	-4.62%
100		10	20.9	18.5	23.3	16	25	1.059	3.348	16.02%	-7.18%

CETIS Summary Report

Report Date: 21 Sep-12 10:47 (p 2 of 2)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test											Environmental Testing and Consulting, Inc.
6d Survival Rate Detail											
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1	1	1	1	1	1	1	1	1	1
32		1	1	1	1	1	1	1	1	1	1
42		1	1	1	1	1	1	1	1	1	1
56		1	1	1	1	1	1	1	1	1	1
75		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1
Reproduction Detail											
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	22	16	21	21	20	19	16	20	18	22
32		18	23	23	16	19	17	10	24	22	19
42		22	20	24	20	18	19	20	18	19	19
56		18	22	19	14	13	16	18	21	16	19
75		19	20	20	21	24	23	19	17	16	25
100		25	25	25	21	18	20	22	17	16	20

CETIS Measurement Report

Report Date: 21 Sep-12 10:47 (p 1 of 8)
Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test

Environmental Testing and Consulting, Inc.

Sample ID: 18-0827-8886	Code: 12-241-0190	Client: City of Berryville WWTP
Sample Date: 27 Aug-12 12:01	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)
Receive Date: 28 Aug-12 08:55	Source: BERRYVILLE_AR - AR0021792 (AR00217	
Sample Age: 25h (1 °C)	Station:	

CETIS Measurement Report

Report Date: 21 Sep-12 10:47 (p 2 of 8)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test Environmental Testing and Consulting, Inc.

Alkalinity (CaCO3)-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	59				
0	Lab Water	2	61				
0	Lab Water	3	62				
0	Lab Water	4	59				
0	Lab Water	5	62				
0	Lab Water	6	63				
0	Lab Water	7	62				

Total Residual Chlorine-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	0				
100			0				
0	Lab Water	2	0				
100			0				
0	Lab Water	3	0				
100			0				
0	Lab Water	4	0				
100			0				
0	Lab Water	5	0				
100			0				
0	Lab Water	6	0				
100			0				
0	Lab Water	7	0				
100			0				

Conductivity-µS/cm							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	182				
100			1631				
0	Lab Water	2	185				
100			1702				
0	Lab Water	3	182				
100			1590				
0	Lab Water	4	182				
100			1605				
0	Lab Water	5	184				
100			1611				
0	Lab Water	6	181				
100			1574				
0	Lab Water	7	183				
100			1589				

CETIS Measurement Report

Report Date: 21 Sep-12 10:47 (p 3 of 8)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test Environmental Testing and Consulting, Inc.

Final Dissolved Oxygen-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	8.3				
32			8.3				
42			8.2				
56			8.2				
75			8.1				
100			8				
0	Lab Water	2	8.2				
32			8				
42			8				
56			8				
75			7.9				
100			8.2				
0	Lab Water	3	8.1				
32			8				
42			8				
56			8.2				
75			8.2				
100			8.2				
0	Lab Water	4	8.2				
32			8.4				
42			8.2				
56			8.2				
75			8				
100			8.2				
0	Lab Water	5	8.2				
32			8.2				
42			8.3				
56			8.3				
75			8.2				
100			8.2				
0	Lab Water	6	8				
32			8.3				
42			8.2				
56			8.2				
75			8.2				
100			8.1				

CETIS Measurement Report

Report Date: 21 Sep-12 10:47 (p 4 of 8)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test						Environmental Testing and Consulting, Inc.	
Initial Dissolved Oxygen-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	9.2				
32			8.9				
42			9				
56			8.9				
75			8.7				
100			9				
0	Lab Water	2	9.2				
32			9.4				
42			9.5				
56			9.7				
75			9.8				
100			9.3				
0	Lab Water	3	9.6				
32			9.8				
42			9.8				
56			9.7				
75			9.6				
100			9.6				
0	Lab Water	4	8.4				
32			8.5				
42			8.5				
56			8.6				
75			8.7				
100			8.7				
0	Lab Water	5	8.5				
32			8.4				
42			8.4				
56			8.4				
75			8.5				
100			8.5				
0	Lab Water	6	9.3				
32			9.9				
42			10				
56			10.3				
75			10.4				
100			1.4				
0	Lab Water	7	8.3				
32			8.4				
42			8.5				
56			8.8				
75			8.7				
100			8.9				
Hardness (CaCO3)-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	91				
0	Lab Water	2	93				
0	Lab Water	3	90				
0	Lab Water	4	88				
0	Lab Water	5	91				
0	Lab Water	6	93				
0	Lab Water	7	92				

CETIS Measurement Report

Report Date: 21 Sep-12 10:47 (p 5 of 8)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test Environmental Testing and Consulting, Inc.

Final pH-Units

C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	Lab Water	1	8.1					
32			7.9					
42			7.8					
56			7.9					
75			7.9					
100			7.8					
0	Lab Water	2	7.9					
32			7.8					
42			7.8					
56			7.8					
75			7.9					
100			7.9					
0	Lab Water	3	7.8					
32			7.8					
42			7.8					
56			7.9					
75			7.9					
100			7.9					
0	Lab Water	4	7.9					
32			8					
42			8					
56			7.8					
75			7.8					
100			7.9					
0	Lab Water	5	7.9					
32			7.9					
42			8					
56			8					
75			8.1					
100			8.1					
0	Lab Water	6	8					
32			8					
42			7.9					
56			7.8					
75			7.8					
100			7.9					

CETIS Measurement Report

Report Date: 21 Sep-12 10:47 (p 6 of 8)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test Environmental Testing and Consulting, Inc.

Initial pH-Units

C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	Lab Water	1	8.2					
32			8					
42			8.1					
56			8.1					
75			8.1					
100			8.2					
0	Lab Water	2	8.4					
32			8.1					
42			8.1					
56			8.1					
75			8.1					
100			8.1					
0	Lab Water	3	8.4					
32			8.2					
42			8.2					
56			8.1					
75			8.1					
100			8					
0	Lab Water	4	8.3					
32			8.3					
42			8.2					
56			8.2					
75			8.2					
100			8.1					
0	Lab Water	5	8.1					
32			8.3					
42			8.3					
56			8.2					
75			8.2					
100			8.2					
0	Lab Water	6	8.2					
32			8.2					
42			8.1					
56			8.1					
75			8					
100			8					
0	Lab Water	7	8.2					
32			8.1					
42			8.1					
56			8					
75			8					
100			8					

CETIS Measurement Report

Report Date: 21 Sep-12 10:47 (p 7 of 8)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test Environmental Testing and Consulting, Inc.

Final Temperature-°C							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	2	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	3	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	4	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	5	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	6	23				
32			23				
42			23				
56			23				
75			23				
100			23				

CETIS Measurement Report

Report Date: 21 Sep-12 10:47 (p 8 of 8)
 Test Code: 2B467D54 | 07-2603-9892

Ceriodaphnia 7-d Survival and Reproduction Test				Environmental Testing and Consulting, Inc.			
Initial Temperature-°C							
C-%	Control Type	Reading Time	Measure QA	Diff-%	Inst ID	Analyst	Notes
0	Lab Water	1	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	2	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	3	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	4	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	5	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	6	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0	Lab Water	7	23				
32			23				
42			23				
56			23				
75			23				
100			23				

CETIS Summary Report

Report Date: 21 Sep-12 10:53 (p 1 of 2)
 Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test			Environmental Testing and Consulting, Inc.		
Batch ID: 11-1356-7489	Test Type: Growth-Survival (7d)	Analyst: Ava Davis	Start Date: 28 Aug-12 13:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Perrier Water
Ending Date: 04 Sep-12 14:10	Species: Pimephales promelas	Brine:	Duration: 7d 1h	Source: Aquatox, AR	Age: < 24
Sample ID: 18-0827-8886	Code: 12-241-0190	Client: City of Berryville WWTP	Sample Date: 27 Aug-12 12:01	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)
Receive Date: 28 Aug-12 08:55	Source: BERRYVILLE_AR - AR0021792 (AR00217)	Station:	Sample Age: 26h (1 °C)		

Sample Renewals					
Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	12-241-0190	29 Aug-12 12:01	30 Aug-12 08:48	30 Aug-12 00:00	1
2	12-241-0190	30 Aug-12 12:01	31 Aug-12 09:37	01 Sep-12 00:00	1

Comparison Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
21-2760-1372	7d Survival Rate	100	>100	NA	11.8%	1	Steel Many-One Rank Sum Test
05-2534-7503	Mean Dry Weight-mg	100	>100	NA	29.8%	1	Dunnett Multiple Comparison Test

Test Acceptability						
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
21-2760-1372	7d Survival Rate	Control Resp	0.95	0.8 - NL	Yes	Passes Acceptability Criteria

7d Survival Rate Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	0.0%
32		5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	0.0%
42		5	0.975	0.9056	1	0.875	1	0.025	0.0559	5.73%	-2.63%
56		5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	0.0%
75		5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	0.0%
100		5	0.95	0.8112	1	0.75	1	0.05	0.1118	11.77%	0.0%

Mean Dry Weight-mg Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	0.5525	0.4351	0.6699	0.4	0.65	0.04228	0.09454	17.11%	0.0%
32		5	0.495	0.4061	0.5839	0.4125	0.5875	0.03202	0.07159	14.46%	10.41%
42		5	0.5475	0.377	0.718	0.325	0.6875	0.06142	0.1373	25.08%	0.9%
56		5	0.61	0.5321	0.6879	0.525	0.6625	0.02806	0.06275	10.29%	-10.41%
75		5	0.5875	0.3631	0.8119	0.375	0.7875	0.08082	0.1807	30.76%	-6.34%
100		5	0.6125	0.5405	0.6845	0.5625	0.7125	0.02592	0.05796	9.46%	-10.86%

CETIS Summary Report

Report Date: 21 Sep-12 10:53 (p 2 of 2)
Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test							Environmental Testing and Consulting, Inc.
7d Survival Rate Detail							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Water	1	0.875	0.875	1	1	
32		1	0.875	0.875	1	1	
42		0.875	1	1	1	1	
56		1	0.875	0.875	1	1	
75		0.875	0.875	1	1	1	
100		1	0.75	1	1	1	
Mean Dry Weight-mg Detail							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Water	0.65	0.5375	0.4	0.575	0.6	
32		0.5875	0.4375	0.4125	0.5375	0.5	
42		0.6125	0.325	0.5875	0.6875	0.525	
56		0.6625	0.525	0.5625	0.6375	0.6625	
75		0.7875	0.375	0.575	0.75	0.45	
100		0.5625	0.7125	0.6	0.5875	0.6	

CETIS Measurement Report

Report Date: 21 Sep-12 10:53 (p 1 of 8)
Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test		Environmental Testing and Consulting, Inc.	
Sample ID: 18-0827-8886	Code: 12-241-0190	Client: City of Berryville WWTP	
Sample Date: 27 Aug-12 12:01	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)	
Receive Date: 28 Aug-12 08:55	Source: BERRYVILLE_AR - AR0021792 (AR00217		
Sample Age: 26h (1 °C)	Station:		

CETIS Measurement Report

Report Date: 21 Sep-12 10:53 (p 2 of 8)
 Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test							Environmental Testing and Consulting, Inc.
Alkalinity (CaCO3)-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	59				
0	Lab Water	2	61				
0	Lab Water	3	62				
0	Lab Water	4	59				
0	Lab Water	5	62				
0	Lab Water	6	63				
0	Lab Water	7	62				
Total Residual Chlorine-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	0				
100			0				
0	Lab Water	2	0				
100			0				
0	Lab Water	3	0				
100			0				
0	Lab Water	4	0				
100			0				
0	Lab Water	5	0				
100			0				
0	Lab Water	6	0				
100			0				
0	Lab Water	7	0				
100			0				
Conductivity-µS/cm							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	182				
100			1631				
0	Lab Water	2	185				
100			1702				
0	Lab Water	3	182				
100			1590				
0	Lab Water	4	182				
100			1605				
0	Lab Water	5	184				
100			1611				
0	Lab Water	6	181				
100			1574				
0	Lab Water	7	183				
100			1589				

CETIS Measurement Report

Report Date: 21 Sep-12 10:53 (p 3 of 8)
 Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test Environmental Testing and Consulting, Inc.

Final Dissolved Oxygen-mg/L							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	10				
32			10				
42			10				
56			10				
75			10				
100			10				
0	Lab Water	2	9.7				
32			9.9				
42			9.8				
56			9.6				
75			9.5				
100			9.5				
0	Lab Water	3	8.3				
32			8.3				
42			8.6				
56			8.6				
75			8.6				
100			8.6				
0	Lab Water	4	8.4				
32			8.5				
42			8.4				
56			8.4				
75			8.4				
100			8.4				
0	Lab Water	5	8.4				
32			8.4				
42			9.1				
56			9.1				
75			9.1				
100			9.1				
0	Lab Water	6	8.2				
32			8.2				
42			8.4				
56			8.4				
75			8.3				
100			8.2				
0	Lab Water	7	8.1				
32			8				
42			8				
56			8				
75			8				
100			7.9				

CETIS Measurement Report

Report Date: 21 Sep-12 10:53 (p 4 of 8)
 Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test							Environmental Testing and Consulting, Inc.
Initial Dissolved Oxygen-mg/L							
C-%	Control Type	Reading Time	Measure QA	Diff-%	Inst ID	Analyst Notes	
0	Lab Water	1	9.2				
32			8.9				
42			9				
56			8.9				
75			8.7				
100			9				
0	Lab Water	2	9.2				
32			9.4				
42			9.5				
56			9.7				
75			9.8				
100			9.3				
0	Lab Water	3	9.6				
32			9.8				
42			9.8				
56			9.7				
75			9.6				
100			9.6				
0	Lab Water	4	8.4				
32			8.5				
42			8.5				
56			8.6				
75			8.7				
100			8.7				
0	Lab Water	5	8.5				
32			8.4				
42			8.4				
56			8.4				
75			8.5				
100			8.5				
0	Lab Water	6	9.3				
32			9.9				
42			10				
56			10.3				
75			10.4				
100			1.4				
0	Lab Water	7	8.3				
32			8.4				
42			8.5				
56			8.8				
75			8.7				
100			8.9				
Hardness (CaCO3)-mg/L							
C-%	Control Type	Reading Time	Measure QA	Diff-%	Inst ID	Analyst Notes	
0	Lab Water	1	91				
0	Lab Water	2	93				
0	Lab Water	3	90				
0	Lab Water	4	88				
0	Lab Water	5	91				
0	Lab Water	6	93				
0	Lab Water	7	92				

CETIS Measurement Report

Report Date: 21 Sep-12 10:53 (p 5 of 8)
 Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test

Environmental Testing and Consulting, Inc.

Final pH-Units

C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	Lab Water	1	8.4					
32			8.5					
42			8.6					
56			8.7					
75			8.8					
100			8.7					
0	Lab Water	2	8.2					
32			8.5					
42			8.5					
56			8.9					
75			8.6					
100			8.7					
0	Lab Water	3	8.2					
32			8.3					
42			8.3					
56			8.3					
75			8.4					
100			8.4					
0	Lab Water	4	8.1					
32			8.1					
42			8.1					
56			8.2					
75			8.2					
100			8.2					
0	Lab Water	5	7.8					
32			8.1					
42			8.2					
56			8.1					
75			8.2					
100			8.3					
0	Lab Water	6	8					
32			7.9					
42			7.9					
56			8.1					
75			8.2					
100			8.2					
0	Lab Water	7	8.1					
32			8					
42			8					
56			7.9					
75			7.8					
100			7.8					

CETIS Measurement Report

Report Date: 21 Sep-12 10:53 (p 6 of 8)
 Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test Environmental Testing and Consulting, Inc.

Initial pH-Units							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	8.2				
32			8				
42			8.1				
56			8.1				
75			8.1				
100			8.2				
0	Lab Water	2	8.4				
32			8.1				
42			8.1				
56			8.1				
75			8.1				
100			8.1				
0	Lab Water	3	8.4				
32			8.2				
42			8.2				
56			8.1				
75			8.1				
100			8				
0	Lab Water	4	8.3				
32			8.3				
42			8.2				
56			8.2				
75			8.2				
100			8.1				
0	Lab Water	5	8.1				
32			8.3				
42			8.3				
56			8.2				
75			8.2				
100			8.2				
0	Lab Water	6	8.2				
32			8.2				
42			8.1				
56			8.1				
75			8				
100			8				
0	Lab Water	7	8.2				
32			8.1				
42			8.1				
56			8				
75			8				
100			8				

CETIS Measurement Report

Report Date: 21 Sep-12 10:53 (p 7 of 8)
 Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test				Environmental Testing and Consulting, Inc.				
Final Temperature-°C								
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	Lab Water	1	23					
32			23					
42			23					
56			23					
75			23					
100			23					
0	Lab Water	2	23					
32			23					
42			23					
56			23					
75			23					
100			23					
0	Lab Water	3	23					
32			23					
42			23					
56			23					
75			23					
100			23					
0	Lab Water	4	23					
32			23					
42			23					
56			23					
75			23					
100			23					
0	Lab Water	5	23					
32			23					
42			23					
56			23					
75			23					
100			23					
0	Lab Water	6	23					
32			23					
42			23					
56			23					
75			23					
100			23					
0	Lab Water	7	23					
32			23					
42			23					
56			23					
75			23					

CETIS Measurement Report

Report Date: 21 Sep-12 10:53 (p 8 of 8)
 Test Code: 4AF14BFA | 12-5732-7610

Fathead Minnow 7-d Larval Survival and Growth Test				Environmental Testing and Consulting, Inc.			
Initial Temperature-°C							
C-%	Control Type	Reading Time	Measure	QA	Diff-%	Inst ID	Analyst Notes
0	Lab Water	1	23				
32			23				
42			23				
56			23				
75			23				
100			23				
0			Lab Water	2	23		
32	23						
42	23						
56	23						
75	23						
100	23						
0	Lab Water	3			23		
32			23				
42			23				
56			23				
75			23				
100			23				
0			Lab Water	4	23		
32	23						
42	23						
56	23						
75	23						
100	23						
0	Lab Water	5			23		
32			23				
42			23				
56			23				
75			23				
100			23				
0			Lab Water	6	23		
32	23						
42	23						
56	23						
75	23						
100	23						
0	Lab Water	7			23		
32			23				
42			23				
56			23				
75			23				
100			23				



ENVIRONMENTAL TESTING & CONSULTING, INC.

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"A Laboratory Management Partner"

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City of Berryville

Mr. Darrell Backs

P.O. Box 227

Berryville, AR 72616

Project WWTP Bioassay
Information :

Report Date : 9/21/2012

Report Number : 12-241-0190

REPORT OF ANALYSIS

Received : 8/28/2012

Lab No : 91843

Matrix: Aqueous

Sample ID : Bioassay 8/26-27/12

Sampled: 8/27/2012 12:01

Test	Results	Units	ML	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	229	mg/L	1	1	09/06/12 09:00	EWB	2320B
Total Calcium	18.9	mg/L	0.100	1	09/05/12 20:36	JTR	EPA-200.7
Hardness as CaCO3(SM-2340B)	67.2	mg/L	0.100	1	09/05/12 20:36		EPA-200.7
Total Magnesium	4.87	mg/L	0.100	1	09/05/12 20:36	JTR	EPA-200.7

Lab No : 92251

Matrix: Aqueous

Sample ID : Bioassay 8/28-29/12

Sampled: 8/29/2012 12:01

Test	Results	Units	ML	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	168	mg/L	1	1	09/06/12 09:00	EWB	2320B
Total Calcium	22.1	mg/L	0.100	1	09/05/12 20:43	JTR	EPA-200.7
Hardness as CaCO3(SM-2340B)	78.5	mg/L	0.100	1	09/05/12 20:43		EPA-200.7
Total Magnesium	5.66	mg/L	0.100	1	09/05/12 20:43	JTR	EPA-200.7

Lab No : 92538

Matrix: Aqueous

Sample ID : Bioassay

Sampled: 8/30/2012 12:01

Test	Results	Units	ML	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	168	mg/L	1	1	09/06/12 09:00	EWB	2320B
Total Calcium	22.0	mg/L	0.100	1	09/05/12 20:50	JTR	EPA-200.7
Hardness as CaCO3(SM-2340B)	77.6	mg/L	0.100	1	09/05/12 20:50		EPA-200.7
Total Magnesium	5.51	mg/L	0.100	1	09/05/12 20:50	JTR	EPA-200.7

Qualifiers/ Definitions

* Outside QC limit
MQL Method Quantitation Limit

DF Dilution Factor

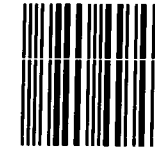
Additional Toxicity Test Information

1. Methods/Instrumentation used in chemical analysis:
 - Dissolved oxygen: 4500-O G YSI MODEL - 58
 - pH: 4500-H + B JENCO METER 6072
 - Temperature: 2500 B JENCO METER 6072
 - Conductivity: 2510 B CORNING METER 441
 - Alkalinity: 2320 B
 - Hardness: 200.7
 - Total Residual Chlorine: 4500-Cl G - REPORTED VALUE OF "0" INDICATES RESULT BELOW DETECTION LIMIT OF 0.02 mg/L
 - EPA Acute/Chronic Manual Edition and Date: EPA-821-R-02-012
OCT 2002 (Fifth edition)
2. Laboratory
 - Temperature: Average - 25 C Range - 23 - 26
 - Light Cycle: 16 hours light/ 8 hours dark
 - Light intensity: 100 foot-candles, average
 - Control Water: Dilute mineral water made with 20 % Perrier in Nanopure
 - Dilution Water: Laboratory control water
 - Pretreatment: none
3. Method 1002.0
 - Test chambers: 30 mL disposable plastic beakers
 - Volume per chamber: 15 mL
 - Number of organisms per chamber: 1
 - Number of replicates: 10
 - Food: Laboratory culture of Selenastrum algae and YCT solution
4. Method 1000.0
 - Test chambers: 20 oz. Disposable plastic cups
 - Volume per chamber: 200 mL
 - Average number of organisms per chamber: 8
 - Number of replicates per concentration: 5
 - Food: Artemia brine shrimp hatched in laboratory
 - Acclimation of organisms: Organisms are allowed to reach test temperature. Dilution water is added at half-hour intervals until organisms are contained in a culture media that consists of 80% dilution water.
5. Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from EPA methodology that were necessary for these tests as well as any sample manipulations which were performed, such as aeration, dechlorination with sodium thiosulfate, etc. and the justification for such manipulations or deviations. Attach additional pages as needed.
 - None

Kirby Murray, P.W. Director
City of Berryville, P.O. Box 227
Berryville, AR 72616



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