



ENVIRONMENTAL TESTING & CONSULTING, INC.

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

July 19, 2013

Mr. Ken Johnson/ Mr. Vincent Miles,
Pine Bluff Wastewater Utility
1520 South Ohio Street
Pine Bluff, AR 71601-6055

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: NOEL/CV = 12% Permit Limit: 9%

Report #: 13-176-0190 PINE BLUFF AR0033316

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, Lab Supervisor

Enclosure(s)

CETIS Test Evaluation Report

Report Date: 19 Jul-13 15:38 (1 of 2)
 Test Code: CD 13-176-0190 | 00-0348-2848

Facility: PINE BLUFF Sample Site: Sample Code: 13-176-0190 Sample Date: 24 Jun-13 09:10 Sample Age: 31h (1 °C) Project:	Test Name: Ceriodaphnia 7-d Survival and Reproduction Test Organism: Ceriodaphnia dubia (Water Flea) Protocol: EPA/821/R-02-013 (2002) Start Date: 25 Jun-13 16:30 End Date: 01 Jul-13 13:40 Duration: 5d 21h Organism Age: > 24
Permitee: Pine Bluff Wastewater Utility Address: 1520 South Ohio Street 900 Island Harbour Marina Road Pine Bluff, AR 71601-6055 Contact: Mr. Ken Johnson/ Mr. Vincent Miles Phone: 870-535-0821, 870-535-6243(fax) Email:	Laboratory: Environmental Testing and Consulting, Inc. Address: 2790 Whitten Road Memphis, TN 38133 Contact: Connie Cook, Lab Supervisor Phone: 901-213-2454 Email: ccook@etcmemphis.com

Chronic Toxicity Evaluation					
Endpoint	Parameter	C-%	IWC	Pass/Fail	Method
Reproduction	NOEL/LOEL	12/>12	9	Pass	Dunnett Multiple Comparison Test

Test Acceptability Criteria				
Endpoint	Attribute	Test Stat	Limits	Pass/Fail
6d Survival Rate	Control CV	0.3514	N/A - 0.4	Pass
6d Survival Rate	Control Resp	0.9	0.8 - N/A	Pass
Reproduction	Control CV	0.2994	N/A - 0.4	Pass
Reproduction	Control Resp	17.8	15 - N/A	Pass
Reproduction	PMSD	0.1982	0.13 - 0.47	Pass

CETIS Test Evaluation Report

Report Date: 19 Jul-13 15:38 (2 of 2)
 Test Code: CD 13-176-0190 | 00-0348-2848

6d Survival Rate Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	0.9	0.7819	1	0	1	0.1	0.3162	35.14%	0.0%
4		10	1	1	1	1	1	0	0	0.0%	-11.11%
5		10	1	1	1	1	1	0	0	0.0%	-11.11%
7		10	1	1	1	1	1	0	0	0.0%	-11.11%
9		10	1	1	1	1	1	0	0	0.0%	-11.11%
12		10	1	1	1	1	1	0	0	0.0%	-11.11%

Reproduction Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	17.8	15.81	19.79	5	26	1.685	5.329	29.94%	0.0%
4		10	19.8	18.53	21.07	14	26	1.073	3.393	17.14%	-11.24%
5		10	18.9	17.81	19.99	14	24	0.9244	2.923	15.47%	-6.18%
7		10	19.4	18.39	20.41	16	25	0.8589	2.716	14.0%	-8.99%
9		10	16.4	15.12	17.68	12	23	1.087	3.438	20.97%	7.87%
12		10	18.3	17.59	19.01	16	21	0.5972	1.889	10.32%	-2.81%

CETIS Summary Report

Report Date: 19 Jul-13 15:38 (p 1 of 2)
 Test Code: CD 13-176-0190 | 00-0348-2848

Ceriodaphnia 7-d Survival and Reproduction Test				Environmental Testing and Consulting, Inc.			
Batch ID:	09-2850-8085	Test Type:	Reproduction-Survival (7d)	Analyst:	Ava Davis		
Start Date:	25 Jun-13 16:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Perrier Water		
Ending Date:	01 Jul-13 13:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable		
Duration:	5d 21h	Source:	In-House Culture	Age:	> 24		

Sample ID:	10-6791-0864	Code:	13-176-0190	Client:	Pine Bluff Wastewater Utility		
Sample Date:	24 Jun-13 09:10	Material:	POTW Effluent	Project:			
Receive Date:	25 Jun-13 08:27	Source:	PINE BLUFF (AR0033316)				
Sample Age:	31h (1 °C)	Station:					

Sample Renewals					
Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	13-176-0190	26 Jun-13 09:10	27 Jun-13 08:13	27 Jun-13 00:00	1
2	13-176-0190	27 Jun-13 08:55	28 Jun-13 09:19	29 Jun-13 00:00	1

Comparison Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
00-4798-1440	6d Survival Rate	12	>12	NA	NA	8.333	Fisher Exact/Bonferroni-Holm Test
01-7743-6254	Reproduction	12	>12	NA	19.8%	8.333	Dunnett Multiple Comparison Test

Test Acceptability						
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
00-4798-1440	6d Survival Rate	Control CV	0.3514	NL - 0.4	Yes	Passes Acceptability Criteria
01-7743-6254	Reproduction	Control CV	0.2994	NL - 0.4	Yes	Passes Acceptability Criteria
00-4798-1440	6d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria
01-7743-6254	Reproduction	Control Resp	17.8	15 - NL	Yes	Passes Acceptability Criteria
01-7743-6254	Reproduction	PMSD	0.1982	0.13 - 0.47	Yes	Passes Acceptability Criteria

6d Survival Rate Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	0.9	0.6738	1	0	1	0.1	0.3162	35.14%	0.0%
4		10	1	1	1	1	1	0	0	0.0%	-11.11%
5		10	1	1	1	1	1	0	0	0.0%	-11.11%
7		10	1	1	1	1	1	0	0	0.0%	-11.11%
9		10	1	1	1	1	1	0	0	0.0%	-11.11%
12		10	1	1	1	1	1	0	0	0.0%	-11.11%

Reproduction Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	17.8	13.99	21.61	5	26	1.685	5.329	29.94%	0.0%
4		10	19.8	17.37	22.23	14	26	1.073	3.393	17.14%	-11.24%
5		10	18.9	16.81	20.99	14	24	0.9244	2.923	15.47%	-6.18%
7		10	19.4	17.46	21.34	16	25	0.8589	2.716	14.0%	-8.99%
9		10	16.4	13.94	18.86	12	23	1.087	3.438	20.97%	7.87%
12		10	18.3	16.95	19.65	16	21	0.5972	1.889	10.32%	-2.81%

CETIS Summary Report

Report Date: 19 Jul-13 15:38 (p 2 of 2)
 Test Code: CD 13-176-0190 | 00-0348-2848

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	0	1	1	1	1	1	1	1
4		1	1	1	1	1	1	1	1	1	1
5		1	1	1	1	1	1	1	1	1	1
7		1	1	1	1	1	1	1	1	1	1
9		1	1	1	1	1	1	1	1	1	1
12		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	17	20	5	17	16	26	18	20	18	21
4		14	26	22	19	21	18	19	21	16	22
5		24	19	21	17	21	16	20	20	14	17
7		19	18	20	16	25	17	23	18	19	19
9		14	15	20	14	14	12	18	19	23	15
12		20	19	18	21	16	18	17	21	16	17

CETIS Measurement Report

Report Date: 19 Jul-13 15:38 (p 1 of 8)
Test Code: CD 13-176-0190 | 00-0348-2848

Ceriodaphnia 7-d Survival and Reproduction Test		Environmental Testing and Consulting, Inc.	
Sample ID: 10-6791-0864	Code: 13-176-0190	Client: Pine Bluff Wastewater Utility	Project:
Sample Date: 24 Jun-13 09:10	Material: POTW Effluent		
Receive Date: 25 Jun-13 08:27	Source: PINE BLUFF (AR0033316)		
Sample Age: 31h (1 °C)	Station:		

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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	61				
0	Lab Water	2	61				
0	Lab Water	3	59				
0	Lab Water	4	63				
0	Lab Water	5	62				
0	Lab Water	6	59				
0	Lab Water	7	61				

Total Residual Chlorine-mg/L

C-%	Control Type	Reading Time	Measure QA	Diff-%	Inst ID	Analyst	Notes
0	Lab Water	1	0				
12			0				
0	Lab Water	2	0				
12			0				
0	Lab Water	3	0				
12			0				
0	Lab Water	4	0				
12			0				
0	Lab Water	5	0				
12			0				
0	Lab Water	6	0				
12			0				
0	Lab Water	7	0				
12			0				

Conductivity-µS/cm

C-%	Control Type	Reading Time	Measure QA	Diff-%	Inst ID	Analyst	Notes
0	Lab Water	1	182				
12			760				
0	Lab Water	2	178				
12			737				
0	Lab Water	3	180				
12			739				
0	Lab Water	4	183				
12			789				
0	Lab Water	5	179				
12			793				
0	Lab Water	6	183				
12			821				
0	Lab Water	7	180				
12			764				

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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	8.4				
4			8.5				
5			8.5				
7			8.5				
9			8.5				
12			8.5				
0	Lab Water	2	9.3				
4			9.3				
5			9.2				
7			9.2				
9			9.3				
12			9.2				
0	Lab Water	3	9.4				
4			9.4				
5			9.5				
7			9.4				
9			9.5				
12			9.5				
0	Lab Water	4	9.5				
4			9.4				
5			9.5				
7			9.6				
9			9.6				
12			9.5				
0	Lab Water	5	9.9				
4			10				
5			9.9				
7			9.7				
9			9.6				
12			9.2				
0	Lab Water	6	9.9				
4			10.1				
5			10.1				
7			10.1				
9			10.2				
12			10				

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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	8.9				
4			8.9				
5			8.8				
7			8.8				
9			8.8				
12			8.7				
0	Lab Water	2	9.4				
4			9.5				
5			9.4				
7			9.5				
9			9.4				
12			9.4				
0	Lab Water	3	9.8				
4			9.8				
5			9.8				
7			9.7				
9			9.7				
12			9.7				
0	Lab Water	4	9.4				
4			9.4				
5			9.4				
7			9.3				
9			9.4				
12			9.3				
0	Lab Water	5	9.3				
4			9.3				
5			9.1				
7			9.1				
9			9.1				
12			9.1				
0	Lab Water	6	10				
4			10				
5			10				
7			10				
9			10				
12			9.9				
0	Lab Water	7	10				
4			9.9				
5			10				
7			10				
9			9.9				
12			10				
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	92				
0	Lab Water	3	91				
0	Lab Water	4	90				
0	Lab Water	5	93				
0	Lab Water	6	89				
0	Lab Water	7	91				

CETIS Measurement Report

Report Date: 19 Jul-13 15:38 (p 5 of 8)
 Test Code: CD 13-176-0190 | 00-0348-2848

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	8.4				
4			8.4				
5			8.4				
7			8.4				
9			8.4				
12			8.4				
0	Lab Water	2	8.5				
4			8.5				
5			8.4				
7			8.1				
9			8.4				
12			8.3				
0	Lab Water	3	8.3				
4			8.6				
5			8.5				
7			8.4				
9			8.4				
12			8.4				
0	Lab Water	4	8.5				
4			8.4				
5			8.4				
7			8.4				
9			8.3				
12			8.3				
0	Lab Water	5	8.1				
4			8				
5			8				
7			8				
9			8				
12			7.9				
0	Lab Water	6	8.2				
4			8.1				
5			8				
7			8				
9			8				
12			8				

CETIS Measurement Report

Report Date: 19 Jul-13 15:38 (p 6 of 8)
 Test Code: CD 13-176-0190 | 00-0348-2848

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	8.7				
4			8.6				
5			8.6				
7			8.6				
9			8.5				
12			8.5				
0	Lab Water	2	8.5				
4			8.5				
5			8.2				
7			8.3				
9			8.5				
12			8.5				
0	Lab Water	3	8.7				
4			8.4				
5			8.5				
7			8.5				
9			8.5				
12			8.5				
0	Lab Water	4	8.4				
4			8.4				
5			8.4				
7			8.4				
9			8.4				
12			8.4				
0	Lab Water	5	8.4				
4			8.4				
5			8.4				
7			8.4				
9			8.3				
12			8.3				
0	Lab Water	6	8				
4			7.9				
5			7.9				
7			8				
9			8				
12			7.9				
0	Lab Water	7	8				
4			8				
5			8				
7			8				
9			8				
12			8				

CETIS Measurement Report

Report Date: 19 Jul-13 15:38 (p 7 of 8)
 Test Code: CD 13-176-0190 | 00-0348-2848

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				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	2	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	3	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	4	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	5	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	6	23				
4			23				
5			23				
7			23				
9			23				
12			23				

CETIS Measurement Report

Report Date: 19 Jul-13 15:38 (p 8 of 8)
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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				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	2	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	3	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	4	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	5	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	6	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	7	23				
4			23				
5			23				
7			23				
9			23				
12			23				

CETIS Test Evaluation Report

Report Date: 19 Jul-13 15:40 (1 of 2)
Test Code: FH 13-176-0190 | 13-1550-2974

Facility: PINE BLUFF Sample Site: Sample Code: 13-176-0190 Sample Date: 24 Jun-13 09:10 Sample Age: 29h (1 °C) Project:	Test Name: Fathead Minnow 7-d Larval Survival and Growth Test Organism: Pimephales promelas (Fathead Minnow) Protocol: EPA/821/R-02-013 (2002) Start Date: 25 Jun-13 14:00 End Date: 02 Jul-13 14:20 Duration: 7d 0h Organism Age: < 24
Permittee: Pine Bluff Wastewater Utility Address: 1520 South Ohio Street 900 Island Harbour Marina Road Pine Bluff, AR 71601-6055 Contact: Mr. Ken Johnson/ Mr. Vincent Miles Phone: 870-535-0821, 870-535-6243(fax) Email:	Laboratory: Environmental Testing and Consulting, Inc. Address: 2790 Whitten Road Memphis, TN 38133 Contact: Connie Cook, Lab Supervisor Phone: 901-213-2454 Email: ccook@etcmemphis.com

Chronic Toxicity Evaluation					
Endpoint	Parameter	C-%	IWC	Pass/Fail	Method
7d Survival Rate	NOEL/LOEL	12/>12	9	Pass	Steel Many-One Rank Sum Test
Mean Dry Weight-mg	NOEL/LOEL	12/>12	9	Pass	Dunnett Multiple Comparison Test

Test Acceptability Criteria				
Endpoint	Attribute	Test Stat	Limits	Pass/Fail
7d Survival Rate	Control CV	0	N/A - 0.4	Pass
7d Survival Rate	Control Resp	1	0.8 - N/A	Pass
Mean Dry Weight-mg	Control CV	0.1372	N/A - 0.4	Pass
Mean Dry Weight-mg	Control Resp	0.2925	0.25 - N/A	Pass

CETIS Test Evaluation Report

Report Date: 19 Jul-13 15:40 (2 of 2)
 Test Code: FH 13-176-0190 | 13-1550-2974

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	1	1	1	1	1	0	0	0.0%	0.0%
4		5	1	1	1	1	1	0	0	0.0%	0.0%
5		5	0.95	0.9244	0.9756	0.875	1	0.03062	0.06847	7.21%	5.0%
7		5	0.95	0.9244	0.9756	0.875	1	0.03062	0.06847	7.21%	5.0%
9		5	0.95	0.9083	0.9917	0.75	1	0.05	0.1118	11.77%	5.0%
12		5	0.95	0.9244	0.9756	0.875	1	0.03062	0.06847	7.21%	5.0%

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	0.2925	0.2775	0.3075	0.2625	0.3625	0.01794	0.04012	13.72%	0.0%
4		5	0.2925	0.2748	0.3101	0.25	0.35	0.02114	0.04727	16.16%	0.0%
5		5	0.3	0.2835	0.3165	0.25	0.35	0.01976	0.04419	14.73%	-2.56%
7		5	0.3175	0.296	0.339	0.25	0.375	0.0258	0.05769	18.17%	-8.55%
9		5	0.2875	0.2776	0.2974	0.25	0.325	0.01186	0.02652	9.22%	1.71%
12		5	0.3225	0.3052	0.3398	0.2625	0.3875	0.02069	0.04627	14.35%	-10.26%

CETIS Summary Report

Report Date: 19 Jul-13 15:40 (p 1 of 2)
 Test Code: FH 13-176-0190 | 13-1550-2974

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

Batch ID: 06-2144-6880	Test Type: Growth-Survival (7d)	Analyst: Ava Davis
Start Date: 25 Jun-13 14:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Perrier Water
Ending Date: 02 Jul-13 14:20	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d 0h	Source: Aquatox, AR	Age: < 24

Sample ID: 10-6791-0864	Code: 13-176-0190	Client: Pine Bluff Wastewater Utility
Sample Date: 24 Jun-13 09:10	Material: POTW Effluent	Project:
Receive Date: 25 Jun-13 08:27	Source: PINE BLUFF (AR0033316)	
Sample Age: 29h (1 °C)	Station:	

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	13-176-0190	26 Jun-13 09:10	27 Jun-13 08:13	27 Jun-13 00:00	1
2	13-176-0190	27 Jun-13 08:55	28 Jun-13 09:19	29 Jun-13 00:00	1

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
03-3011-0920	7d Survival Rate	12	>12	NA	9.88%	8.333	Steel Many-One Rank Sum Test
00-3336-4820	Mean Dry Weight-mg	12	>12	NA	22.8%	8.333	Dunnett Multiple Comparison Test

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
03-3011-0920	7d Survival Rate	Control CV	0	NL - 0.4	Yes	Passes Acceptability Criteria
00-3336-4820	Mean Dry Weight-mg	Control CV	0.1372	NL - 0.4	Yes	Passes Acceptability Criteria
03-3011-0920	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
00-3336-4820	Mean Dry Weight-mg	Control Resp	0.2925	0.25 - NL	Yes	Passes Acceptability Criteria

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	1	1	1	1	1	0	0	0.0%	0.0%
4		5	1	1	1	1	1	0	0	0.0%	0.0%
5		5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	5.0%
7		5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	5.0%
9		5	0.95	0.8112	1	0.75	1	0.05	0.1118	11.77%	5.0%
12		5	0.95	0.865	1	0.875	1	0.03062	0.06847	7.21%	5.0%

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	0.2925	0.2427	0.3423	0.2625	0.3625	0.01794	0.04012	13.72%	0.0%
4		5	0.2925	0.2338	0.3512	0.25	0.35	0.02114	0.04727	16.16%	0.0%
5		5	0.3	0.2451	0.3549	0.25	0.35	0.01976	0.04419	14.73%	-2.56%
7		5	0.3175	0.2459	0.3891	0.25	0.375	0.0258	0.05769	18.17%	-8.55%
9		5	0.2875	0.2546	0.3204	0.25	0.325	0.01186	0.02652	9.22%	1.71%
12		5	0.3225	0.2651	0.38	0.2625	0.3875	0.02069	0.04627	14.35%	-10.26%

CETIS Summary Report

Report Date: 19 Jul-13 15:40 (p 2 of 2)
 Test Code: FH 13-176-0190 | 13-1550-2974

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	1	1	1	1
4		1	1	1	1	1
5		1	1	0.875	0.875	1
7		0.875	1	1	1	0.875
9		1	0.75	1	1	1
12		1	1	0.875	0.875	1
Mean Dry Weight-mg Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	0.275	0.2875	0.2625	0.275	0.3625
4		0.3375	0.35	0.2625	0.25	0.2625
5		0.35	0.3375	0.2625	0.25	0.3
7		0.375	0.3625	0.3375	0.25	0.2625
9		0.2875	0.325	0.2875	0.2875	0.25
12		0.3	0.3375	0.2625	0.3875	0.325

CETIS Analytical Report

Report Date: 19 Jul-13 15:40 (p 3 of 3)
 Test Code: FH 13-176-0190 | 13-1550-2974

Fathead Minnow 7-d Larval Survival and Growth Test			Environmental Testing and Consulting, Inc.		
Analysis ID: 00-3336-4820	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.8.6			
Analyzed: 19 Jul-13 15:40	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 06-2144-6880	Test Type: Growth-Survival (7d)	Analyst: Ava Davis			
Start Date: 25 Jun-13 14:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Perrier Water			
Ending Date: 02 Jul-13 14:20	Species: Pimephales promelas	Brine: Not Applicable			
Duration: 7d 0h	Source: Aquatox, AR	Age: < 24			
Sample ID: 10-6791-0864	Code: 13-176-0190	Client: Pine Bluff Wastewater Utility			
Sample Date: 24 Jun-13 09:10	Material: POTW Effluent	Project:			
Receive Date: 25 Jun-13 08:27	Source: PINE BLUFF (AR0033316)				
Sample Age: 29h (1 °C)	Station:				

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	22.8%	12	>12	NA	8.333

Dunnett Multiple Comparison Test									
Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Lab Water		4	8.61E-05	2.362	0.067	8	0.8333	CDF	Non-Significant Effect
		5	-0.2655	2.362	0.067	8	0.8999	CDF	Non-Significant Effect
		7	-0.885	2.362	0.067	8	0.9772	CDF	Non-Significant Effect
		9	0.177	2.362	0.067	8	0.7758	CDF	Non-Significant Effect
		12	-1.062	2.362	0.067	8	0.9860	CDF	Non-Significant Effect

Test Acceptability Criteria				
Attribute	Test Stat	TAC Limits	Overlap	Decision
Control CV	0.1372	NL - 0.4	Yes	Passes Acceptability Criteria
Control Resp	0.2925	0.25 - NL	Yes	Passes Acceptability Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.005275855	0.001055171	5	0.529	0.7521	Non-Significant Effect
Error	0.0478747	0.001994779	24			
Total	0.05315056		29			

Distributional Tests					
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	2.124	15.09	0.8317	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9503	0.9031	0.1722	Normal Distribution

Mean Dry Weight-mg Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water	5	0.2925	0.2427	0.3423	0.275	0.2625	0.3625	0.01794	13.72%	0.0%
4		5	0.2925	0.2338	0.3512	0.2625	0.25	0.35	0.02114	16.16%	0.0%
5		5	0.3	0.2451	0.3549	0.3	0.25	0.35	0.01976	14.73%	-2.56%
7		5	0.3175	0.2459	0.3891	0.3375	0.25	0.375	0.0258	18.17%	-8.55%
9		5	0.2875	0.2546	0.3204	0.2875	0.25	0.325	0.01186	9.22%	1.71%
12		5	0.3225	0.2651	0.38	0.325	0.2625	0.3875	0.02069	14.35%	-10.26%

Mean Dry Weight-mg Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	0.275	0.2875	0.2625	0.275	0.3625
4		0.3375	0.35	0.2625	0.25	0.2625
5		0.35	0.3375	0.2625	0.25	0.3
7		0.375	0.3625	0.3375	0.25	0.2625
9		0.2875	0.325	0.2875	0.2875	0.25
12		0.3	0.3375	0.2625	0.3875	0.325

CETIS Measurement Report

Report Date: 19 Jul-13 15:40 (p 1 of 8)
Test Code: FH 13-176-0190 | 13-1550-2974

Fathead Minnow 7-d Larval Survival and Growth Test		Environmental Testing and Consulting, Inc.	
Sample ID: 10-6791-0864	Code: 13-176-0190	Client: Pine Bluff Wastewater Utility	Project:
Sample Date: 24 Jun-13 09:10	Material: POTW Effluent		
Receive Date: 25 Jun-13 08:27	Source: PINE BLUFF (AR0033316)		
Sample Age: 29h (1 °C)	Station:		

CETIS Measurement Report

Report Date: 19 Jul-13 15:40 (p 3 of 8)
 Test Code: FH 13-176-0190 | 13-1550-2974

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	9				
4			9.1				
5			9.1				
7			9.1				
9			9.1				
12			9.1				
0	Lab Water	2	9.6				
4			9.6				
5			9.6				
7			9.6				
9			9.6				
12			9.5				
0	Lab Water	3	9.3				
4			9.3				
5			9.3				
7			9.4				
9			9.4				
12			9.4				
0	Lab Water	4	9				
4			9				
5			9.1				
7			9				
9			9				
12			9				
0	Lab Water	5	9.9				
4			10.1				
5			10.1				
7			10				
9			10				
12			9.9				
0	Lab Water	6	9.8				
4			9.6				
5			9.3				
7			9.5				
9			9.6				
12			9.6				
0	Lab Water	7	8.7				
4			8.8				
5			8.6				
7			8.7				
9			8.7				
12			8.9				

CETIS Measurement Report

Report Date: 19 Jul-13 15:40 (p 4 of 8)
 Test Code: FH 13-176-0190 | 13-1550-2974

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	8.9				
4			8.9				
5			8.8				
7			8.8				
9			8.8				
12			8.7				
0	Lab Water	2	9.4				
4			9.5				
5			9.4				
7			9.5				
9			9.4				
12			9.4				
0	Lab Water	3	9.8				
4			9.8				
5			9.8				
7			9.7				
9			9.7				
12			9.7				
0	Lab Water	4	9.4				
4			9.4				
5			9.4				
7			9.3				
9			9.4				
12			9.3				
0	Lab Water	5	9.3				
4			9.3				
5			9.1				
7			9.1				
9			9.1				
12			9.1				
0	Lab Water	6	10				
4			10				
5			10				
7			10				
9			10				
12			9.9				
0	Lab Water	7	10				
4			9.9				
5			10				
7			10				
9			9.9				
12			10				
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	92				
0	Lab Water	3	91				
0	Lab Water	4	90				
0	Lab Water	5	93				
0	Lab Water	6	89				
0	Lab Water	7	91				

CETIS Measurement Report

Report Date: 19 Jul-13 15:40 (p 5 of 8)
 Test Code: FH 13-176-0190 | 13-1550-2974

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	8.3				
4			8.3				
5			8.3				
7			8.3				
9			8.3				
12			8.3				
0	Lab Water	2	8.4				
4			8.3				
5			8.3				
7			8.3				
9			8.1				
12			8.2				
0	Lab Water	3	8.3				
4			8.3				
5			8.3				
7			8.2				
9			8.2				
12			8.2				
0	Lab Water	4	8.3				
4			8.2				
5			8.2				
7			8.2				
9			8.2				
12			8.2				
0	Lab Water	5	7.9				
4			7.8				
5			7.8				
7			7.8				
9			7.8				
12			7.8				
0	Lab Water	6	7				
4			7.5				
5			7.5				
7			7.6				
9			7.6				
12			7.6				
0	Lab Water	7	7.3				
4			7.6				
5			7.5				
7			7.7				
9			7.7				
12			7.9				

CETIS Measurement Report

Report Date: 19 Jul-13 15:40 (p 6 of 8)
 Test Code: FH 13-176-0190 | 13-1550-2974

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	8.7				
4			8.6				
5			8.6				
7			8.6				
9			8.5				
12			8.5				
0	Lab Water	2	8.5				
4			8.5				
5			8.2				
7			8.3				
9			8.5				
12			8.5				
0	Lab Water	3	8.7				
4			8.4				
5			8.5				
7			8.5				
9			8.5				
12			8.5				
0	Lab Water	4	8.4				
4			8.4				
5			8.4				
7			8.4				
9			8.4				
12			8.4				
0	Lab Water	5	8.4				
4			8.4				
5			8.4				
7			8.4				
9			8.3				
12			8.3				
0	Lab Water	6	8				
4			7.9				
5			7.9				
7			8				
9			8				
12			7.9				
0	Lab Water	7	8				
4			8				
5			8				
7			8				
9			8				
12			8				

CETIS Measurement Report

Report Date: 19 Jul-13 15:40 (p 8 of 8)
 Test Code: FH 13-176-0190 | 13-1550-2974

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				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	2	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	3	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	4	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	5	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	6	23				
4			23				
5			23				
7			23				
9			23				
12			23				
0	Lab Water	7	23				
4			23				
5			23				
7			23				
9			23				
12			23				



ENVIRONMENTAL TESTING & CONSULTING, INC.

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440
 "A Laboratory Management Partner"

03326

Pine Bluff Wastewater Utility
 Mr. Vincent Miles
 900 Island Harbour Marina Rd.
 Pine Bluff, AR 71602

Project Bioassay
 Information :

Report Date : 7/19/2013

Report Number : 13-176-0190

REPORT OF ANALYSIS

Received : 6/25/2013

Lab No : 94739
 Sample ID : Bioassay

Matrix: Aqueous
 Sampled: 6/23/2013 9:10

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	147	mg/L	1	1	07/02/13 09:02	KMF	2320B
Total Calcium	13.2	mg/L	0.100	1	07/03/13 18:26	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	46.7	mg/L	0.100	1	07/02/13 22:12		EPA-200.7
Total Magnesium	3.33	mg/L	0.100	1	07/02/13 22:12	BKN	EPA-200.7

Lab No : 95280
 Sample ID : Bioassay

Matrix: Aqueous
 Sampled: 6/25/2013 9:10

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	150	mg/L	1	1	07/02/13 09:02	KMF	2320B
Total Calcium	12.2	mg/L	0.100	1	07/03/13 18:34	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	43.7	mg/L	0.100	1	07/02/13 22:15		EPA-200.7
Total Magnesium	3.22	mg/L	0.100	1	07/02/13 22:15	BKN	EPA-200.7

Lab No : 95618
 Sample ID : Bioassay

Matrix: Aqueous
 Sampled: 6/26/2013 8:55

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	147	mg/L	1	1	07/02/13 09:02	KMF	2320B
Total Calcium	13.5	mg/L	0.100	1	07/03/13 18:41	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	47.8	mg/L	0.100	1	07/02/13 22:19		EPA-200.7
Total Magnesium	3.43	mg/L	0.100	1	07/02/13 22:19	BKN	EPA-200.7

Qualifiers/Definitions
 * Outside QC limit
 MQL Method Quantitation Limit

DF Dilution Factor

Environmental Testing and Consulting, Inc.
2790 Whitten Road
Memphis, TN 38133

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: 2550 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



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ENVIRONMENTAL TESTING & CONSULTING, INC.

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



Pine Bluff Wastewater Utility
Bioassay

13-176-0190
03326
06-25-2013
09:30:42

①

Company Name Pine Bluff Wastewater Utility				Customer Number 03326		Telephone (870) 535-0828		RUSH	ICE
Site Name Semi-annual Bioassay			Project Comment					FID Number	
Project Pine Bluff - Bioassay			Project Number Outfall 001		PO Number 27665				
Project Manager / Contact Pine Bluff Wastewater Utility Vincent Miles				E-mail vincent@pwwater.com					
Sample ID	Container Type	Collected Date / Time	# Cont	Preservative	Grab / Comp	Matrix	Analyses		
C1 - Outfall 001	Plastic - Pint	6-23-13 09:10	1	NONE	C	Aqueous	alkalinity		
C1 - Outfall 001	Plastic - Pint	I	1	HNO3 - Nitric Acid	C	Aqueous	hardness		
C1 - Outfall 001	Plastic - Quart		2	NONE	C	Aqueous	Chronic CD/FH		
C2 - Outfall 001	Plastic - Quart		2	NONE	C	Aqueous	Chronic CD/FH		
C2 - Outfall 001	Plastic - Pint		1	NONE	C	Aqueous	alkalinity		
C2 - Outfall 001	Plastic - Pint		1	HNO3 - Nitric Acid	C	Aqueous	hardness		
C3 - Outfall 001	Plastic - Pint		1	HNO3 - Nitric Acid	C	Aqueous	hardness		

6/23/13; 0910

Sampled By Samantha Simpson		Method of Shipment Federal Express		Blank / Cooler Temperature 12		Remarks	
Relinquished By (sign)		Date / Time		Received By (sign)		Date / Time	
Relinquished By (sign)		Date / Time		Received By (sign)		Date / Time	
Relinquished By (sign)		Date / Time		Received by Lab (sign) B. Hoop		Date / Time 6-25-13 08:27	



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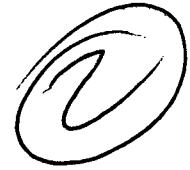
ENVIRONMENTAL TESTING & CONSULTING, INC.

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



Pine Bluff Wastewater Utility
Bioassay / 6/25/13

13-176-0190
03326
06-25-2013
09:30:42



Company Name Pine Bluff Wastewater Utility				Customer Number 03326		Telephone (870) 535-0828		RUSH	ICE
Site Name Semi-annual Bioassay				Project Comment				FID Number	
Project Pine Bluff - Bioassay				Project Number Outfall 001		PO Number 27665			
Project Manager / Contact Pine Bluff Wastewater Utility <i>Vincent Miles</i>					E-mail <i>Vincent@pwwater.com</i>				
Sample ID	Container Type	Collected Date / Time	# Cont	Preservative	Grab / Comp	Matrix	Analyses		
C1 - Outfall 001	Plastic - Pint		1	NONE	C	Aqueous	alkalinity		
C1 - Outfall 001	Plastic - Pint		1	HNO3 - Nitric Acid	C	Aqueous	hardness		
C1 - Outfall 001	Plastic - Quart		2	NONE	C	Aqueous	Chronic CD/FH		
C2 - Outfall 001	Plastic - Quart	<i>6-25-13 09:10</i>	2	NONE	C	Aqueous	Chronic CD/FH		
C2 - Outfall 001	Plastic - Pint	<i> </i>	1	NONE	C	Aqueous	alkalinity		
C2 - Outfall 001	Plastic - Pint	<i> </i>	1	HNO3 - Nitric Acid	C	Aqueous	hardness		
C3 - Outfall 001	Plastic - Pint		1	HNO3 - Nitric Acid	C	Aqueous	hardness		

6/25/13; 0910 HRS

Sampled By <i>Samantha Simpson</i>		Method of Shipment <i>Federal Express</i>		Blank / Cooler Temperature <i>10°C</i>		Remarks	
Relinquished By (sign)		Date / Time		Received By (sign)		Date / Time	
Relinquished By (sign)		Date / Time		Received By (sign)		Date / Time	
Relinquished By (sign)		Date / Time		Received by Lab (sign) <i>BLOUG</i>		Date / Time <i>6-27-13/0813</i>	



ENVIRONMENTAL TESTING & CONSULTING, INC.

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



Pine Bluff Wastewater Utility
Bioassav / 6/25/13/6/27/13

13-176-0190
03326
06-25-2013
09:30:42

3

Company Name Pine Bluff Wastewater Utility		Customer Number 03326	Telephone (870) 535-0828	RUSH	ICE		
Site Name Semi-annual Bioassay		Project Comment			FID Number		
Project Pine Bluff - Bioassay		Project Number	PO Number				
Project Manager / Contact Pine Bluff Wastewater Utility			E-mail				
Sample ID	Container Type	Collected Date / Time	# Cont	Preservative	Grab / Comp	Matrix	Analyses
C3 - Outfall 001	Plastic - Pint	6-26-13 08:55	1	NONE	C	Aqueous	alkalinity
C3 - Outfall 001	Plastic - Quart		3	NONE	C	Aqueous	Chronic CD/FH

↓

Hardness

Sampled By	Method of Shipment	Blank / Cooler Temperature 12	Remarks
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time
Relinquished By (sign)	Date / Time	Received by Lab (sign) BROOK	Date / Time 6-28-13 08:19



PINE BLUFF WASTEWATER UTILITY

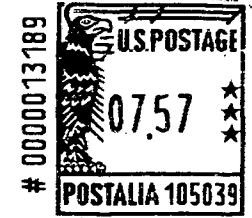
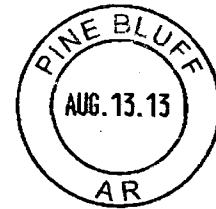
1520 S. Ohio Street
Pine Bluff, Arkansas 71601-6055

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT
OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

CERTIFIED MAIL™



7011 2970 0002 2646 4982



0000013189

AR DEPT OF ENVIRONMENTAL QUALITY
ATTN: ENFORCEMENT DIVISION
5301 NORTSHORE DRIVE
NORTH LITTLE ROCK, AR 72118-5317