

09/02/2020

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

Ref: Analytical Testing
Report Number: 20-231-0390
Client Project Description: Bioassay
Quarterly - 3
AR0033316

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: *Ceriodaphnia dubia* NOEL = 12 % CV = 32.50 %
 Fathead Minnow NOEL = 12 % CV = 22.34 %

Permit Limit: Critical Dilution = 9 %
 Maximum Coefficient of Variation (CV) < 40 %

EPA Methods: 1002.0 *Ceriodaphnia dubia* Survival and Reproduction
 1000.0 *Pimephales promelas* Larval Survival and Growth

All statistical interpretations generated by CETIS - Comprehensive Environmental Toxicity Information System (v.1.9.1.4). CETIS created by Tidepool Scientific Software

Respectfully,



Blake Andres
Lab Supervisor

CETIS Test Evaluation Report

Report Date: 02 Sep-20 16:08 (1 of 1)
Test Code: 20-231-0390 cd | 00-3511-1594

Facility: Pine Bluff Wastewater Utility
Sample Site:
Sample Code: 20-231-0390
Sample Date: 17 Aug-20 08:45
Sample Age: 28h (2.7 °C)
Project: WET Quarterly Compliance Test (3Q)

Permittee: Pine Bluff Wastewater Utility
Address: 1520 South Ohio Street
 Pine Bluff, AR 71601-6055

Contact: Mr. Vincent Miles
Phone: 870-535-6603
Email: Vincent@pbwastewater.com

Test Name: Ceriodaphnia 7-d Survival and Reproduction Test
Organism: Ceriodaphnia dubia (Water Flea)
Protocol: EPA/821/R-02-013 (2002)
Start Date: 18 Aug-20 12:31
End Date: 25 Aug-20 10:55
Duration: 6d 22h **Organism Age:** <24

Laboratory: Waypoint Analytical Tennessee , LLC.
Address: 2790 Whitten Road
 Memphis, TN 38133

Contact: Ms. Blake Andres, Lab Supervisor
Phone: 901-271-5200, 901-213-2440(fax)
Email: sandres@waypointanalytical.com

Comments:

Chronic Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
7d Survival Rate	NOEL/LOEL	12/>12	8.99	Passes IWC	Fisher Exact/Bonferroni-Holm Test
Reproduction	NOEL/LOEL	12/>12	8.99	Passes IWC	Dunnett Multiple Comparison Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	TAC Limits			Decision
			Lower	Upper	Overlap	
7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Acceptability Criteria
Reproduction	Control Resp	19.3	15	>>	Yes	Passes Acceptability Criteria

Reproduction Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	19.3	17	21.6	7	28	1.984	6.273	32.50%	0.0%
4		10	16	13.37	18.63	2	26	2.271	7.18	44.88%	17.1%
5		10	20.4	18.16	22.64	10	31	1.928	6.096	29.88%	-5.7%
7		10	14.5	11.5	17.5	0	24	2.587	8.182	56.43%	24.87%
9		10	17.5	15.5	19.5	8	26	1.727	5.462	31.21%	9.33%
12		10	17.2	14.73	19.67	0	22	2.133	6.746	39.22%	10.88%

7d Survival Rate Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	1	1	1	1	1	0	0	0.00%	0.0%
4		10	1	1	1	1	1	0	0	0.00%	0.0%
5		10	1	1	1	1	1	0	0	0.00%	0.0%
7		10	0.9	0.784	1	0	1	0.1	0.3162	35.14%	10.0%
9		10	0.8	0.6453	0.9547	0	1	0.1333	0.4216	52.70%	20.0%
12		10	0.9	0.784	1	0	1	0.1	0.3162	35.14%	10.0%

CETIS Summary Report

Report Date: 02 Sep-20 16:08 (p 1 of 2)
 Test Code: 20-231-0390 cd | 00-3511-1594

Ceriodaphnia 7-d Survival and Reproduction Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 11-7146-5128 Test Type: Reproduction-Survival (7d) Analyst: Ivey E. Wilkinson
 Start Date: 18 Aug-20 12:31 Protocol: EPA/821/R-02-013 (2002) Diluent: 20% DMW
 Ending Date: 25 Aug-20 10:55 Species: Ceriodaphnia dubia Brine: Not Applicable
 Duration: 6d 22h Source: In-House Culture Age: <24

Sample ID: 15-0611-9863 Code: 20-231-0390 Client: Pine Bluff Wastewater Utility
 Sample Date: 17 Aug-20 08:45 Material: POTW Effluent Project: WET Quarterly Compliance Test (3Q)
 Receipt Date: 18 Aug-20 09:50 Source: Pine Bluff Wastewater Utility (AR0033316)
 Sample Age: 28h (2.7 °C) Station:

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	20-231-0390	19 Aug-20 08:45	20 Aug-20 09:15	20 Aug-20 00:00	2
2	20-231-0390	21 Aug-20 08:45	21 Aug-20 07:45	22 Aug-20 00:00	1.5

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
20-0704-8856	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	12	> 12	n/a	8.333	n/a
07-0618-7081	Reproduction	Dunnett Multiple Comparison Test	12	> 12	n/a	8.333	35.6%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
20-0704-8856	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Acceptability Criteria
07-0618-7081	Reproduction	Control Resp	19.3	15	>>	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
4		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
7		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
9		10	0.8000	0.4984	1.0000	0.0000	1.0000	0.1333	0.4216	52.70%	20.00%
12		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	19.3	14.81	23.79	7	28	1.984	6.273	32.50%	0.00%
4		10	16	10.86	21.14	2	26	2.271	7.18	44.88%	17.10%
5		10	20.4	16.04	24.76	10	31	1.928	6.096	29.88%	-5.70%
7		10	14.5	8.647	20.35	0	24	2.587	8.182	56.43%	24.87%
9		10	17.5	13.59	21.41	8	26	1.727	5.462	31.21%	9.33%
12		10	17.2	12.37	22.03	0	22	2.133	6.746	39.22%	10.88%

CETIS Summary Report

Report Date: 02 Sep-20 16:08 (p 2 of 2)
Test Code: 20-231-0390 cd | 00-3511-1594

Ceriodaphnia 7-d Survival and Reproduction Test

Waypoint Analytical Tennessee, LLC.

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7		1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
9		1.0000	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12		1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	26	28	18	23	15	7	17	17	25	17
4		2	10	21	18	20	26	17	22	9	15
5		10	25	20	26	21	13	31	20	18	20
7		10	24	24	0	16	22	9	14	20	6
9		16	8	15	13	22	26	19	24	18	14
12		22	16	20	0	22	14	16	22	22	18

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
4		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
7		1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1
9		1/1	0/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1
12		1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Measurement Report

Report Date: 02 Sep-20 16:08 (p 1 of 4)
Test Code: 20-231-0390 cd | 00-3511-1594

Ceriodaphnia 7-d Survival and Reproduction Test

Waypoint Analytical Tennessee , LLC.

Batch ID: 11-7146-5128	Test Type: Reproduction-Survival (7d)	Analyst: Ivey E. Wilkinson
Start Date: 18 Aug-20 12:31	Protocol: EPA/821/R-02-013 (2002)	Diluent: 20% DMW
Ending Date: 25 Aug-20 10:55	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 22h	Source: In-House Culture	Age: <24
Sample ID: 15-0611-9863	Code: 20-231-0390	Client: Pine Bluff Wastewater Utility
Sample Date: 17 Aug-20 08:45	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)
Receipt Date: 18 Aug-20 09:50	Source: Pine Bluff Wastewater Utility (AR0033316)	
Sample Age: 28h (2.7 °C)	Station:	

Total Residual Chlorine-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	0	0	0	0	0	0	0		0
12		7	0	0	0	0	0	0	0		0
Overall		14	0	0	0	0	0	0	0	#Num!	0 (0%)

Conductivity-µS/cm

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	165.1	162.7	167.4	162.2	167.9	0.9539	2.524	1.53%	0
12		7	538.1	521.2	555.1	516	565	6.912	18.29	3.4%	0
Overall		14	351.6	239.6	463.6	162.2	565	51.84	194	55.17%	0 (0%)

Final Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	8.557	8.261	8.854	7.9	8.8	0.1212	0.3207	3.75%	0
4		7	8.486	8.159	8.812	7.8	8.7	0.1335	0.3532	4.16%	0
5		7	8.5	8.162	8.838	7.8	8.8	0.138	0.3651	4.3%	0
7		7	8.5	8.142	8.858	7.7	8.8	0.1464	0.3873	4.56%	0
9		7	8.557	8.208	8.907	7.8	8.8	0.1429	0.378	4.42%	0
12		7	8.586	8.21	8.961	7.8	9	0.1534	0.4059	4.73%	0
Overall		42	8.531	8.422	8.639	7.7	9	0.05372	0.3482	4.08%	0 (0%)

Initial Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	8.343	8.124	8.562	8	8.7	0.08959	0.237	2.84%	0
4		7	8.357	8.138	8.576	8.1	8.7	0.08959	0.237	2.84%	0
5		7	8.414	8.25	8.578	8.2	8.7	0.067	0.1773	2.11%	0
7		7	8.371	8.214	8.529	8.2	8.6	0.06442	0.1704	2.04%	0
9		7	8.329	8.171	8.486	8.2	8.6	0.06442	0.1704	2.05%	0
12		7	8.329	8.19	8.467	8.2	8.6	0.05654	0.1496	1.8%	0
Overall		42	8.357	8.3	8.414	8	8.7	0.02834	0.1837	2.20%	0 (0%)

Final pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	7.671	7.555	7.787	7.5	7.8	0.04738	0.1254	1.63%	0
4		7	7.686	7.587	7.785	7.5	7.8	0.04041	0.1069	1.39%	0
5		7	7.7	7.624	7.776	7.6	7.8	0.03086	0.08165	1.06%	0
7		7	7.714	7.631	7.797	7.6	7.8	0.03401	0.08998	1.17%	0
9		7	7.786	7.687	7.885	7.6	7.9	0.04041	0.1069	1.37%	0
12		7	7.814	7.731	7.897	7.7	7.9	0.03401	0.08997	1.15%	0
Overall		42	7.729	7.695	7.762	7.5	7.9	0.01679	0.1088	1.41%	0 (0%)

CETIS Measurement Report

Report Date: 02 Sep-20 16:08 (p 2 of 4)
Test Code: 20-231-0390 cd | 00-3511-1594

Ceriodaphnia 7-d Survival and Reproduction Test

Waypoint Analytical Tennessee, LLC.

Initial pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	7.586	7.461	7.71	7.3	7.7	0.05084	0.1345	1.77%	0
4		7	7.571	7.483	7.659	7.4	7.7	0.03595	0.09512	1.26%	0
5		7	7.571	7.469	7.674	7.4	7.7	0.04206	0.1113	1.47%	0
7		7	7.586	7.503	7.669	7.5	7.7	0.03401	0.08997	1.19%	0
9		7	7.571	7.483	7.659	7.4	7.7	0.03595	0.09512	1.26%	0
12		7	7.614	7.55	7.678	7.5	7.7	0.02608	0.06901	0.91%	0
Overall		42	7.583	7.553	7.613	7.3	7.7	0.01482	0.09606	1.27%	0 (0%)

Final Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	22.43	21.97	22.88	21.8	23.1	0.1861	0.4923	2.2%	0
4		7	22.4	21.9	22.9	21.8	23.2	0.2024	0.5354	2.39%	0
5		7	22.57	22.06	23.08	21.9	23.3	0.2078	0.5499	2.44%	0
7		7	22.54	21.98	23.11	21.7	23.4	0.2318	0.6133	2.72%	0
9		7	22.31	21.81	22.82	21.8	23.4	0.2075	0.549	2.46%	0
12		7	22.6	22.08	23.12	21.8	23.3	0.2138	0.5657	2.5%	0
Overall		42	22.48	22.31	22.64	21.7	23.4	0.08142	0.5277	2.35%	0 (0%)

Initial Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	22.96	22.66	23.25	22.3	23.2	0.1212	0.3207	1.4%	0
4		7	22.99	22.53	23.45	22.2	23.8	0.1883	0.4981	2.17%	0
5		7	22.91	22.5	23.33	22.3	23.7	0.1696	0.4488	1.96%	0
7		7	22.9	22.48	23.32	22.3	23.6	0.1718	0.4546	1.99%	0
9		7	22.89	22.5	23.27	22.4	23.6	0.158	0.418	1.83%	0
12		7	22.83	22.49	23.17	22.4	23.4	0.1375	0.3638	1.59%	0
Overall		42	22.91	22.79	23.04	22.2	23.8	0.06146	0.3983	1.74%	0 (0%)

CETIS Measurement Report

Report Date: 02 Sep-20 16:08 (p 3 of 4)
Test Code: 20-231-0390 cd | 00-3511-1594

Ceriodaphnia 7-d Survival and Reproduction Test

Waypoint Analytical Tennessee , LLC.

Total Residual Chlorine-mg/L

Conc.-%	Code	1	2	3	4	5	6	7
0	L	0	0	0	0	0	0	0
4								
5								
7								
9								
12		0	0	0	0	0	0	0

Conductivity-µS/cm

Conc.-%	Code	1	2	3	4	5	6	7
0	L	162.9	167.5	162.2	167.9	163.2	164.1	167.7
4								
5								
7								
9								
12		562	535	530	530	516	529	565

Final Dissolved Oxygen-mg/L

Conc.-%	Code	1	2	3	4	5	6	7
0	L	7.9	8.4	8.7	8.6	8.8	8.8	8.7
4		7.8	8.2	8.6	8.7	8.7	8.7	8.7
5		7.8	8.2	8.6	8.7	8.8	8.7	8.7
7		7.7	8.3	8.7	8.7	8.7	8.6	8.8
9		7.8	8.3	8.7	8.8	8.8	8.7	8.8
12		7.8	8.3	8.7	8.8	8.7	8.8	9

Initial Dissolved Oxygen-mg/L

Conc.-%	Code	1	2	3	4	5	6	7
0	L	8	8.3	8.3	8.6	8.2	8.3	8.7
4		8.1	8.2	8.4	8.6	8.1	8.4	8.7
5		8.4	8.2	8.3	8.6	8.3	8.4	8.7
7		8.2	8.2	8.3	8.6	8.4	8.3	8.6
9		8.5	8.2	8.2	8.4	8.2	8.2	8.6
12		8.4	8.2	8.2	8.4	8.3	8.2	8.6

Final pH-Units

Conc.-%	Code	1	2	3	4	5	6	7
0	L	7.5	7.7	7.7	7.7	7.8	7.8	7.5
4		7.5	7.7	7.7	7.8	7.7	7.8	7.6
5		7.6	7.7	7.8	7.7	7.7	7.8	7.6
7		7.6	7.8	7.8	7.7	7.7	7.8	7.6
9		7.7	7.8	7.8	7.8	7.9	7.9	7.6
12		7.7	7.9	7.9	7.8	7.8	7.9	7.7

Initial pH-Units

Conc.-%	Code	1	2	3	4	5	6	7
0	L	7.3	7.6	7.7	7.6	7.7	7.6	7.6
4		7.4	7.6	7.7	7.5	7.6	7.6	7.6
5		7.4	7.6	7.7	7.5	7.7	7.5	7.6
7		7.5	7.6	7.7	7.5	7.7	7.5	7.6
9		7.4	7.6	7.7	7.5	7.6	7.6	7.6
12		7.5	7.7	7.7	7.6	7.6	7.6	7.6

CETIS Measurement Report

Report Date: 02 Sep-20 16:08 (p 4 of 4)
Test Code: 20-231-0390 cd | 00-3511-1594

Ceriodaphnia 7-d Survival and Reproduction Test

Waypoint Analytical Tennessee, LLC.

Final Temperature-°C

Conc.-%	Code	1	2	3	4	5	6	7
0	L	21.9	22.7	21.8	22.3	22.9	23.1	22.3
4		21.9	22.5	21.8	22.1	23	23.2	22.3
5		21.9	22.7	21.9	23	22.9	23.3	22.3
7		21.9	22.6	21.7	22.9	23	23.4	22.3
9		21.9	22.6	21.8	22.3	22	23.4	22.2
12		22	22.5	21.8	23	23.1	23.3	22.5

Initial Temperature-°C

Conc.-%	Code	1	2	3	4	5	6	7
0	L	22.3	23.2	23.1	22.8	23.1	23.2	23
4		22.2	23.8	23	22.8	23.2	23.2	22.7
5		22.3	23.7	22.9	22.7	23.1	23.1	22.6
7		22.3	23.6	23	22.5	23.2	23.1	22.6
9		22.4	23.6	22.8	22.5	23.2	23	22.7
12		22.4	23.4	22.9	22.4	22.9	23.1	22.7

CETIS Test Evaluation Report

Report Date: 02 Sep-20 16:08 (1 of 1)
Test Code: 20-231-0390 fh | 04-0159-3015

Facility: Pine Bluff Wastewater Utility
Sample Site:
Sample Code: 20-231-0390
Sample Date: 17 Aug-20 08:45
Sample Age: 27h (2.7 °C)
Project: WET Quarterly Compliance Test (3Q)

Permittee: Pine Bluff Wastewater Utility
Address: 1520 South Ohio Street
 Pine Bluff, AR 71601-6055

Contact: Mr. Vincent Miles
Phone: 870-535-6603
Email: Vincent@pbwastewater.com

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: 18 Aug-20 12:13
End Date: 25 Aug-20 10:40
Duration: 6d 22h **Organism Age:** <24

Laboratory: Waypoint Analytical Tennessee , LLC.
Address: 2790 Whitten Road
 Memphis, TN 38133

Contact: Ms. Blake Andres, Lab Supervisor
Phone: 901-271-5200, 901-213-2440(fax)
Email: sandres@waypointanalytical.com

Comments:

Chronic Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
7d Survival Rate	NOEL/LOEL	12/>12	8.99	Passes IWC	Dunnett Multiple Comparison Test
Mean Dry Weight-mg	NOEL/LOEL	12/>12	8.99	Passes IWC	Dunnett Multiple Comparison Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	TAC Limits			Decision
			Lower	Upper	Overlap	
7d Survival Rate	Control Resp	0.9	0.8	>>	Yes	Passes Acceptability Criteria
Mean Dry Weight-mg	Control Resp	0.2625	0.25	>>	Yes	Passes Acceptability Criteria

7d Survival Rate Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.9	0.8616	0.9384	0.75	1	0.04677	0.1046	11.62%	0.0%
4		5	0.775	0.6756	0.8744	0.375	1	0.1212	0.271	34.97%	13.89%
5		5	0.825	0.7727	0.8773	0.625	1	0.06374	0.1425	17.28%	8.33%
7		5	0.875	0.8291	0.9209	0.75	1	0.0559	0.125	14.29%	2.78%
9		5	0.95	0.9249	0.9751	0.875	1	0.03062	0.06847	7.21%	-5.56%
12		5	0.925	0.8999	0.9501	0.875	1	0.03062	0.06847	7.40%	-2.78%

Mean Dry Weight-mg Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.2625	0.241	0.284	0.2125	0.3625	0.02622	0.05863	22.34%	0.0%
4		5	0.235	0.2174	0.2526	0.1625	0.275	0.02143	0.04793	20.39%	10.48%
5		5	0.25	0.2454	0.2546	0.2375	0.2625	0.005591	0.0125	5.00%	4.76%
7		5	0.3	0.2745	0.3255	0.2	0.3875	0.03113	0.0696	23.20%	-14.29%
9		5	0.28	0.2705	0.2895	0.2375	0.3	0.01159	0.02592	9.26%	-6.67%
12		5	0.2875	0.2689	0.3061	0.2375	0.35	0.02271	0.05077	17.66%	-9.52%

CETIS Summary Report

Report Date: 02 Sep-20 16:09 (p 1 of 2)
 Test Code: 20-231-0390 fh | 04-0159-3015

Fathead Minnow 7-d Larval Survival and Growth Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 15-5973-9247 Test Type: Growth-Survival (7d) Analyst: Ivey E. Wilkinson
 Start Date: 18 Aug-20 12:13 Protocol: EPA/821/R-02-013 (2002) Diluent: 20% DMW
 Ending Date: 25 Aug-20 10:40 Species: Pimephales promelas Brine: Not Applicable
 Duration: 6d 22h Source: Aquatic Biosystems, CO Age: <24

Sample ID: 15-0611-9863 Code: 20-231-0390 Client: Pine Bluff Wastewater Utility
 Sample Date: 17 Aug-20 08:45 Material: POTW Effluent Project: WET Quarterly Compliance Test (3Q)
 Receipt Date: 18 Aug-20 09:50 Source: Pine Bluff Wastewater Utility (AR0033316)
 Sample Age: 27h (2.7 °C) Station:

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	20-231-0390	19 Aug-20 08:45	20 Aug-20 09:15	20 Aug-20 00:00	2
2	20-231-0390	21 Aug-20 08:45	21 Aug-20 07:45	22 Aug-20 00:00	1.5

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
02-4018-5237	7d Survival Rate	Dunnett Multiple Comparison Test	12	> 12	n/a	8.333	24.2%
02-4053-4015	Mean Dry Weight-mg	Dunnett Multiple Comparison Test	12	> 12	n/a	8.333	27.5%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
02-4018-5237	7d Survival Rate	Control Resp	0.9	0.8	>>	Yes	Passes Acceptability Criteria
02-4053-4015	Mean Dry Weight-mg	Control Resp	0.2625	0.25	>>	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.9000	0.7701	1.0000	0.7500	1.0000	0.0468	0.1046	11.62%	0.00%
4		5	0.7750	0.4385	1.0000	0.3750	1.0000	0.1212	0.2710	34.97%	13.89%
5		5	0.8250	0.6480	1.0000	0.6250	1.0000	0.0637	0.1425	17.28%	8.33%
7		5	0.8750	0.7198	1.0000	0.7500	1.0000	0.0559	0.1250	14.29%	2.78%
9		5	0.9500	0.8650	1.0000	0.8750	1.0000	0.0306	0.0685	7.21%	-5.56%
12		5	0.9250	0.8400	1.0000	0.8750	1.0000	0.0306	0.0685	7.40%	-2.78%

Mean Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.2625	0.1897	0.3353	0.2125	0.3625	0.02622	0.05863	22.34%	0.00%
4		5	0.235	0.1755	0.2945	0.1625	0.275	0.02143	0.04793	20.39%	10.48%
5		5	0.25	0.2345	0.2655	0.2375	0.2625	0.005591	0.0125	5.00%	4.76%
7		5	0.3	0.2136	0.3864	0.2	0.3875	0.03113	0.0696	23.20%	-14.29%
9		5	0.28	0.2478	0.3122	0.2375	0.3	0.01159	0.02592	9.26%	-6.67%
12		5	0.2875	0.2245	0.3505	0.2375	0.35	0.02271	0.05077	17.66%	-9.52%

CETIS Summary Report

Report Date: 02 Sep-20 16:09 (p 2 of 2)
Test Code: 20-231-0390 fh | 04-0159-3015

Fathead Minnow 7-d Larval Survival and Growth Test

Waypoint Analytical Tennessee, LLC.

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	0.7500	0.8750	1.0000	1.0000	0.8750
4		1.0000	0.3750	1.0000	0.8750	0.6250
5		0.8750	1.0000	0.6250	0.7500	0.8750
7		0.8750	1.0000	0.7500	0.7500	1.0000
9		1.0000	1.0000	0.8750	1.0000	0.8750
12		1.0000	1.0000	0.8750	0.8750	0.8750

Mean Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	0.2125	0.2625	0.2375	0.3625	0.2375
4		0.275	0.1625	0.275	0.25	0.2125
5		0.2375	0.2625	0.25	0.2375	0.2625
7		0.2	0.3375	0.2875	0.2875	0.3875
9		0.275	0.3	0.2875	0.3	0.2375
12		0.35	0.2875	0.2375	0.2375	0.325

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	6/8	7/8	8/8	8/8	7/8
4		8/8	3/8	8/8	7/8	5/8
5		7/8	8/8	5/8	6/8	7/8
7		7/8	8/8	6/8	6/8	8/8
9		8/8	8/8	7/8	8/8	7/8
12		8/8	8/8	7/8	7/8	7/8

CETIS Measurement Report

Report Date: 02 Sep-20 16:08 (p 1 of 4)
 Test Code: 20-231-0390 fh | 04-0159-3015

Fathead Minnow 7-d Larval Survival and Growth Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 15-5973-9247	Test Type: Growth-Survival (7d)	Analyst: Ivey E. Wilkinson
Start Date: 18 Aug-20 12:13	Protocol: EPA/821/R-02-013 (2002)	Diluent: 20% DMW
Ending Date: 25 Aug-20 10:40	Species: Pimephales promelas	Brine: Not Applicable
Duration: 6d 22h	Source: Aquatic Biosystems, CO	Age: <24
Sample ID: 15-0611-9863	Code: 20-231-0390	Client: Pine Bluff Wastewater Utility
Sample Date: 17 Aug-20 08:45	Material: POTW Effluent	Project: WET Quarterly Compliance Test (3Q)
Receipt Date: 18 Aug-20 09:50	Source: Pine Bluff Wastewater Utility (AR0033316)	
Sample Age: 27h (2.7 °C)	Station:	

Total Residual Chlorine-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	0	0	0	0	0	0	0		0
12		7	0	0	0	0	0	0	0		0
Overall		14	0	0	0	0	0	0	0	#Num!	0 (0%)

Conductivity-µS/cm

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	165.1	162.7	167.4	162.2	167.9	0.9539	2.524	1.53%	0
12		7	538.1	521.2	555.1	516	565	6.912	18.29	3.4%	0
Overall		14	351.6	239.6	463.6	162.2	565	51.84	194	55.17%	0 (0%)

Final Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	7.943	7.775	8.11	7.6	8.2	0.06851	0.1813	2.28%	0
4		7	7.914	7.62	8.209	7.5	8.4	0.1204	0.3185	4.02%	0
5		7	7.986	7.65	8.321	7.5	8.5	0.137	0.3625	4.54%	0
7		7	8.071	7.785	8.358	7.6	8.5	0.1169	0.3094	3.83%	0
9		7	8.143	7.802	8.484	7.6	8.7	0.1395	0.369	4.53%	0
12		7	8.257	7.869	8.645	7.8	9.1	0.1587	0.4197	5.08%	0
Overall		42	8.052	7.947	8.157	7.5	9.1	0.05194	0.3366	4.18%	0 (0%)

Initial Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	8.343	8.124	8.562	8	8.7	0.08959	0.237	2.84%	0
4		7	8.357	8.138	8.576	8.1	8.7	0.08959	0.237	2.84%	0
5		7	8.414	8.25	8.578	8.2	8.7	0.067	0.1773	2.11%	0
7		7	8.371	8.214	8.529	8.2	8.6	0.06442	0.1704	2.04%	0
9		7	8.329	8.171	8.486	8.2	8.6	0.06442	0.1704	2.05%	0
12		7	8.329	8.19	8.467	8.2	8.6	0.05654	0.1496	1.8%	0
Overall		42	8.357	8.3	8.414	8	8.7	0.02834	0.1837	2.20%	0 (0%)

Final pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	7.314	7.215	7.413	7.2	7.5	0.0404	0.1069	1.46%	0
4		7	7.371	7.223	7.52	7.2	7.7	0.06061	0.1604	2.18%	0
5		7	7.4	7.249	7.551	7.2	7.7	0.06172	0.1633	2.21%	0
7		7	7.429	7.238	7.619	7.2	7.8	0.07781	0.2059	2.77%	0
9		7	7.471	7.281	7.662	7.3	7.9	0.07781	0.2059	2.76%	0
12		7	7.6	7.317	7.883	7.2	8.2	0.1155	0.3055	4.02%	0
Overall		42	7.431	7.366	7.496	7.2	8.2	0.03224	0.2089	2.81%	0 (0%)

CETIS Measurement Report

Report Date: 02 Sep-20 16:08 (p 2 of 4)
Test Code: 20-231-0390 fh | 04-0159-3015

Fathead Minnow 7-d Larval Survival and Growth Test

Waypoint Analytical Tennessee, LLC.

Initial pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	7.586	7.461	7.71	7.3	7.7	0.05084	0.1345	1.77%	0
4		7	7.571	7.483	7.659	7.4	7.7	0.03595	0.09512	1.26%	0
5		7	7.571	7.469	7.674	7.4	7.7	0.04206	0.1113	1.47%	0
7		7	7.586	7.503	7.669	7.5	7.7	0.03401	0.08997	1.19%	0
9		7	7.571	7.483	7.659	7.4	7.7	0.03595	0.09512	1.26%	0
12		7	7.614	7.55	7.678	7.5	7.7	0.02608	0.06901	0.91%	0
Overall		42	7.583	7.553	7.613	7.3	7.7	0.01482	0.09606	1.27%	0 (0%)

Final Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	23.67	23.15	24.19	22.9	24.4	0.2135	0.5648	2.39%	0
4		7	23.69	23.18	24.2	23	24.5	0.2087	0.5521	2.33%	0
5		7	23.61	23.12	24.11	22.9	24.4	0.2017	0.5336	2.26%	0
7		7	23.61	23.13	24.1	22.9	24.3	0.1981	0.5242	2.22%	0
9		7	23.66	23.27	24.05	23	24.3	0.1601	0.4237	1.79%	0
12		7	23.8	23.43	24.17	23.2	24.4	0.1528	0.4041	1.7%	0
Overall		42	23.67	23.53	23.82	22.9	24.5	0.07357	0.4768	2.01%	0 (0%)

Initial Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	L	7	22.96	22.66	23.25	22.3	23.2	0.1212	0.3207	1.4%	0
4		7	22.99	22.53	23.45	22.2	23.8	0.1883	0.4981	2.17%	0
5		7	22.91	22.5	23.33	22.3	23.7	0.1696	0.4488	1.96%	0
7		7	22.9	22.48	23.32	22.3	23.6	0.1718	0.4546	1.99%	0
9		7	22.89	22.5	23.27	22.4	23.6	0.158	0.418	1.83%	0
12		7	22.83	22.49	23.17	22.4	23.4	0.1375	0.3638	1.59%	0
Overall		42	22.91	22.79	23.04	22.2	23.8	0.06146	0.3983	1.74%	0 (0%)

CETIS Measurement Report

Report Date: 02 Sep-20 16:08 (p 3 of 4)
Test Code: 20-231-0390 fh | 04-0159-3015

Fathead Minnow 7-d Larval Survival and Growth Test

Waypoint Analytical Tennessee , LLC.

Total Residual Chlorine-mg/L

Conc.-%	Code	1	2	3	4	5	6	7
0	L	0	0	0	0	0	0	0
4								
5								
7								
9								
12		0	0	0	0	0	0	0

Conductivity-µS/cm

Conc.-%	Code	1	2	3	4	5	6	7
0	L	162.9	167.5	162.2	167.9	163.2	164.1	167.7
4								
5								
7								
9								
12		562	535	530	530	516	529	565

Final Dissolved Oxygen-mg/L

Conc.-%	Code	1	2	3	4	5	6	7
0	L	7.6	7.9	8	7.9	8	8	8.2
4		7.5	7.8	7.6	8	7.9	8.2	8.4
5		7.5	7.7	8	8	7.8	8.4	8.5
7		7.6	7.9	8.1	8.1	7.9	8.5	8.4
9		7.6	8	8.1	8.2	7.9	8.7	8.5
12		7.8	8.1	8.3	8.1	8	9.1	8.4

Initial Dissolved Oxygen-mg/L

Conc.-%	Code	1	2	3	4	5	6	7
0	L	8	8.3	8.3	8.6	8.2	8.3	8.7
4		8.1	8.2	8.4	8.6	8.1	8.4	8.7
5		8.4	8.2	8.3	8.6	8.3	8.4	8.7
7		8.2	8.2	8.3	8.6	8.4	8.3	8.6
9		8.5	8.2	8.2	8.4	8.2	8.2	8.6
12		8.4	8.2	8.2	8.4	8.3	8.2	8.6

Final pH-Units

Conc.-%	Code	1	2	3	4	5	6	7
0	L	7.3	7.2	7.2	7.3	7.4	7.5	7.3
4		7.3	7.4	7.2	7.3	7.3	7.7	7.4
5		7.3	7.4	7.4	7.2	7.3	7.7	7.5
7		7.4	7.5	7.4	7.2	7.2	7.8	7.5
9		7.4	7.5	7.4	7.3	7.3	7.9	7.5
12		7.6	7.6	7.6	7.4	7.2	8.2	7.6

Initial pH-Units

Conc.-%	Code	1	2	3	4	5	6	7
0	L	7.3	7.6	7.7	7.6	7.7	7.6	7.6
4		7.4	7.6	7.7	7.5	7.6	7.6	7.6
5		7.4	7.6	7.7	7.5	7.7	7.5	7.6
7		7.5	7.6	7.7	7.5	7.7	7.5	7.6
9		7.4	7.6	7.7	7.5	7.6	7.6	7.6
12		7.5	7.7	7.7	7.6	7.6	7.6	7.6

CETIS Measurement Report

Report Date: 02 Sep-20 16:08 (p 4 of 4)
Test Code: 20-231-0390 fh | 04-0159-3015

Fathead Minnow 7-d Larval Survival and Growth Test

Waypoint Analytical Tennessee, LLC.

Final Temperature-°C

Conc.-%	Code	1	2	3	4	5	6	7
0	L	24.4	24.1	23.8	22.9	23	24	23.5
4		24.5	24.1	23.7	23.1	23	24	23.4
5		24.4	24	23.5	23.2	22.9	24	23.3
7		24.3	24.1	23.8	23.1	22.9	23.8	23.3
9		24.3	24	23.6	23.4	23	23.8	23.5
12		24.4	24.2	23.7	23.6	23.2	23.9	23.6

Initial Temperature-°C

Conc.-%	Code	1	2	3	4	5	6	7
0	L	22.3	23.2	23.1	22.8	23.1	23.2	23
4		22.2	23.8	23	22.8	23.2	23.2	22.7
5		22.3	23.7	22.9	22.7	23.1	23.1	22.6
7		22.3	23.6	23	22.5	23.2	23.1	22.6
9		22.4	23.6	22.8	22.5	23.2	23	22.7
12		22.4	23.4	22.9	22.4	22.9	23.1	22.7

Additional Toxicity Test Information

1. Methods/Instrumentation used in chemical analysis:
 - Dissolved oxygen, DM 4: (SM 4500-O G-2011)
 - pH, PH 21: (SM 4500-H + B-2011)
 - Temperature, T 83
 - Conductivity, C 1: (SM 2510 B-2011)
 - Alkalinity: (SM 2320 B-2011)
 - Hardness: (EPA 200.7 / SM 2340 B-2011)
 - Total Residual Chlorine: (SM 4500-CL G-2011)
 - Reported value of “0” indicates result below detection limit of 0.02 mg/L
 - Reported value of “1” indicates result above detection limit of 0.02 mg/L
 - EPA Acute Manual Edition and Date: EPA-821-R-02-012, OCT 2002 (Fifth edition)
 - EPA Chronic Manual Edition and Date: EPA-821-R-02-013, OCT 2002 (Fourth edition)
2. Laboratory
 - Temperature: Average: 25 °C Range: 25± 1°C
 - Incubator ID: BIO Thermometer ID: 120554
 - Light Cycle: 16 hours light/ 8 hours dark
 - Light intensity: 50-100 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 *Ceriodaphnia dubia* Survival and Reproduction
 - Test chambers: 30 mL disposable plastic beakers
 - Volume per chamber: 15 mL
 - Number of organisms per chamber: 1
 - Number of replicates: 10
 - Food: *Ceriodaphnia dubia* are fed 0.15mL *Raphidocelis subcapitata* (Algae) and YTC solution daily.
 - Acclimation of organisms: In house cultures are raised at 25°C. Purchased organisms are allowed to reach 25°C prior to use.
4. Method 1000.0 *Pimephales promelas* (Fathead minnow) Larval Survival and Growth
 - Test chambers: 20 oz. Disposable plastic cups
 - Volume per chamber: 250 mL
 - Average number of organisms per chamber: 8
 - Number of replicates per concentration: 5
 - Food: Fathead minnows are fed 0.15 mL *Artemia* brine shrimp hatched in laboratory twice daily
 - Acclimation of organisms: Dilution water is added until organisms are contained in a culture media that consists of 80% dilution water. Organisms are allowed to reach 25°C prior to use.
5. Reference Toxicity
 - Reference toxicity tests are performed monthly on each method performed by the laboratory.
 - Potassium Chloride is used as the reference toxicity chemical for vertebrate species
 - Current chemical ID: CS 6156984
 - Sodium Chloride is used as the reference toxicity chemical for invertebrate species
 - Current chemical ID: CS 6158580
6. 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

03326
 Pine Bluff Wastewater Utility
 Mr. Ken Johnson
 900 Island Harbour Marina Rd.
 Pine Bluff , AR 71602

Project Bioassay
 Information :

Report Number : **20-231-0390**

REPORT OF ANALYSIS

Report Date : 09/02/2020

Received : 08/18/2020

Lab No : **85161**
 Sample ID : **Outfall 001 - Composite 1**

Matrix: **Aqueous**
 Sampled: **8/16/2020 8:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	129	mg/L	1	1	08/25/20 10:10	CXB	2320B-2011
Calcium	14.7	mg/L	0.500	1	08/27/20 04:43	JADS	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	49.3	mg/L	0.100	1	08/27/20 04:43		EPA-200.7
Magnesium	3.06	mg/L	0.100	1	08/27/20 04:43	JADS	EPA-200.7

Lab No : **86008**
 Sample ID : **Outfall 001 - Composite 2**

Matrix: **Aqueous**
 Sampled: **8/19/2020 8:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	131	mg/L	1	1	08/25/20 10:10	CXB	2320B-2011
Calcium	14.2	mg/L	0.500	1	08/27/20 05:10	JADS	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	47.9	mg/L	0.100	1	08/27/20 05:10		EPA-200.7
Magnesium	3.01	mg/L	0.100	1	08/27/20 05:10	JADS	EPA-200.7

Lab No : **86829**
 Sample ID : **Outfall 001 - Composite 3**

Matrix: **Aqueous**
 Sampled: **8/20/2020 8:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	137	mg/L	1	1	08/25/20 10:10	CXB	2320B-2011
Calcium	15.1	mg/L	0.500	1	08/27/20 05:16	JADS	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	50.6	mg/L	0.100	1	08/27/20 05:16		EPA-200.7
Magnesium	3.12	mg/L	0.100	1	08/27/20 05:16	JADS	EPA-200.7

**Qualifiers/
 Definitions**

DF Dilution Factor
 MQL Method Quantitation Limit

L Limit Exceeded

#1



Kit ID:	127052
Initiated By:	Sydney Andres
Initiated Date:	10/30/2019
Project Comment	Pine Bluff Bioassay

CHAIN-OF-CUSTODY

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
Pine Bluff Wastewater Utility	03326	Mr. Vincent Miles	47062
Site Name	Project Number	<input type="checkbox"/> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment
QTR 3 A - Bioassay - 08/16-17/2020			<input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
Pine Bluff - Bioassay	(870) 535-0821	vincent@pbwastewater.com	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
8/16/20	0845	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Pint	NONE	alkalinity
8/16/20	0845	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
8/16/20	0845	Outfall 001 - Composite 1	Aqueous	C	2	Plastic - Quart	NONE	Chronic CD/FH

20-231-0390
 03326
 08-18-2020
 10:22:45
 Pine Bluff Wastewater Utility
 Bioassay

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	Isaiah Solomon					
			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
Blank/Cooler Temp			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time

Ice: 0/N
 Custody Seals: Y/N
 Blank/Cooler Temp: 2.7 T99
 8/18/20 09:50
 Page 18 of 32



#2

Kit ID:	127053
Initiated By:	Sydney Andres
Initiated Date:	10/30/2019
Project Comment	Pine Bluff Bioassay

CHAIN-OF-CUSTODY

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
Pine Bluff Wastewater Utility	03326	Mr. Vincent Miles	47062
Site Name	Project Number	<input type="checkbox"/> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment
QTR 3 B - Bioassay - 08/18-19/2020			<input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
Pine Bluff - Bioassay	(870) 535-0821	vincent@pbwastewater.com	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
8/18/20	0845	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	NONE	alkalinity
8/18/20	0845	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
8/18/20	0845	Outfall 001 - Composite 2	Aqueous	C	2	Plastic - Quart	NONE	Chronic CD/FH


 20-231-0390
 03326
 08-18-2020
 Pine Bluff Wastewater Utility
 Bioassay / 8/18/20
 10:22:45

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	Jorretta Shaw					
Y/N	Y/N		Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
Blank/Cooler Temp			Page 19 of 32		Summer Hanisul		8/20/20	09:15
2.0 T102 Sltt								



#3

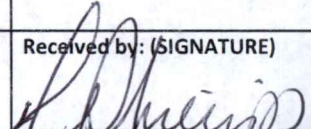
Kit ID:	127054
Initiated By:	Sydney Andres
Initiated Date:	10/30/2019
Project Comment	Pine Bluff Bioassay

CHAIN-OF-CUSTODY

 Pine Bluff Wastewater Utility Bioassay / 8/18/20/8/20/20	20-231-0390 03326 08-18-2020 10:22:45
---	--

Company Name Pine Bluff Wastewater Utility	Company Number 03326	Client Project Manager/Contact Mr. Vincent Miles	Purchase Order Number 47062
Site Name QTR 3 C - Bioassay - 08/20-21/2020	Project Number	<input type="checkbox"/> RUSH - Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
LIMS Project ID Pine Bluff - Bioassay	Project Manager Phone # (870) 535-0821	Project Manager Email vincent@pbwastewater.com	Site/Facility ID #

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
8/20/20	0845	Outfall 001 - Composite 3	Aqueous	C	1	Plastic - Pint	NONE	alkalinity
8/20/20	0845	Outfall 001 - Composite 3	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
8/20/20	0845	Outfall 001 - Composite 3	Aqueous	C	3	Plastic - Quart	NONE	Chronic CD/FH

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	Jornetta Shaw					
(Y/N)	(Y/N)		Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
			Relinquished by: (SIGNATURE)	Date	Time	Received by: (SIGNATURE)	Date	Time
Blank/Cooler Temp			Page 20 of 32					
T100 1.5°C (TP)			 8/21/20 07:45					

Sample ID: Pine Bluff Date/Time Start: 8/18/2020 12:31 Analyst: IW

Report # 20-231-0390 Date/Time End: 8/25/2020 10:55 Analyst: CF

Data Entered By: 9/2/2020 IW
date / initial

Data Reviewed By: SBA 9/2/20
date / initial

Method 1002.0 - Ceriodaphnia dubia Survival and Reproduction Data

Conc. % EFF	Day #	1	2	3	4	5	6	7	8	9	10	Total live young	# live Adults	Young per Live adult	
Control	1	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	3	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	4	2	6	2	4	2	3	2	2	3	4	30	10	3.0	
	5	7	4	3	3	3	3	2	6	4	4	39	10	3.9	
	6	1	3	0	0	0	0	0	0	3	0	7	10	0.7	
	7	16	15	13	16	10	1	13	9	15	9	117	10	11.7	
Replicate Totals	---	26	28	18	23	15	7	17	17	25	17	Avg. Yng/ adult=	19	% Coeff	32.50
32	1	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	3	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	4	0	3	6	3	3	2	2	2	3	6	24	10	2.4	
	5	2	2	2	3	6	7	2	7	2	2	35	10	3.5	
	6	0	0	3	0	0	4	1	0	0	2	10	10	1.0	
	7	0	5	10	12	11	13	12	13	4	5	85	10	8.5	
Replicate Totals	---	2	10	21	18	20	26	17	22	9	15	Avg. Yng/ adult=	15	% Coeff	48.80
42	1	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	3	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	4	2	3	1	4	2	3	7	4	3	4	33	10	3.3	
	5	2	4	4	7	2	2	6	2	6	2	37	10	3.7	
	6	0	3	2	0	0	0	5	6	0	4	20	10	2.0	
	7	6	15	13	15	17	8	13	8	9	10	114	10	11.4	
Replicate Totals	---	10	25	20	26	21	13	31	20	18	20	Avg. Yng/ adult=	20	% Coeff	29.88
56	1	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	3	0	0	0	x	0	0	0	0	0	0	0	10	0.0	
	4	2	2	4	x	0	0	0	0	3	2	13	10	1.3	
	5	4	3	6	x	2	6	4	3	7	2	37	10	3.7	
	6	0	5	2	x	0	2	0	0	0	0	9	10	0.9	
	7	4	14	12	x	14	14	5	11	10	2	86	10	8.6	
Replicate Totals	---	10	24	24	0	16	22	9	14	20	6	Avg. Yng/ adult=	15	% Coeff	56.43
75	1	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	3	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	4	0	4	4	6	2	3	3	3	2	4	31	10	3.1	
	5	2	4	6	7	2	4	4	8	8	3	48	10	4.8	
	6	4	x	0	x	6	3	0	3	0	0	16	10	1.6	
	7	10	x	5	x	12	16	12	10	8	7	75	10	7.5	
Replicate Totals	---	16	8	15	13	22	26	19	24	18	14	Avg. Yng/ adult=	17	% Coeff	35.40
100	1	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0.0	
	3	0	0	0	x	0	0	0	0	0	0	0	10	0.0	
	4	2	0	4	x	4	3	2	4	6	2	27	10	2.7	
	5	7	4	2	x	0	2	4	6	2	4	31	10	3.1	
	6	3	4	0	x	4	0	0	0	3	0	16	10	1.6	
	7	10	8	14	x	14	9	10	12	11	12	100	10	10.0	
Replicate Totals	---	22	16	20	0	22	14	16	22	22	18	Avg. Yng/ adult=	17	% Coeff	39.47

7 DAYS

Parameters for control acceptability:
 Page 21 of 32
 - the average number of live adults must be >= 80 %
 - the average number a young per live adult must be >= 15.
 - 60 % of the controls must produce 3 broods.

#'s represent the number of young per live organism.
 X represents death of the organism.
 M represents a missing organism.

Sample ID:

REP	Control	32	42	56	75	100
A	26	2	10	10	16	22
B	28	10	25	24	8	16
C	18	21	20	24	15	22 20
D	23	18	26	0	13	0
E	15	20	21	16	22	22
F	7	26	13	22	26	14
G	17	17	31	9	19	16
H	17	22	20	14	24	22
I	25	9	18	20	18	22
J	17	8 15	20	6	9 14	18
%CV	32.5	48.6	29.9	56.4	35.4	39.5

Sample ID: Pine Bluff Date/Time Start: 8/18/2020 12:13 - Analyst: IW

Report # 20-231-0390 Date/Time End: 8/25/2020 10:40 - Analyst: CF

Data Entered By: 9/2/2020 IW
date / initial

Data Reviewed By: SBA 9/2/20
date / initial

Method 1000.0 - *Pimephales promelas* (Fathead Minnow) Survival and Growth Data

Conch % EFF	REP	DAY								Proportion Survival	Avg. Dry Wt. surviving org (mg)	Avg. Dry Wt. original org (mg)	initial weight	final weight
		0	1	2	3	4	5	6	7					
Control	A	8	8	7	7	7	7	6	6	0.75	0.283	0.213	28.7232	28.7249
	B	8	8	8	8	8	8	8	7	0.88	0.300	0.263	29.0810	29.0831
	C	8	8	8	8	8	8	8	8	1.00	0.237	0.237	26.2803	26.2822
	D	8	8	8	8	8	8	8	8	1.00	0.363	0.363	22.5570	22.5599
	E	8	7	7	7	7	7	7	7	0.88	0.271	0.237	27.4796	27.4815

Mean proportion survival = 0.90

Mean average weight (original organisms) mg = 0.2625 Survival % COEF = 11.62

Mean average weight (surviving organisms) mg = 0.2910 Growth % COEF = 22.34

32	A	8	8	8	8	8	8	8	8	1.00	0.275	0.213	28.1528	28.1550
	B	8	8	8	7	6	4	3	3	0.38	0.163	0.263	32.4020	32.4033
	C	8	8	8	8	8	8	8	8	1.00	0.275	0.237	33.5658	33.5680
	D	8	8	7	7	7	7	7	7	0.88	0.250	0.250	29.7577	29.7597
	E	8	8	8	7	7	6	5	5	0.63	0.212	0.212	28.5079	28.5096

Mean proportion survival = 0.78

Mean average weight (original organisms) mg = 0.2350 Survival % COEF = 34.97

Growth % COEF = 20.39

42	A	8	8	8	8	7	7	7	7	0.88	0.238	0.213	33.9329	33.9348
	B	8	8	8	8	8	8	8	8	1.00	0.263	0.263	31.4319	31.4340
	C	8	8	7	7	7	7	5	5	0.63	0.250	0.237	25.5501	25.5521
	D	8	8	8	6	6	6	6	6	0.75	0.238	0.237	27.1820	27.1839
	E	8	8	8	8	8	8	7	7	0.88	0.262	0.237	31.2804	31.2825

Mean proportion survival = 0.83

Mean average weight (original organisms) mg = 0.2500 Survival % COEF = 17.28

Growth % COEF = 5.00

56	A	8	8	8	8	7	7	7	7	0.88	0.200	0.213	29.5759	29.5775
	B	8	8	8	8	8	8	8	8	1.00	0.337	0.263	34.3294	34.3321
	C	8	8	7	7	7	7	6	6	0.75	0.287	0.237	30.1779	30.1802
	D	8	8	8	7	7	6	6	6	0.75	0.288	0.237	24.8783	24.8806
	E	8	8	8	8	8	8	8	8	1.00	0.387	0.237	31.8996	31.9027

Mean proportion survival = 0.88

Mean average weight (original organisms) mg = 0.3000 Survival % COEF = 14.29

Growth % COEF = 23.20

75	A	8	8	8	8	8	8	8	8	1.00	0.275	0.213	35.2635	35.2657
	B	8	8	8	8	8	8	8	8	1.00	0.300	0.263	29.7150	29.7174
	C	8	8	8	8	8	8	8	7	0.88	0.288	0.237	32.1624	32.1647
	D	8	8	8	8	8	8	8	8	1.00	0.300	0.237	31.3209	31.3233
	E	8	8	8	8	8	8	7	7	0.88	0.237	0.237	23.5148	23.5167

Mean proportion survival = 0.95

Mean average weight (original organisms) mg = 0.2800 Survival % COEF = 7.21

Growth % COEF = 9.26

100	A	8	8	8	8	8	8	8	8	1.00	0.350	0.213	27.6720	27.6748
	B	8	8	8	8	8	8	8	8	1.00	0.287	0.263	31.0925	31.0948
	C	8	8	8	7	7	7	7	7	0.88	0.237	0.237	31.3702	31.3721
	D	8	8	8	8	8	8	7	7	0.88	0.238	0.237	30.1742	30.1761
	E	8	8	8	7	7	7	7	7	0.88	0.325	0.237	25.4186	25.4212

Mean proportion survival = 0.93

Mean average weight (original organisms) mg = 0.2875 Survival % COEF = 7.40

Growth % COEF = 17.66

Parameters for control acceptability:

- the mean proportion survival must be $\geq 80\%$
- the mean average weight must be $\geq 0.250\text{mg}$

Sample ID:

SURVIVAL

<u># org</u>	CONC	A	B	C	D	E	24HR	48HR	7DAY	%CV
	Control	75	88	100	100	88	98	95	90	11.62
6	32	100	38	100	88	63	100	98	78	34.97
7	42	88	100	63	75	88	100	98	83	17.28
8	56	88	100	75	75	100	100	98	88	14.29
8	75	100	100	88	100	88	100	100	95	7.21
7	100	100	100	88	88	88	100	100	93	7.40

GROWTH

CONC	A	B	C	D	E	MEAN	%CV
Control	0.213	0.263	0.237	0.363	0.237	0.2625	22.34
32	0.275	0.163	0.275	0.250	0.212	0.2350	20.39
42	0.238	0.263	0.250	0.238	0.262	0.2500	5.00
56	0.200	0.337	0.287	0.288	0.387	0.3000	23.20
75	0.275	0.300	0.288	0.300	0.237	0.2800	9.26
100	0.350	0.287	0.237	0.238	0.325	0.2875	17.66

SAMPLE ID: Pine Bluff

Report Number: 20-731-0390

Date test started: 8/18/20

		DAY 1	2	3	4	5	6	7
INITIAL READINGS	pH CTRL	7.3	7.6	7.7	7.6	7.7	7.10	7.6
	Initial R							
	1	7.4	7.6	7.7	7.5	7.6	7.6	7.6
	2	7.4	7.6	7.7	7.5	7.7	7.5	7.6
	3	7.5	7.6	7.7	7.5	7.7	7.5	7.6
	4	7.4	7.6	7.7	7.5	7.6	7.6	7.6
	5	7.5	7.7	7.7	7.6	7.6	7.6	7.6
	DO CTRL	8.0	8.3	8.3	8.6	8.2	8.3	8.7
	Initial (mg/L) R							
	1	8.1	8.2	8.4	8.6	8.1	8.4	8.7
	2	8.4	8.2	8.3	8.6	8.3	8.4	8.7
	3	8.2	8.2	8.3	8.6	8.4	8.3	8.6
	4	8.5	8.2	8.2	8.4	8.2	8.2	8.6
	5	8.4	8.2	8.2	8.4	8.3	8.2	8.6
	Temp CTRL	22.3	23.7	23.1	22.8	23.1	23.2	23.0
Initial (°C) R								
1	22.2	23.8	23.0	22.8	23.2	23.2	22.7	
2	22.3	23.7	22.9	22.7	23.1	23.1	22.6	
3	22.3	23.6	23.0	22.5	23.2	23.1	22.6	
4	22.4	23.6	22.8	22.5	23.2	23.0	22.7	
5	22.4	23.4	22.9	22.4	22.9	23.1	22.7	
ANALYST:	W	CF	CF	CF	W	SFA	CF	
DATE:	8/18/20	8/19/20	8/20/20	8/21/20	8/22/20	8/23/20	8/24/20	

		DAY 1	2	3	4	5	6	7
CERIODAPHNIA DUBIA READINGS	pH - CD CTRL	7.5	7.7	7.7	7.7	7.8	7.8	7.5
	After 24 hrs. R							
	1	7.5	7.7	7.7	7.8	7.7	7.8	7.6
	2	7.6	7.7	7.8	7.7	7.7	7.8	7.6
	3	7.6	7.8	7.8	7.7	7.7	7.8	7.6
	4	7.7	7.8	7.8	7.8	7.9	7.9	7.6
	5	7.7	7.9	7.9	7.8	7.8	7.9	7.7
	DO - CD CTRL	7.9	8.4	8.7	8.6	8.8	8.8	8.7
	After 24 hrs. R							
	1	7.8	8.2	8.6	8.7	8.7	8.7	8.7
	2	7.8	8.2	8.6	8.7	8.8	8.7	8.7
	3	7.7	8.3	8.7	8.7	8.7	8.6	8.8
	4	7.8	8.3	8.7	8.8	8.8	8.7	8.8
	5	7.8	8.3	8.7	8.8	8.7	8.8	9.0
	Temp CTRL	21.9	22.7	21.8	22.3	22.9	23.1	22.3
After 24 hrs (°C)R								
1	21.9	22.5	21.8	22.1	23.0	23.2	22.3	
2	21.9	22.7	21.9	23.0	22.9	23.3	22.3	
3	21.9	22.6	21.7	22.9	23.0	23.4	22.3	
4	21.9	22.6	21.8	22.3	22.0	23.4	22.2	
5	22.0	22.5	21.8	23.0	23.1	23.3	22.5	
ANALYST:	CF	CF	CF	W	W	CF	S/CF	
DATE:	8/19/20	8/20/20	8/21/20	8/22/20	8/23/20	8/24/20	8/25/20	

READINGS DATA SHEET FOR 7-DAY CHRONIC TESTING

SAMPLE ID: Pine Bluff

Report Number: 20-231-0390

Date test started: 8/18/20

DAY		1	2	3	4	5	6	7
pH - FH	CTRL	7.3	7.2	7.2	7.3	7.4	7.5	7.3
After 24 hrs.	R							
	1	7.3	7.4	7.2	7.3	7.3	7.7	7.4
	2	7.3	7.4	7.4	7.2	7.3	7.7	7.5
	3	7.4	7.5	7.4	7.2	7.2	7.8	7.5
	4	7.4	7.5	7.4	7.3	7.3	7.9	7.5
	5	7.6	7.6	7.6	7.4	7.2	8.2	7.6
DO - FH	CTRL	7.6	7.9	8.0	7.9	8.0	8.0	8.2
After 24 hrs.	R							
	1	7.5	7.8	7.6	8.0	7.9	8.2	8.4
	2	7.5	7.7	8.0	8.0	7.8	8.4	8.5
	3	7.6	7.9	8.1	8.1	7.9	8.5	8.4
	4	7.6	8.0	8.1	8.2	7.9	8.7	8.5
	5	7.8	8.1	8.3	8.1	8.0	9.1	8.4
Temp	CTRL	24.4	24.1	23.8	22.9	23.0	24.0	23.5
After 24 hrs (°C)	R							
	1	24.5	24.1	23.7	23.1	23.0	24.0	23.4
	2	24.4	24.6	23.5	23.2	22.9	24.0	23.3
	3	24.3	24.1	23.8	23.1	22.9	23.8	23.3
	4	24.3	24.6	23.6	23.4	23.0	23.8	23.5
	5	24.4	24.2	23.7	23.6	23.2	23.9	23.6
ANALYST:		CF	CF	CF	1W	1W	CF	SPOA
DATE:		8/19/20	8/20/20	8/21/20	8/22/20	8/23/20	8/24/20	8/25/20

Conductivity (µS/cm)

Initial	CTRL	162.9	167.5	162.2	167.9	163.2	164.1	167.7
	R							
100%		562	535	530	530	516	529	565
INITIAL:		1W	CF	CF	CF	1W	1W	CF
DATE:		8/18/20	8/19/20	8/20/20	8/21/20	8/22/20	8/23/20	8/24/20
Total Residual Chlorine		DL = 0.02mg/L						
Initial	CTRL	20.02		20.02		20.02		
	R							
100%		20.02		20.02		20.02		
INITIAL:		1W		CF		1W		
DATE:		8/18/20		8/20/20		8/22/20		
DPD Cl2 Reagent		20-Reag- 2048		20-Reag- 2048		20-Reag- 2048		

Comments / Observations:

Tests are maintained at 25 ± 1 °C
Incubator ID: BIO Thermometer ID: 120554

Meter	ID
pH	PH 21
Conductivity	C1
DO	DM4
Temp.	T83

Waypoint Analytical, LLC.
CERIODAPHNIA SURVIVAL AND REPRODUCTION DATA

SAMPLE ID: Pine Bluff

TEST START - DATE/TIME: 8/18/20 1231 ANALYST: lw

REPORT #: 20-231-0390

TEST END - DATE/TIME: 8/25/20 1055 ANALYST: CF

ORGANISM REF#: 19-REAG-01910

RANDOMIZING KEY #: 4

ANALYST: lw

CONC.	REPLICATE										INITIALS	DATE	
1	DAY	1	2	3	4	5	6	7	8	9	10		
1	1	0	0	0	0	0	0	0	0	0	0	8/19/20	CF
	2	0	0	0	0	0	0	0	0	0	0	8/20/20	CF
	3	0	0	0	X	0	0	0	0	0	0	8/21/20	CF
	4	2	3	2	I	2	3	2	4	3	2	8/22/20	lw
	5	4	2	3	I	2	4	2	6	4	4	8/23/20	lw
	6	0	0	0	I	0	3	1	0	0	0	8/24/20	CF
	7	4	5	13	I	12	16	12	12	10	12	8/25/20	CF
2	REPLICATE										INITIALS		
2	DAY	1	2	3	4	5	6	7	8	9	10		
	1	0	0	0	0	0	0	0	0	0	0	CF	
	2	0	0	0	0	0	0	0	0	0	0	CF	
	3	0	0	0	X	0	0	0	0	0	0	CF	
	4	0	0	4	I	2	3	0	2	3	4	lw	
	5	2	4	6	I	3	2	4	6	2	3	lw	
	6	4	4	0	I	0	0	0	0	0	0	CF	
7	10	8	5	I	10	8	5	9	4	7	CF		
3	REPLICATE										INITIALS		
3	DAY	1	2	3	4	5	6	7	8	9	10		
	1	0	0	0	0	0	0	0	0	0	0	CF	
	2	0	0	0	0	0	0	0	0	0	0	CF	
	3	0	0	0	0	0	0	0	0	0	0	CF	
	4	2	3	6	4	4	3	2	0	3	4	lw	
	5	2	4	2	3	0 ^{lw}	2	2	3	6	4	lw	
	6	1	3	3	0	4	0	0	0	0	0	CF	
7	16	15	10	16	14	9	13	11	9	9	CF		
4	REPLICATE										INITIALS		
4	DAY	1	2	3	4	5	6	7	8	9	10		
	1	0	0	0	0	0	0	0	0	0	0	CF	
	2	0	0	0	0	0	0	0	0	0	0	CF	
	3	0	0	0	0	0	0	0	0	0	0	CF	
	4	2	6	4	3	3	2	3	4	2	6	lw	
	5	2	4	2	3	6	7	4	2	8	2	lw	
	6	3	3	0	0	0	4	0	6	0	2	CF	
7	10	15	14	12	11	13	12	8	8	5	CF		
5	REPLICATE										INITIALS		
5	DAY	1	2	3	4	5	6	7	8	9	10		
	1	0	0	0	0	0	0	0	0	0	0	CF	
	2	0	0	0	0	0	0	0	0	0	0	CF	
	3	0	0	0	0	0	0	0	0	0	0	CF	
	4	2	4	4	6	2	3	7	2	3	4	lw	
	5	2	4	6	7	2	3	6	7	4	2	lw	
	6	0	X	2	X	0	0	5	0	3	4	CF	
7	6	I	12	I	17	1	13	13	15	10	CF		
6	REPLICATE										INITIALS		
6	DAY	1	2	3	4	5	6	7	8	9	10		
	1	0	0	0	0	0	0	0	0	0	0	CF	
	2	0	0	0	0	0	0	0	0	0	0	CF	
	3	0	0	0	0	0	0	0	0	0	0	CF	
	4	0	2	1	4	0	0	2	3	6	2	lw	
	5	2	3	4	7	2	6	4	8	2	2	lw	
	6	0	5	2	0	0	2	0	3	3	0	CF	
7	0	14	13	15	14	14	10	10	11	2	CF		

WAYPOINT ANALYTICAL, LLC.
 TEST TRACEABILITY RECORD
7-DAY CERIODAPHNIA DUBIA

SAMPLE ID: Pine Bluff REPORT # 20-23-0390

DATE START: 8/18/20 DATE END: 8/25/20

CERIODAPHNIA DUBIA REFERENCE # 19-REAG-61910

Neonates obtained from: Brood Tray ID: Monday / Tuesday / Wednesday A / B
 (circle) Brood Tray Set: Y / P / B / O / G

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST DAY	ALGAE	YCT
CHRONIC	8/18/20	lw	0	20-REAG-3343	20-REAG-3343
	8/19/20	CF	1	20-REAG-3343	20-REAG-3612
	8/20/20	CF	2	20-REAG-3611	20-REAG-3612
	8/21/20	CF	3	20-REAG-3611	20-REAG-3612
	8/22/20	lw	4	20-REAG-3611	20-REAG-3612
	8/23/20	lw	5	20-REAG-3611	20-REAG-3621
	8/24/20	CF	6	20-REAG-3611	20-REAG-3612

TEST DAY	CONTROL WATER	SAMPLE LAB ID
0	20-REAG-3574	L85161
1	20-REAG-3589	↓
2	20-REAG-3590	L86008
3	20-REAG-3639	↓
4	20-REAG-3687	L86829
5	20-REAG-3687	↓
6	20-REAG-3691	↓

COMMENTS: YCT is filtered with 60 - micron mesh to remove additional debris.
 Organisms are fed 0.15 mL Algae and YCT daily after renewal.
 Test conducted at 25 ±1 °C Incubator ID: BIO / Thermometer ID: 120554

ANALYST COMMENTS:
 If an organisms did not produce any broods, check under microscope for sex of organism.
 Annotate the Concentration and Replicate of organism that is MALE: _____

WAYPOINT ANALYTICAL, LLC.

CERIODAPHNIA RANDOMIZATION TRANSLATION

RANDOMIZING KEY #:

4

REPORT #

20-231-0390

TEST CONCENTRATIONS:

1: Control 2: 4 3: 5 4: 7 5: 9 6: 12

Row	REPLICATE									
	1	2	3	4	5	6	7	8	9	10
1	4	2	1	4	5	5	2	6	4	6

Row	REPLICATE									
	1	2	3	4	5	6	7	8	9	10
2	5	6	5	6	1	3	4	1	2	5

Row	REPLICATE									
	1	2	3	4	5	6	7	8	9	10
3	1	3	2	1	6	6	1	4	3	1

Row	REPLICATE									
	1	2	3	4	5	6	7	8	9	10
4	6	1	6	2	2	2	5	3	5	2

Row	REPLICATE									
	1	2	3	4	5	6	7	8	9	10
5	3	5	4	5	3	1	3	2	1	3

Row	REPLICATE									
	1	2	3	4	5	6	7	8	9	10
6	2	4	3	3	4	4	6	5	6	4

Waypoint Analytical, LLC.
TEST DATA SHEET FOR FATHEAD MINNOW SURVIVAL (7-DAY)

SAMPLE ID: Pine Bluff REPORT #: 20-231-0390

TEST START - DATE/TIME: 8/18/20 1213 ANALYST: lw

TEST END - DATE/TIME : 8/25/20 1040 ANALYST: CF

NOTE: PER ADEQ REQUIREMENTS THE INTIAL NUMBER OF FISH PER REPLICATE MUST BE 8 !!

CONC.	REP NO.	NO. OF SURVIVORS									REMARKS
		DAY									
		0	1	2	3	4	5	6	7		
1	A	8	8	8	8	7	7	7	7		
	B	8	8	8	8	7	7	7	7		
	C	8	8	8	8	8	7	8	8		
	D	8	8	7	7	7	7	6	6		
	E	8	8	8	8	8	8	8	8		
2	A	8	8	8	8	8	8	8	8		
	B	8	8	7	7	7	7	6	6		
	C	8	8	8	8	6	5	8	8		
	D	8	8	8	8	8	8	8	8		
	E	8	8	8	8	8	8	8	8		
3	A	8	8	7	7	7	7	5	5		
	B	8	8	8	8	8	8	8	8		
	C	8	8	8	8	8	8	8	7		
	D	8	8	8	7	6	4	3	3		
	E	8	8	8	7	7	7	7	7		
4	A	8	8	8	6	6	6	6	6		
	B	8	8	8	8	8	8	8	8		
	C	8	8	8	8	8	8	8	8		
	D	8	8	8	8	8	8	8	7		
	E	8	8	8	7	7	6	6	6		
5	A	8	8	8	8	8	8	8	8		
	B	8	8	8	8	8	8	7	7		
	C	8	8	8	8	8	8	8	8		
	D	8	8	7	7	7	7	7	7		
	E	8	7	7	7	7	7	8	7		
6	A	8	8	8	7	7	lw/10	5	5		
	B	8	8	8	8	8	8	7	7		
	C	8	8	8	8	8	8	8	8		
	D	8	8	8	8	8	8	7	7		
	E	8	8	8	7	7	7	7	7		
INITIALS		lw	CF	CF	CF	lw	lw	CF	CF		
DATE		8/18/20	8/19/20	8/20/20	8/21/20	8/22/20	8/23/20	8/24/20	8/25/20		

ORGANISM REF#: 20-REAG- 3610

COMMENTS:

WAYPOINT ANALYTICAL, LLC.
 TEST TRACEABILITY RECORD
7-DAY FATHEAD MINNOW

SAMPLE ID: Pine Bluff REPORT # 20-231-0390

DATE START: 8/18/20 DATE END: 8/25/20

FATHEAD MINNOW REFERENCE # 20-REAG- 3610

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST DAY	CONTROL WATER	BRINE SHRIMP	SAMPLE LAB ID:
CHRONIC	8/18/20	IW	0	20-REAG-3574	20-REAG-3573	L851101
	8/19/20	CF	1	20-REAG-3589	20-REAG-3595	I
	8/20/20	CF	2	20-REAG-3590	20-REAG-3614	L86008
	8/21/20	CF	3	20-REAG-3639	20-REAG-3637	I
	8/22/20	IW	4	20-REAG-3687	20-REAG-3663	L86829
	8/23/20	IW	5	20-REAG-3687	20-REAG-3687	I
	8/24/20	CF	6	20-REAG-3691	20-REAG-3690	I

COMMENTS: Fathead minnows are fed 0.15 mL Artemia Brine Shrimp x2 daily.
 Test conducted at 25 ±1 °C Incubator ID: BIO / Thermometer ID: 120554

ANALYST COMMENTS:

FATHEAD MINNOW FINAL WEIGHT SHEET

SAMPLE ID: Pine bluffREPORT #: 20-231-0390INITIAL WEIGHT DATE/TIME: 8/25/20 826ANALYST: SBADATE/TIME IN OVEN: 8/25/20 1620 TEMP (°C): 79ANALYST: CFDATE/TIME OUT OVEN: 8/26/20 753 TEMP (°C): 67ANALYST: lwFINAL WEIGHT DATE/TIME: 8/27/20 1553ANALYST: CF

Oven ID : 03

Thermometer ID: T49

Balance ID: B12

Temp Range : 50 - 105 °C

	REP ID	CRUC ID	INT WEIGHT (g)	FINAL WEIGHT (g)	# LARV	REMARKS
1	A	Soph	29.5759	29.5775	7	
	B	exit	33.9329	33.9348	7	
	C	hrw	27.6720	27.6748	8	
	D	tuber	28.7232	28.7249	6	
	E	ds	34.3294	34.3321	8	
2	A	+Rut	35.2635	35.2657	8	
	B	529	30.1779	30.1802	6	
	C	pond	28.1528	28.1550	8	
	D	four	31.4319	31.4340	8	
	E	Cars	29.7150	29.7174	8	
3	A	bird	25.5501	25.5521	5	
	B	tuan	31.0925	31.0948	8	
	C	Slime	29.0810	29.0831	7	
	D	200	32.4020	32.4033	3	
	E	bt	31.3702	31.3721	7	
4	A	Red	27.1820	27.1839	6	
	B	lfi	26.2803	26.2822	8	
	C	.357	33.5658	33.5680	8	
	D	Dell	32.1624	32.1647	7	
	E	AR	24.8783	24.8806	6	
5	A	taco	22.5579 ^{SPR}	22.5599	8	
	B	luv	30.1742	30.1761	7	
	C	love	31.3209	31.3233	8	
	D	gv	29.7577	29.7597	7	
	E	lion	27.4796	27.4815	7	
6	A	turf	28.5079	28.5096	5	
	B	4K	31.2804	31.2825	7	
	C	Earlz	31.8996	31.9027	8	
	D	47	23.5148	23.5167	7	
	E	671	25.4186	25.4212	7	

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Crucibles must be in the oven a minimum of 6 hours. Immediately after removal from the oven the crucibles must be allowed to cool in the dessicator a minimum of 2 hours.

Comments/Observations:

F:\CETIS\bio report forms\BIO BATCH SHEETS 010720\WEIGHT 5 rep 121818