

05/11/2020

Harrison Wastewater Treatment Plant
Ms. Kathryn Catlin
PO Box 1715
Harrison, AR 72601

Ref: Analytical Testing
Report Number: 20-112-0390
Client Project Description: Bioassay QTR 2
AR0034321

Dear Ms. Kathryn Catlin:

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 = 84 % CV = 39.77 %
Fathead minnow NOEL = 84 % CV = 31.27 %

Permit Limit: Critical dilution = 84 %
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: 11 May-20 13:05 (1 of 1)
Test Code: 20-112-0390 cd | 18-4458-3172

Facility: Harrison Treatment Plant	Test Name: Ceriodaphnia 7-d Survival and Reproduction Test
Sample Site:	Organism: Ceriodaphnia dubia (Water Flea)
Sample Code: 20-112-0390	Protocol: EPA/821/R-02-013 (2002)
Sample Date: 20 Apr-20 08:15	Start Date: 21 Apr-20 11:49
Sample Age: 28h (2.5 °C)	End Date: 28 Apr-20 11:29
Project: WET Quarterly Compliance Test (2Q)	Duration: 7d Organism Age: <24
Permittee: Harrison Treatment Plant	Laboratory: Waypoint Analytical Tennessee , LLC.
Address: PO Box 1715 Harrison, AR 72601	Address: 2790 Whitten Road Memphis, TN 38133
Contact: Ms. Kathryn Catlin	Contact: Ms. Blake Andres, Lab Supervisor
Phone: 870-741-5527	Phone: 901-271-5200, 901-213-2440(fax)
Email: kathryn.catlin@cityofharrison.com	Email: sandres@waypointanalytical.com

Comments:

Chronic Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
7d Survival Rate	NOEL/LOEL	84/>84	83.99	Passes IWC	Fisher Exact/Bonferroni-Holm Test
Reproduction	NOEL/LOEL	84/>84	83.99	Passes IWC	Dunnett Multiple Comparison Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	TAC Limits			Decision
			Lower	Upper	Overlap	
7d Survival Rate	Control Resp	0.8	0.8	>>	Yes	Passes Acceptability Criteria
Reproduction	Control Resp	16.1	15	>>	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	10	0.8	0.6453	0.9547	0	1	0.1333	0.4216	52.70%	0.0%
27		10	0.9	0.784	1	0	1	0.1	0.3162	35.14%	-12.5%
35		10	1	1	1	1	1	0	0	0.00%	-25.0%
47		10	1	1	1	1	1	0	0	0.00%	-25.0%
63		10	1	1	1	1	1	0	0	0.00%	-25.0%
84		10	1	1	1	1	1	0	0	0.00%	-25.0%

Reproduction Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	16.1	13.75	18.45	0	22	2.025	6.402	39.77%	0.0%
27		10	14.7	11.24	18.16	0	30	2.982	9.429	64.14%	8.7%
35		10	15.8	14.45	17.15	11	22	1.162	3.676	23.26%	1.86%
47		10	20.4	17.14	23.66	0	30	2.81	8.884	43.55%	-26.71%
63		10	17.7	15.63	19.77	8	28	1.783	5.638	31.85%	-9.94%
84		10	20.1	17.73	22.47	9	33	2.046	6.471	32.20%	-24.84%

CETIS Summary Report

Report Date: 11 May-20 13:05 (p 1 of 2)
 Test Code: 20-112-0390 cd | 18-4458-3172

Ceriodaphnia 7-d Survival and Reproduction Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 13-2243-1932	Test Type: Reproduction-Survival (7d)	Analyst: Ivey E. Wilkinson
Start Date: 21 Apr-20 11:49	Protocol: EPA/821/R-02-013 (2002)	Diluent: 20% DMW
Ending Date: 28 Apr-20 11:29	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d	Source: In-House Culture	Age: <24

Sample ID: 13-9360-3619	Code: 20-112-0390	Client: Harrison Treatment Plant
Sample Date: 20 Apr-20 08:15	Material: POTW Effluent	Project: WET Quarterly Compliance Test (2Q)
Receipt Date: 21 Apr-20 08:03	Source: Harrison Treatment Plant (AR0034321)	
Sample Age: 28h (2.5 °C)	Station:	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	20-112-0390	21 Apr-20 08:30	22 Apr-20 08:00	23 Apr-20 00:00	0.8
2	20-112-0390	23 Apr-20 08:30	24 Apr-20 09:40	25 Apr-20 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
04-1475-4252	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	84	> 84	n/a	1.19	n/a
15-3835-4428	Reproduction	Dunnett Multiple Comparison Test	84	> 84	n/a	1.19	44.7%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
04-1475-4252	7d Survival Rate	Control Resp	0.8	0.8	>>	Yes	Passes Acceptability Criteria
15-3835-4428	Reproduction	Control Resp	16.1	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	0.8000	0.4984	1.0000	0.0000	1.0000	0.1333	0.4216	52.70%	0.00%
27		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	-12.50%
35		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-25.00%
47		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-25.00%
63		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-25.00%
84		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-25.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	16.1	11.52	20.68	0	22	2.025	6.402	39.77%	0.00%
27		10	14.7	7.955	21.44	0	30	2.982	9.429	64.14%	8.70%
35		10	15.8	13.17	18.43	11	22	1.162	3.676	23.26%	1.86%
47		10	20.4	14.04	26.76	0	30	2.81	8.884	43.55%	-26.71%
63		10	17.7	13.67	21.73	8	28	1.783	5.638	31.85%	-9.94%
84		10	20.1	15.47	24.73	9	33	2.046	6.471	32.20%	-24.84%

CETIS Summary Report

Report Date: 11 May-20 13:05 (p 2 of 2)
Test Code: 20-112-0390 cd | 18-4458-3172

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	0.0000	1.0000	1.0000	1.0000	0.0000
27		1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
35		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
47		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
63		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
84		1.0000	1.0000	1.0000	1.0000	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	14	21	21	15	15	0	22	15	18	20
27		19	1	15	0	24	30	13	12	21	12
35		22	16	17	15	13	22	14	13	15	11
47		24	27	0	24	30	27	23	12	20	17
63		19	8	28	22	11	17	21	19	15	17
84		25	23	24	9	18	18	18	17	33	16

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	0/1	1/1	1/1	1/1	0/1
27		1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
35		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
47		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
63		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
84		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Measurement Report

Report Date: 11 May-20 13:05 (p 1 of 3)
Test Code: 20-112-0390 cd | 18-4458-3172

Ceriodaphnia 7-d Survival and Reproduction Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 13-2243-1932	Test Type: Reproduction-Survival (7d)	Analyst: Ivey E. Wilkinson
Start Date: 21 Apr-20 11:49	Protocol: EPA/821/R-02-013 (2002)	Diluent: 20% DMW
Ending Date: 28 Apr-20 11:29	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d	Source: In-House Culture	Age: <24

Sample ID: 13-9360-3619	Code: 20-112-0390	Client: Harrison Treatment Plant
Sample Date: 20 Apr-20 08:15	Material: POTW Effluent	Project: WET Quarterly Compliance Test (2Q)
Receipt Date: 21 Apr-20 08:03	Source: Harrison Treatment Plant (AR0034321)	
Sample Age: 28h (2.5 °C)	Station:	

CETIS Measurement Report

Report Date: 11 May-20 13:05 (p 2 of 3)
Test Code: 20-112-0390 cd | 18-4458-3172

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
27								
35								
47								
63								
84		0	0	0	0	0	0	0

Conductivity-µS/cm

Conc-%	Code	1	2	3	4	5	6	7
0	L	153.1	153.6	161.1	173.4	171.2	172.3	169.7
27								
35								
47								
63								
84		380	381	388	409	446	456	400

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2	3	4	5	6	7
0	L	9.1	8.3	9	8.6	8.7	7.7	8.7
27		9.1	8.4	9	8.5	8.6	7.8	8.6
35		9	8.4	9.1	8.4	8.6	7.7	8.5
47		8.9	8.5	9.1	8.4	8.6	7.8	8.4
63		8.8	8.5	9.1	8.4	8.7	7.8	8.4
84		8.8	8.6	9.2	8.5	8.7	7.9	8.5

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2	3	4	5	6	7
0	L	9.9	8.4	7.6	8.9	8.5	8.3	8.7
27		10.3	8.6	7.6	8.8	8.6	8.5	8.8
35		10.4	8.7	7.7	8.9	8.6	8.5	8.8
47		10.4	8.8	7.8	9	8.6	8.6	8.9
63		10.6	9.1	7.8	9.1	8.8	8.6	8.9
84		10.9	9.4	7.9	9.3	8.9	8.9	9

Final pH-Units

Conc-%	Code	1	2	3	4	5	6	7
0	L	8	8	7.5	7.3	7.5	7.5	7.6
27		8	8.1	7.5	7.3	7.5	7.6	7.5
35		8	8.1	7.6	7.3	7.5	7.6	7.6
47		8	8.1	7.6	7.4	7.5	7.6	7.6
63		8	8.1	7.6	7.4	7.6	7.6	7.6
84		8	8	7.6	7.4	7.7	7.7	7.7

Initial pH-Units

Conc-%	Code	1	2	3	4	5	6	7
0	L	7.6	7.8	8.1	7.6	7.4	7.4	7.5
27		7.4	7.6	8.1	7.5	7.2	7.1	7.4
35		7.4	7.6	7.9	7.3	7.1	7.1	7.3
47		7.3	7.6	7.9	7.3	7.1	7.2	7.2
63		7.2	7.5	7.9	7.2	6.9	7	7.2
84		7.1	7.4	7.8	7.1	6.8	6.8	7

CETIS Measurement Report

Report Date: 11 May-20 13:05 (p 3 of 3)
Test Code: 20-112-0390 cd | 18-4458-3172

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	23.4	23.4	22.7	23.4	23	21.7	23.5
27		23.4	23.3	22.9	23.3	22.8	21.8	23.4
35		23.4	23.4	22.8	23.2	22.7	21.9	23.5
47		23.3	23.2	22.7	23.2	22.8	21.7	23.5
63		23.3	23.2	22.7	23.2	22.8	22.8	23.4
84		23.4	23.3	22.8	23.3	22.8	21.7	23.5

Initial Temperature-°C

Conc-%	Code	1	2	3	4	5	6	7
0	L	22.6	22.7	23.1	23.4	23.5	23.8	23.1
27		22.7	22.9	23.3	23.2	23.6	24	23
35		22.6	23	23.3	23.2	23.7	24.1	22.9
47		22.9	23	23.2	23.1	24	24.3	22.8
63		23	23.1	23.1	23.3	24.1	24.4	22.7
84		23.9	23.2	23.1	23.2	24.3	24.5	22.6

CETIS Test Evaluation Report

Report Date: 11 May-20 13:06 (1 of 1)
Test Code: 20-112-0390 fh | 20-4401-3333

Facility: Harrison Treatment Plant
Sample Site:
Sample Code: 20-112-0390
Sample Date: 20 Apr-20 08:15
Sample Age: 28h (2.5 °C)
Project: WET Quarterly Compliance Test (2Q)

Permittee: Harrison Treatment Plant
Address:
 PO Box 1715
 Harrison, AR 72601

Contact: Ms. Kathryn Catlin
Phone: 870-741-5527
Email: kathryn.catlin@cityofharrison.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: 21 Apr-20 12:00
End Date: 28 Apr-20 12:25
Duration: 7d 0h **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	84/>84	83.99	Passes IWC	Steel Many-One Rank Sum Test
Mean Dry Weight-mg	NOEL/LOEL	84/>84	83.99	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
Mean Dry Weight-mg	Control Resp	0.6719	0.25	>>	Yes	Passes Acceptability Criteria

Mean Dry Weight-mg Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	4	0.6719	0.602	0.7418	0.4625	0.925	0.09525	0.1905	28.35%	0.0%
27		4	0.7844	0.7589	0.8099	0.6875	0.85	0.03475	0.0695	8.86%	-16.74%
35		4	0.8531	0.7897	0.9166	0.6875	1.037	0.08651	0.173	20.28%	-26.98%
47		4	0.875	0.7886	0.9614	0.7125	1.225	0.1178	0.2356	26.93%	-30.23%
84		4	1.069	0.9987	1.139	0.8375	1.275	0.09554	0.1911	17.88%	-59.07%

7d Survival Rate Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	1	1	1	1	1	0	0	0.00%	0.0%
27		5	1	1	1	1	1	0	0	0.00%	0.0%
35		5	1	1	1	1	1	0	0	0.00%	0.0%
47		5	1	1	1	1	1	0	0	0.00%	0.0%
63		5	0.975	0.9545	0.9955	0.875	1	0.025	0.0559	5.73%	2.5%
84		5	1	1	1	1	1	0	0	0.00%	0.0%

CETIS Summary Report

Report Date: 11 May-20 13:06 (p 1 of 2)
 Test Code: 20-112-0390 fh | 20-4401-3333

Fathead Minnow 7-d Larval Survival and Growth Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 18-9206-8365	Test Type: Growth-Survival (7d)	Analyst: Ivey E. Wilkinson
Start Date: 21 Apr-20 12:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: 20% DMW
Ending Date: 28 Apr-20 12:25	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d 0h	Source: Aquatic Biosystems, CO	Age: <24

Sample ID: 13-9360-3619	Code: 20-112-0390	Client: Harrison Treatment Plant
Sample Date: 20 Apr-20 08:15	Material: POTW Effluent	Project: WET Quarterly Compliance Test (2Q)
Receipt Date: 21 Apr-20 08:03	Source: Harrison Treatment Plant (AR0034321)	
Sample Age: 28h (2.5 °C)	Station:	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	20-112-0390	21 Apr-20 08:30	22 Apr-20 08:00	23 Apr-20 00:00	0.8
2	20-112-0390	23 Apr-20 08:30	24 Apr-20 09:40	25 Apr-20 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
16-0868-4269	7d Survival Rate	Steel Many-One Rank Sum Test	84	> 84	n/a	1.19	5.1%
04-9921-0018	Mean Dry Weight-mg	Dunnett Multiple Comparison Test	84	> 84	n/a	1.19	44.8%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
16-0868-4269	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Acceptability Criteria
04-9921-0018	Mean Dry Weight-mg	Control Resp	0.6719	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	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
27		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
35		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
47		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
63		5	0.9750	0.9056	1.0000	0.8750	1.0000	0.0250	0.0559	5.73%	2.50%
84		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.625	0.3823	0.8677	0.4375	0.925	0.08741	0.1955	31.27%	0.00%
27		5	0.805	0.7108	0.8992	0.6875	0.8875	0.03391	0.07583	9.42%	-28.80%
35		5	0.83	0.6332	1.027	0.6875	1.037	0.07089	0.1585	19.10%	-32.80%
47		5	0.8325	0.553	1.112	0.6625	1.225	0.1007	0.2251	27.04%	-33.20%
63		5	0.855	0.2494	1.461	0	1.213	0.2181	0.4877	57.04%	-36.80%
84		5	1.045	0.8292	1.261	0.8375	1.275	0.07772	0.1738	16.63%	-67.20%

CETIS Summary Report

Report Date: 11 May-20 13:06 (p 2 of 2)
Test Code: 20-112-0390 fh | 20-4401-3333

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	1.0000	1.0000	1.0000	1.0000	1.0000
27		1.0000	1.0000	1.0000	1.0000	1.0000
35		1.0000	1.0000	1.0000	1.0000	1.0000
47		1.0000	1.0000	1.0000	1.0000	1.0000
63		0.8750	1.0000	1.0000	1.0000	1.0000
84		1.0000	1.0000	1.0000	1.0000	1.0000

Mean Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	0.4375	0.65	0.925	0.4625	0.65
27		0.8875	0.8125	0.6875	0.85	0.7875
35		0.7375	0.6875	1.037	0.9625	0.725
47		0.6625	0.775	1.225	0.7875	0.7125
63		0	1.213	0.9625	1	1.1
84		0.95	0.8375	1	1.275	1.162

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	8/8	8/8	8/8	8/8	8/8
27		8/8	8/8	8/8	8/8	8/8
35		8/8	8/8	8/8	8/8	8/8
47		8/8	8/8	8/8	8/8	8/8
63		7/8	8/8	8/8	8/8	8/8
84		8/8	8/8	8/8	8/8	8/8

CETIS Measurement Report

Report Date: 11 May-20 13:06 (p 1 of 3)
Test Code: 20-112-0390 fh | 20-4401-3333

Fathead Minnow 7-d Larval Survival and Growth Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 18-9206-8365	Test Type: Growth-Survival (7d)	Analyst: Ivey E. Wilkinson
Start Date: 21 Apr-20 12:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: 20% DMW
Ending Date: 28 Apr-20 12:25	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d 0h	Source: Aquatic Biosystems, CO	Age: <24

Sample ID: 13-9360-3619	Code: 20-112-0390	Client: Harrison Treatment Plant
Sample Date: 20 Apr-20 08:15	Material: POTW Effluent	Project: WET Quarterly Compliance Test (2Q)
Receipt Date: 21 Apr-20 08:03	Source: Harrison Treatment Plant (AR0034321)	
Sample Age: 28h (2.5 °C)	Station:	

CETIS Measurement Report

Report Date: 11 May-20 13:06 (p 2 of 3)
Test Code: 20-112-0390 fh | 20-4401-3333

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
27								
35								
47								
63								
84		0	0	0	0	0	0	0

Conductivity-µS/cm

Conc-%	Code	1	2	3	4	5	6	7
0	L	153.1	153.6	161.1	173.4	171.2	172.3	169.7
27								
35								
47								
63								
84		380	381	388	409	446	456	400

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2	3	4	5	6	7
0	L	7.3	8	7.8	7	6.7	7.4	7.5
27		7.4	7.9	7.6	7	6.7	7.2	7.7
35		7.3	7.8	7.5	7.2	6.8	7.3	7.7
47		7.3	7.7	7.3	7.3	7	7.1	7.7
63		7	7.6	7.2	7.2	6.9	7.1	7.9
84		7.2	7.6	7.4	7.2	7.1	7	7.9

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2	3	4	5	6	7
0	L	9.9	8.4	7.6	8.9	8.5	8.3	8.7
27		10.3	8.6	7.6	8.8	8.6	8.5	8.8
35		10.4	8.7	7.7	8.9	8.6	8.5	8.8
47		10.4	8.8	7.8	9	8.6	8.6	8.9
63		10.6	9.1	7.8	9.1	8.8	8.6	8.9
84		10.9	9.4	7.9	9.3	8.9	8.9	9

Final pH-Units

Conc-%	Code	1	2	3	4	5	6	7
0	L	7	7	7	6.8	6.7	6.8	7
27		7.2	7	7	6.8	6.7	6.8	6.9
35		7.1	7.1	7	6.9	6.7	6.9	7
47		7.2	7.1	7	6.9	6.8	6.8	7
63		7.1	7.1	7.1	6.8	6.7	6.9	7.1
84		7.3	7.1	7.1	6.9	6.8	6.9	7.1

Initial pH-Units

Conc-%	Code	1	2	3	4	5	6	7
0	L	7.6	7.8	8.1	7.6	7.4	7.4	7.5
27		7.4	7.6	8.1	7.5	7.2	7.1	7.4
35		7.4	7.6	7.9	7.3	7.1	7.1	7.3
47		7.3	7.6	7.9	7.3	7.1	7.2	7.2
63		7.2	7.5	7.9	7.2	6.9	7	7.2
84		7.1	7.4	7.8	7.1	6.8	6.8	7

CETIS Measurement Report

Report Date: 11 May-20 13:06 (p 3 of 3)
Test Code: 20-112-0390 fh | 20-4401-3333

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	23.9	23.5	23.1	24.2	24.1	23.4	23
27		24.1	23.6	23.2	24.1	24.2	23.3	23.2
35		24.1	23.5	23.4	24.2	24	23.2	23.3
47		24.1	23.6	23.5	24.2	23.9	23.2	23.2
63		24.1	23.7	23.8	24.2	24.1	23.4	23.2
84		24.1	23.6	23.7	24.2	24.2	23.3	23.2

Initial Temperature-°C

Conc-%	Code	1	2	3	4	5	6	7
0	L	22.6	22.7	23.1	23.4	23.5	23.8	23.1
27		22.7	22.9	23.3	23.2	23.6	24	23
35		22.6	23	23.3	23.2	23.7	24.1	22.9
47		22.9	23	23.2	23.1	24	24.3	22.8
63		23	23.1	23.1	23.3	24.1	24.4	22.7
84		23.9	23.2	23.1	23.2	24.3	24.5	22.6

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 6154725
 - Sodium Chloride is used as the reference toxicity chemical for invertebrate species
 - Current chemical ID: CS 6155537
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

03322

Harrison Wastewater Treatment Plant
 Mr. Randy Reese
 1508 Silver Valley Road
 Harrison , AR 72601

Project Bioassay
 Information :

Report Number : **20-112-0390**

REPORT OF ANALYSIS

Report Date : 05/11/2020

Received : 04/21/2020

Lab No : **90642**

Sample ID : **Effluent Composite**

Matrix: **Aqueous**

Sampled: **4/20/2020 8:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	93	mg/L	1	1	04/28/20 09:06	CMF	2320B-2011
Calcium	53.4	mg/L	0.500	1	04/27/20 23:54	KKM	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	144	mg/L	0.100	1	04/27/20 23:54		EPA-200.7
Magnesium	2.59	mg/L	0.100	1	04/27/20 23:54	KKM	EPA-200.7

Lab No : **90937**

Sample ID : **Effluent Composite**

Matrix: **Aqueous**

Sampled: **4/21/2020 8:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	92	mg/L	1	1	04/28/20 09:06	CMF	2320B-2011
Calcium	56.1	mg/L	0.500	1	04/27/20 23:59	KKM	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	151	mg/L	0.100	1	04/27/20 23:59		EPA-200.7
Magnesium	2.77	mg/L	0.100	1	04/27/20 23:59	KKM	EPA-200.7

Lab No : **91587**

Sample ID : **Effluent Composite**

Matrix: **Aqueous**

Sampled: **4/23/2020 8:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	89	mg/L	1	1	04/28/20 09:06	CMF	2320B-2011
Calcium	51.6	mg/L	0.500	1	04/28/20 00:14	KKM	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	141	mg/L	0.100	1	04/28/20 00:14		EPA-200.7
Magnesium	2.87	mg/L	0.100	1	04/28/20 00:14	KKM	EPA-200.7

**Qualifiers/
Definitions**

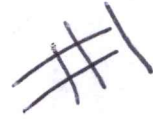
DF Dilution Factor
 MQL Method Quantitation Limit

L Limit Exceeded



Kit ID: 126724
Initiated By: Sydney Andres
Initiated Date: 10/24/2019
Project Comment Harrison WWTP Bioassay

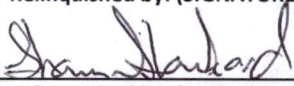
CHAIN-OF-CUSTODY



Company Name Harrison Wastewater Treatment Plant	Company Number 03322	Client Project Manager/Contact Harrison Wastewater Treatment Plant	Purchase Order Number
Site Name QTR 2 A - Bioassay 04/19-20/2020	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 Harrison - Bioassay	Project Manager Phone # (870) 741-5527	Project Manager Email	Site/Facility ID #

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
4-19/4-20-20	08:15 to 08:15	Composite 1	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
4-19/4-20-20	08:15 to 08:15	Composite 1	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
4-19/4-20-20	08:15 to 08:15	Composite 1	Aqueous	C	2	Plastic - Gallon	NONE	Chronic CD/FH


 20-112-0390
 03322
 04-21-2020
 Harrison Wastewater Treatment Plant
 Bioassay
 09:21:23

For Laboratory Use Only			Sampled by (Name - Print) *		Client Remarks/Comments					
Ice Y/N	Custody Seals Y/N	Lab Comments	Shaun Slankard		Bio's 1 of 3					
Blank/Cooler Temp 75.6 25.0°C			Relinquished by: (SIGNATURE) *		Date	Time	Received by: (SIGNATURE)		Date	Time
					4-20-20 *	8:15 G.M.				
			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)		Date	Time
			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)		Date	Time

Handwritten signature and date: 4/21/20 0803



#2

Kit ID: 126725
Initiated By: Sydney Andres
Initiated Date: 10/24/2019
Project Comment Harrison WWTP Bioassay

CHAIN-OF-CUSTODY

Company Name Harrison Wastewater Treatment Plant	Company Number 03322	Client Project Manager/Contact Harrison Wastewater Treatment Plant	Purchase Order Number
Site Name QTR 2 B - Bioassay 04/21-22/2020	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 Harrison - Bioassay	Project Manager Phone # (870) 741-5527	Project Manager Email	Site/Facility ID #

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
4-20/4-21-20	08:30 to 08:30	Composite 2	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
4-20/4-21-20	08:30 to 08:30	Composite 2	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
4-20/4-21-20	08:30 to 08:30	Composite 2	Aqueous	C	2	Plastic - Gallon	NONE	Chronic CD/FH


 20-112-0390
 03322
 Harrison Wastewater Treatment Plant
 Bioassay / 4/21/20
 04-21-2020
 09:21:23

For Laboratory Use Only			Sampled by (Name - Print) *	Client Remarks/Comments			
Ice Y/N	Custody Seals Y/N	Lab Comments	Shawn Skantard	Bis 2 of 3			
Blank/Cooler Temp 0.8°C T90 HB			Relinquished by: (SIGNATURE) *	Date Time	Received by: (SIGNATURE)	Date Time	
			Shawn Skantard	4-21-20 8:30am			
			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	



Kit ID:	126726
Initiated By:	Sydney Andres
Initiated Date:	10/24/2019
Project Comment	Harrison WWTP Bioassay

CHAIN-OF-CUSTODY

#3

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
Harrison Wastewater Treatment Plant	03322	Harrison Wastewater Treatment Plant	
Site Name	Project Number	<input type="checkbox"/> RUSH – Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	Method of Shipment <input type="checkbox"/> Fed Ex <input checked="" type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
QTR 2 C - Bioassay 04/23-24/2020			
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
Harrison - Bioassay	(870) 741-5527		

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
4-22/4-23-20	08:30 to 08:30	Composite 3	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
4-22/4-23-20	08:30 to 08:30	Composite 3	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
4-22/4-23-20	08:30 to 08:30	Composite 3	Aqueous	C	3	Plastic - Gallon	NONE	Chronic CD/FH

20-112-0390
 03322
 04-21-2020
 09:21:23
 Harrison Wastewater Treatment Plant
 Bioassay / 4/21/20/4/22/20

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments			
Ice	Custody Seals	Lab Comments	Shawn Stentard		Bids 3 of 3			
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time		
			<i>[Signature]</i>	4-23-20 08:30				
Blank/Cooler Temp			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time		
					<i>[Signature]</i> 4/24/20 0940			