

06/06/2022

Osceola Water Department
Mr. Brandon Haynes
PO Box 443
Osceola, AR 72370

Ref: Analytical Testing
Report Number: 22-145-0392
Client Project Description: Bioassay QTR 2
AR0021580

Dear Mr. Brandon Haynes

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:	<i>Daphnia pulex</i>	NOEL = 0.23 %	CV = 0.00 %
	Fathead minnow	NOEL = 0.23 %	CV = 18.13 %

Permit Limit: Critical Dilution = 0.17 %
Maximum Coefficient of Variation (CV) < 40 %

EPA Methods: 2021.0 *Daphnia pulex* Acute Toxicity
2000.0 *Pimephales promelas* Acute Toxicity

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

Respectfully,



Blake Smith
Lab Supervisor

CETIS Test Evaluation Report

Report Date: 31 May-22 11:59 (1 of 1)
Test Code: 22-145-0392-dp | 20-3172-5244

Facility: Osceola Water Department	Test Name: Daphnia pulex 48-h Acute Survival Test
Sample Site:	Organism: Daphnia pulex (Water Flea)
Sample Code: 22-145-0392	Protocol: EPA/821/R-02-012 (2002)
Sample Date: 24 May-22 08:00	Start Date: 25 May-22 15:44
Sample Age: 32h (2.3 °C)	End Date: 27 May-22 15:47
Project: WET Quarterly Compliance Test (2Q)	Duration: 48h Organism Age: <24
Permittee: Osceola Water Department	Laboratory: Waypoint Analytical Tennessee , LLC.
Address: 303 W. Hale PO Box 443 Osceola, AR 72370	Address: 2790 Whitten Road Memphis, TN 38133
Contact: Mr. Brandon Haynes	Contact: Mrs. Blake Smith, Lab Supervisor
Phone: 870-563-2628	Phone: 901-271-5200, 901-213-2440(fax)
Email: bhaynes58@yahoo.com	Email: Bsmith@wpacorp.com

Comments:

Acute Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
48h Survival Rate	NOEL/LOEL	0.23/>0.23	0.17	Passes IWC	Steel Many-One Rank Sum Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
			Lower	Upper		
48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Acceptability Criteria

48h Survival Rate Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	1	1	1	1	1	0	0	0.00%	0.0%
0.07		5	1	1	1	1	1	0	0	0.00%	0.0%
0.1		5	1	1	1	1	1	0	0	0.00%	0.0%
0.13		5	0.975	0.9545	0.9955	0.875	1	0.025	0.0559	5.73%	2.5%
0.17		5	1	1	1	1	1	0	0	0.00%	0.0%
0.23		5	1	1	1	1	1	0	0	0.00%	0.0%

CETIS Summary Report

Report Date: 31 May-22 11:59 (p 1 of 1)
 Test Code: 22-145-0392-dp | 20-3172-5244

Daphnia pulex 48-h Acute Survival Test **Waypoint Analytical Tennessee, LLC.**

Batch ID: 01-9619-5368	Test Type: Survival (48h)	Analyst: Chase M. Featherston
Start Date: 25 May-22 15:44	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 27 May-22 15:47	Species: Daphnia pulex	Brine: Not Applicable
Duration: 48h	Source: In-House Culture	Age: <24
Sample ID: 19-5690-8616	Code: 22-145-0392	Client: Osceola Water Department
Sample Date: 24 May-22 08:00	Material: POTW Effluent	Project: WET Quarterly Compliance Test (2Q)
Receipt Date: 25 May-22 14:00	Source: Osceola Water Department (AR0021580)	
Sample Age: 32h (2.3 °C)	Station:	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	22-145-0392	25 May-22 08:00	25 May-22 14:00	26 May-22 00:00	2.3

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-9598-3293	48h Survival Rate	Steel Many-One Rank Sum Test	0.23	> 0.23	n/a	434.8	5.1%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
01-9598-3293	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Acceptability Criteria

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0	L	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.07		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.1		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.13		5	0.9750	0.9056	1.0000	0.8750	1.0000	0.0250	0.0559	5.73%	2.50%
0.17		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.23		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	1.0000	1.0000	1.0000	1.0000	1.0000
0	L	1.0000	1.0000	1.0000	1.0000	1.0000
0.07		1.0000	1.0000	1.0000	1.0000	1.0000
0.1		1.0000	1.0000	1.0000	1.0000	1.0000
0.13		1.0000	1.0000	0.8750	1.0000	1.0000
0.17		1.0000	1.0000	1.0000	1.0000	1.0000
0.23		1.0000	1.0000	1.0000	1.0000	1.0000

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	8/8	8/8	8/8	8/8	8/8
0	L	8/8	8/8	8/8	8/8	8/8
0.07		8/8	8/8	8/8	8/8	8/8
0.1		8/8	8/8	8/8	8/8	8/8
0.13		8/8	8/8	7/8	8/8	8/8
0.17		8/8	8/8	8/8	8/8	8/8
0.23		8/8	8/8	8/8	8/8	8/8

CETIS Measurement Report

Report Date: 31 May-22 11:59 (p 1 of 3)
Test Code: 22-145-0392-dp | 20-3172-5244

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 01-9619-5368	Test Type: Survival (48h)	Analyst: Chase M. Featherston
Start Date: 25 May-22 15:44	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 27 May-22 15:47	Species: Daphnia pulex	Brine: Not Applicable
Duration: 48h	Source: In-House Culture	Age: <24

Sample ID: 19-5690-8616	Code: 22-145-0392	Client: Osceola Water Department
Sample Date: 24 May-22 08:00	Material: POTW Effluent	Project: WET Quarterly Compliance Test (2Q)
Receipt Date: 25 May-22 14:00	Source: Osceola Water Department (AR0021580)	
Sample Age: 32h (2.3 °C)	Station:	

CETIS Measurement Report

Report Date: 31 May-22 11:59 (p 2 of 3)
Test Code: 22-145-0392-dp | 20-3172-5244

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Total Residual Chlorine-mg/L

Conc-%	Code	1	2
0	R	0	0
0	L	0	0
0.07			
0.1			
0.13			
0.17			
0.23		1	1

Conductivity-µS/cm

Conc-%	Code	1	2
0	R	395.4	390
0	L	172.8	169.3
0.07			
0.1			
0.13			
0.17			
0.23		535.9	542.2

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	8	9.7
0	L	7.8	9.6
0.07		8.2	9.9
0.1		8.3	9.9
0.13		8.3	9.9
0.17		8.3	9.9
0.23		8.3	10

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	8.3	8.3
0	L	8.5	8.8
0.07		8.3	8.3
0.1		8.3	8.2
0.13		8.3	8
0.17		8.3	8.1
0.23		8.3	8

Final pH-Units

Conc-%	Code	1	2
0	R	8.2	8.2
0	L	8	7.9
0.07		8.3	8.2
0.1		8.3	8.1
0.13		8.2	8.2
0.17		8.3	8.2
0.23		8.3	8.2

CETIS Measurement Report

Report Date: 31 May-22 11:59 (p 3 of 3)
Test Code: 22-145-0392-dp | 20-3172-5244

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Initial pH-Units

Conc-%	Code	1	2
0	R	7.9	8.1
0	L	8.1	8.1
0.07		7.9	7.9
0.1		7.9	7.9
0.13		7.9	8
0.17		7.9	7.9
0.23		7.9	7.9

Final Temperature-°C

Conc-%	Code	1	2
0	R	24	23.8
0	L	23.6	23.8
0.07		24	23.6
0.1		24	23.8
0.13		24.1	23.7
0.17		23.9	23.7
0.23		24.1	23.8

Initial Temperature-°C

Conc-%	Code	1	2
0	R	25.1	25.6
0	L	24.9	24.3
0.07		25.3	25.7
0.1		25.3	25.8
0.13		25.3	25.9
0.17		25.5	25.8
0.23		25.6	26

CETIS Test Evaluation Report

Report Date: 31 May-22 11:59 (1 of 1)
Test Code: 22-145-0392-fh | 02-0537-3649

Facility: Osceola Water Department	Test Name: Fathead Minnow 48-h Acute Survival Test
Sample Site:	Organism: Pimephales promelas (Fathead Minnow)
Sample Code: 22-145-0392	Protocol: EPA/821/R-02-012 (2002)
Sample Date: 24 May-22 08:00	Start Date: 25 May-22 15:42
Sample Age: 32h (2.3 °C)	End Date: 27 May-22 15:43
Project: WET Quarterly Compliance Test (2Q)	Duration: 48h Organism Age: <24
Permittee: Osceola Water Department	Laboratory: Waypoint Analytical Tennessee , LLC.
Address: 303 W. Hale PO Box 443 Osceola, AR 72370	Address: 2790 Whitten Road Memphis, TN 38133
Contact: Mr. Brandon Haynes	Contact: Mrs. Blake Smith, Lab Supervisor
Phone: 870-563-2628	Phone: 901-271-5200, 901-213-2440(fax)
Email: bhaynes58@yahoo.com	Email: Bsmith@wpacorp.com

Comments:

Acute Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
48h Survival Rate	NOEL/LOEL	0.23/>0.23	0.17	Passes IWC	Steel Many-One Rank Sum Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
			Lower	Upper		
48h Survival Rate	Control Resp	0.925	0.9	>>	Yes	Passes Acceptability Criteria

48h Survival Rate Data Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	0.925	0.8635	0.9865	0.625	1	0.075	0.1677	18.13%	0.0%
0.07		5	1	1	1	1	1	0	0	0.00%	-8.11%
0.1		5	1	1	1	1	1	0	0	0.00%	-8.11%
0.13		5	0.975	0.9545	0.9955	0.875	1	0.025	0.0559	5.73%	-5.41%
0.17		5	1	1	1	1	1	0	0	0.00%	-8.11%
0.23		5	1	1	1	1	1	0	0	0.00%	-8.11%

CETIS Summary Report

Report Date: 31 May-22 11:59 (p 1 of 1)
 Test Code: 22-145-0392-fh | 02-0537-3649

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 10-9081-5500 Test Type: Survival (48h) Analyst: Chase M. Featherston
 Start Date: 25 May-22 15:42 Protocol: EPA/821/R-02-012 (2002) Diluent: 20% DMW
 Ending Date: 27 May-22 15:43 Species: Pimephales promelas Brine: Not Applicable
 Duration: 48h Source: Aquatic Biosystems, CO Age: <24

Sample ID: 19-5690-8616 Code: 22-145-0392 Client: Osceola Water Department
 Sample Date: 24 May-22 08:00 Material: POTW Effluent Project: WET Quarterly Compliance Test (2Q)
 Receipt Date: 25 May-22 14:00 Source: Osceola Water Department (AR0021580)
 Sample Age: 32h (2.3 °C) Station:

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	22-145-0392	25 May-22 08:00	25 May-22 14:00	26 May-22 00:00	2.3

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
04-4421-6522	48h Survival Rate	Steel Many-One Rank Sum Test	0.23	> 0.23	n/a	434.8	9.42%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
04-4421-6522	48h Survival Rate	Control Resp	0.925	0.9	>>	Yes	Passes Acceptability Criteria

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	0.9250	0.7168	1.0000	0.6250	1.0000	0.0750	0.1677	18.13%	0.00%
0	L	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-8.11%
0.07		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-8.11%
0.1		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-8.11%
0.13		5	0.9750	0.9056	1.0000	0.8750	1.0000	0.0250	0.0559	5.73%	-5.41%
0.17		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-8.11%
0.23		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-8.11%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	0.6250	1.0000	1.0000	1.0000	1.0000
0	L	1.0000	1.0000	1.0000	1.0000	1.0000
0.07		1.0000	1.0000	1.0000	1.0000	1.0000
0.1		1.0000	1.0000	1.0000	1.0000	1.0000
0.13		1.0000	0.8750	1.0000	1.0000	1.0000
0.17		1.0000	1.0000	1.0000	1.0000	1.0000
0.23		1.0000	1.0000	1.0000	1.0000	1.0000

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	5/8	8/8	8/8	8/8	8/8
0	L	8/8	8/8	8/8	8/8	8/8
0.07		8/8	8/8	8/8	8/8	8/8
0.1		8/8	8/8	8/8	8/8	8/8
0.13		8/8	7/8	8/8	8/8	8/8
0.17		8/8	8/8	8/8	8/8	8/8
0.23		8/8	8/8	8/8	8/8	8/8

CETIS Measurement Report

Report Date: 31 May-22 11:59 (p 1 of 3)
Test Code: 22-145-0392-fh | 02-0537-3649

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 10-9081-5500	Test Type: Survival (48h)	Analyst: Chase M. Featherston
Start Date: 25 May-22 15:42	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 27 May-22 15:43	Species: Pimephales promelas	Brine: Not Applicable
Duration: 48h	Source: Aquatic Biosystems, CO	Age: <24

Sample ID: 19-5690-8616	Code: 22-145-0392	Client: Osceola Water Department
Sample Date: 24 May-22 08:00	Material: POTW Effluent	Project: WET Quarterly Compliance Test (2Q)
Receipt Date: 25 May-22 14:00	Source: Osceola Water Department (AR0021580)	
Sample Age: 32h (2.3 °C)	Station:	

CETIS Measurement Report

Report Date: 31 May-22 11:59 (p 2 of 3)
Test Code: 22-145-0392-fh | 02-0537-3649

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Total Residual Chlorine-mg/L

Conc-%	Code	1	2
0	R	0	0
0	L	0	0
0.07			
0.1			
0.13			
0.17			
0.23		1	1

Conductivity-µS/cm

Conc-%	Code	1	2
0	R	395.4	390
0	L	172.8	169.3
0.07			
0.1			
0.13			
0.17			
0.23		535.9	542.2

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	8.5	8.3
0	L	8.4	9.3
0.07		8.5	9.3
0.1		8.5	9.4
0.13		8.5	9.5
0.17		8.5	9.5
0.23		8.5	9.5

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	8.3	8.3
0	L	8.5	8.8
0.07		8.3	8.3
0.1		8.3	8.2
0.13		8.3	8
0.17		8.3	8.1
0.23		8.3	8

Final pH-Units

Conc-%	Code	1	2
0	R	8.3	8.2
0	L	8.3	8.1
0.07		8.3	8.2
0.1		8.3	8.2
0.13		8.2	8.2
0.17		8.3	8.2
0.23		8.3	8.2

CETIS Measurement Report

Report Date: 31 May-22 11:59 (p 3 of 3)
Test Code: 22-145-0392-fh | 02-0537-3649

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Initial pH-Units

Conc-%	Code	1	2
0	R	7.9	8.1
0	L	8.1	8.1
0.07		7.9	7.9
0.1		7.9	7.9
0.13		7.9	8
0.17		7.9	7.9
0.23		7.9	7.9

Final Temperature-°C

Conc-%	Code	1	2
0	R	24.2	23.8
0	L	24.3	23.9
0.07		24.2	23.9
0.1		24.4	23.9
0.13		24.4	23.8
0.17		24.3	23.8
0.23		24.4	23.8

Initial Temperature-°C

Conc-%	Code	1	2
0	R	25.1	25.6
0	L	24.9	24.3
0.07		25.3	25.7
0.1		25.3	25.8
0.13		25.3	25.9
0.17		25.5	25.8
0.23		25.6	26

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, T148 & T124
 - Conductivity, C 2: (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 0.02mg/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
 - Incubator Temperature: 25± 1°C
 - Incubator ID: BIO Thermometer ID: 120554
 - Sample Temperature: 25± 3°C
 - Sample Temperatures are read after the organisms have been transferred and counted.
 - Depending on temperature of laboratory and time spent on organisms the temperature of the sample may drop below limits. However, the organisms are maintained at 25± 3°C
 - Light Cycle: 16 hours light/ 8 hours dark
 - Light intensity: 50-100 foot-candles, average
 - Control (Dilution) Water: Dilute mineral water made with 20 % Perrier in Nanopure (20%DMW)
 - Maintained in the incubator at 25± 1°C
 - Pretreatment: none
3. Method 2021.0 *Daphnia pulex* Acute Toxicity Testing
 - Test chambers: 30 mL disposable plastic beakers
 - Volume per chamber: 25 mL
 - Number of organisms per chamber: 8
 - Number of replicates: 5
 - Food: *Daphnia pulex* are fed 0.15mL *Raphidocelis subcapitata* (Algae) and YTC solution while holding prior to testing.
 - Acclimation of organisms: In house cultures are raised at 25°C. Purchased organisms are allowed to reach 25°C prior to use.
4. Method 2000.0 *Pimephales promelas* (Fathead minnow) Acute Toxicity Testing
 - 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 0.15mL *Artemia* brine shrimp hatched in laboratory during holding, prior to test 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 6166591
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

03334

Osceola Water Department
 Mr. Brandon Haynes
 303 W. Hale
 Osceola , AR 72370

Project Bioassay
 Information :

Report Date : 06/06/2022

Report Number : **22-145-0392**

REPORT OF ANALYSIS

Received : 05/25/2022

Lab No : **97681**

Matrix: **Aqueous**

Sample ID : **Outfall 001 - Composite 1**

Sampled: **5/24/2022 8:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	244	mg/L	1	1	05/27/22 09:30	DAS	2320B-2011
Calcium	61.6	mg/L	0.500	1	06/02/22 22:09	EAL	EPA-200.7
Hardness as CaCO3(SM-2340B)	226	mg/L	0.100	1	06/02/22 22:09		EPA-200.7
Magnesium	17.5	mg/L	0.100	1	06/02/22 22:09	EAL	EPA-200.7

Lab No : **97682**

Matrix: **Aqueous**

Sample ID : **Outfall 001 - Composite 2**

Sampled: **5/25/2022 8:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	247	mg/L	1	1	05/27/22 09:30	DAS	2320B-2011
Calcium	60.5	mg/L	0.500	1	06/02/22 22:14	EAL	EPA-200.7
Hardness as CaCO3(SM-2340B)	221	mg/L	0.100	1	06/02/22 22:14		EPA-200.7
Magnesium	16.9	mg/L	0.100	1	06/02/22 22:14	EAL	EPA-200.7

Lab No : **97683**

Matrix: **Aqueous**

Sample ID : **River Water**

Sampled: **5/25/2022 9:15**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	125	mg/L	1	1	05/27/22 09:30	DAS	2320B-2011
Calcium	43.9	mg/L	0.500	1	06/02/22 22:30	EAL	EPA-200.7
Hardness as CaCO3(SM-2340B)	176	mg/L	0.100	1	06/02/22 22:30		EPA-200.7
Magnesium	16.2	mg/L	0.100	1	06/02/22 22:30	EAL	EPA-200.7

**Qualifiers/
Definitions**

DF Dilution Factor
 MQL Method Quantitation Limit

L Limit Exceeded

Kit ID:	168529
Initiated By:	Sydney Andres
Initiated Date:	10/8/2021
Project Comment	Bioassay

CHAIN-OF-CUSTODY



Osceola Water Department
 Bioassay

22-145-0392
 03334
 05-25-2022
 14:33:40

Company Name Osceola Water Department	Company Number 03334	Client Project Manager/Contact <i>Brandon Haynes</i> Osceola Water Dept.	Purchase Order Number <i>472310</i>
Site Name QTR 2 Bioassay 05/23-25/2022	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 type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other
LIMS Project ID Osceola Water - Bioassay	Project Manager Phone # (870) 563-2628	Project Manager Email <i>bhaynes58@yahoo.com</i>	Site/Facility ID #

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
<i>5/23/22</i> <i>5/24/22</i>	<i>8:00 AM</i>	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
<i>5/24/22</i> <i>5/25/22</i>	<i>8:00 AM</i>	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
<i>5/23/22</i> <i>5/24/22</i>	<i>8:00 AM</i>	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
<i>5/24/22</i> <i>5/25/22</i>	<i>8:00 AM</i>	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
<i>5/23/22</i> <i>5/24/22</i>	<i>8:00 AM</i>	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Quart	NONE	48 hr bioassay - renewal
<i>5/24/22</i> <i>5/25/22</i>	<i>8:00 AM</i>	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Quart	NONE	48 hr bioassay - renewal
<i>5/25/22</i>	<i>9:15 AM</i>	River Water	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
<i>5/25/22</i>	<i>9:15 AM</i>	river water	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments			
Ice	Custody	Lab Comments	<i>Brandon Haynes</i>				
<input checked="" type="checkbox"/>	Seals		Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<i>[Signature]</i>	<i>5/25/22</i> <i>0955</i>	<i>[Signature]</i>	<i>5/25/22</i> <i>0955</i>	
Blank/Cooler Temp			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
<i>T-102</i>		<i>[Signature]</i>	<i>5/25/22</i> <i>1400</i>	<i>[Signature]</i>	<i>5/25/22</i> <i>1400</i>		
<i>2.3c</i>							

Kit ID:	168529
Initiated By:	Sydney Andres
Initiated Date:	10/8/2021
Project Comment	Bioassay

CHAIN-OF-CUSTODY



Osceola Water Department
Bioassav

22-145-0392
03334
05-25-2022
14:33:40

Company Name Osceola Water Department		Company Number 03334		Client Project Manager/Contact <i>BRANDON HAYNES</i> Osceola Water Dept.		Purchase Order Number 472310		
Site Name QTR 2 Bioassay 05/23-25/2022		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 type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other		
LIMS Project ID Osceola Water - Bioassay		Project Manager Phone # (870) 563-2628		Project Manager Email <i>bhaynes58@yahoo.com</i>		Site/Facility ID #		
Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
5/25/22	9:15 AM	river water	Aqueous	C	4	Plastic - Gallon	NONE	dilution water

For Laboratory Use Only			Sampled by (Name - Print)	Client Remarks/Comments			
Ice	Custody Seals	Lab Comments	<i>Brandon Haynes</i>				
<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N		Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
			<i>[Signature]</i>	5/25/22 0955	<i>[Signature]</i>	52522 0955	
			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
Blank/Cooler Temp 7-102 2.30 M			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time	
			<i>[Signature]</i>	52522 1400	<i>[Signature]</i>	52522 1400	

Waypoint Analytical, LLC.

48 HOUR RENEWAL DAILY READINGS SHEET

SAMPLE ID: Osceola
 REPORT #: 22-145-0392
 DATE START: 5/25/22
 ORGANISM 1: Daphnia pulex
 ORGANISM 2: Fathead Minnow

pH	DAY 1	DAY 2	AFTER - DAY 1	AFTER - DAY 2	AFTER - DAY 1	AFTER - DAY 2
	INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL	8.1	8.1	8.0	7.9	8.3	8.1
R	7.9	8.1	8.2	8.2	8.3	8.2
1	7.9	7.9	8.3	8.2	8.3	8.2
2	7.9	7.9	8.3	8.1	8.3	8.2
3	7.9	8.0	8.2	8.2	8.2	8.2
4	7.9	7.9	8.3	8.2	8.3	8.2
5	7.9	7.9	8.3	8.2	8.3	8.2
DO mg/L	DAY 1	DAY 2	AFTER - DAY 1	AFTER - DAY 2	AFTER - DAY 1	AFTER - DAY 2
	INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL	8.5	8.8	7.8	9.6	8.4	9.3
R	8.3	8.3	8.0	9.7	8.5	9.3
1	8.3	8.3	8.2	9.9	8.5	9.3
2	8.3	8.2	8.3	9.9	8.5	9.4
3	8.3	8.0	8.3	9.9	8.5	9.5
4	8.3	8.1	8.3	9.9	8.5	9.5
5	8.3	8.0	8.3	10.0	8.5	9.5
TEMP. (C°)	DAY 1	DAY 2	AFTER - DAY 1	AFTER - DAY 2	AFTER - DAY 1	AFTER - DAY 2
	INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL	24.9	24.3	23.6	23.8	24.3	23.9
R	25.1	25.6	24.0	23.8	24.2	23.8
1	25.3	25.7	24.0	23.6	24.2	23.8
2	25.3	25.8	24.6	23.8	24.4	23.9
3	25.3	25.9	24.1	23.7	24.4	23.8
4	25.5	25.8	23.9	23.7	24.3	23.8
5	25.6	26.0	24.1	23.8	24.4	23.8
ANALYST:	CF	IM	IM	IM	IM	IM
DATE:	5/25/22	5/26/22	5/26/22	5/27/22	5/26/22	5/27/22

	CONDUCTIVITY (micromhos)		CHLORINE mg/L		DL = 0.02 mg/L
	DAY 1	DAY 2	DAY 1	DAY 2	
CONTROL	172.8	169.3	20.02	20.02	DAY 1 DPD Cl2 Reagent ID 22-REAG- 1342
Rec. Stream	395.4	390.0	20.02	20.02	DAY 2 DPD Cl2 Reagent ID
EFFLUENT	535.9	542.2	20.02	20.02	22-REAG- 1342
ANALYST:	CF	IM	CF	IM	
DATE:	5/25/22	5/26/22	5/25/22	5/26/22	

Meter	ID
pH	PH 21
Conductivity	C 2
DO	DM 4
Temp.	T148

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

48 HOUR SURVIVAL DATA SHEET (5 replicates)

SAMPLE ID: Osceola
 REPORT #: 22-145-0392
 TEST START - DATE/TIME: 5/25/22 1544 ANALYST: CS
 TEST END - DATE/TIME: 5/27/22 1547 ANALYST: CS
 TEST TYPE: RENEWAL

CONC. (% EFF)	REP NO.	NO. OF SURVIVORS		
		HOUR		
		0	24	48
CONTROL	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
RECEIVING STREAM	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.07	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.1	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.13	A	8	8	8
	B	8	8	8
	C	8	8	7
	D	8	8	8
	E	8	8	8
0.17	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.23	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
ANALYST:		CS	lm	CS
DATE:		5/25/22	5/26/22	5/27/22

TEST ORGANISM: Daphnia pulex
 ORGANISM RN: 22-REAG-0005

WAYPOINT ANALYTICAL, LLC.
 TEST TRACEABILITY RECORD
48 HOUR DAPHNIA PULEX

SAMPLE ID: Osceola REPORT # 22-145-0392

DATE START: 5/15/22 DATE END: 5/27/22

DAPHNIA PULEX REFERENCE # : 22-REAG-0005

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST DAY	CONTROL WATER	ALGAE	YCT
ACUTE	<u>5/15/22</u>	<u>CS</u>	0	<u>22-REAG-2959</u>	<u>22-REAG-2951</u>	<u>22-REAG-2952</u>
	<u>5/26/22</u>	<u>LM</u>	24 HRS	<u>22-REAG-2991</u>	<u>22-REAG-2951</u>	<u>22-REAG-2952</u>

TEST DAY	SAMPLE LAB ID:	RECEIVING STREAM LAB ID:
0	<u>L97681</u>	<u>L97683</u>
24 HRS	<u>L97682</u>	<u>L97683</u>

COMMENTS: Organisms are fed 0.15 mL Algae and YCT while holding prior to test set up.
 YCT is filtered with 60-micron mesh to removed additional debris
 Test conducted at 25 ± 1°C Incubator ID: BIO / Thermometer ID: 120554

ANALYST COMMENTS:

48 HOUR SURVIVAL DATA SHEET (5 replicates)

SAMPLE ID: Osceola
 REPORT #: 22-145-0392
 TEST START - DATE/TIME: 5/25/22 1542 ANALYST: CS
 TEST END - DATE/TIME: 5/27/22 1543 ANALYST: CS
 TEST TYPE: RENEWAL

CONC. (% EFF)	REP NO.	NO. OF SURVIVORS		
		HOUR		
		0	24	48
CONTROL	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
RECEIVING STREAM	A	8	5	5
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.07	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.1	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.13	A	8	8	8
	B	8	7	7
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.17	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.23	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
ANALYST:		CS	WJ	CS
DATE:		5/25/22	5/26/22	5/27/22

TEST ORGANISM: Fathead minnow

ORGANISM RN: 22-REAG- 2950

WAYPOINT ANALYTICAL, LLC.
 TEST TRACEABILITY RECORD
48 HOUR FATHEAD MINNOW

SAMPLE ID: Osceola REPORT # 22-145-0392

DATE START: 5/25/22 DATE END: 5/27/22

FATHEAD MINNOW REFERENCE # 22-REAG- 2950

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST DAY	CONTROL WATER	SAMPLE LAB ID:	RECEIVING STREAM:
ACUTE	<u>5/25/22</u>	<u>CF</u>	<u>0</u>	<u>22-REAG- 2950</u>	<u>L97681</u>	<u>L97683</u>
	<u>5/26/22</u>	<u>IM</u>	<u>24 HRS</u>	<u>22-REAG- 2991</u>	<u>L97682</u>	<u>L97683</u>

(if applicable)

COMMENTS: Fathead minnows are fed 0.15 mL Artemia brine shrimp x2 daily while holding prior to test set up.
 Test conducted at 25 ± 1°C Incubator ID: BIO / Thermometer ID: 120554

ANALYST COMMENTS: