

12/15/2023

City of Marion Water Department
Mr. Jerry Kelley
PO Box 814
Marion, AR 72364

Ref: Analytical Testing
Report Number: 23-332-0393
Client Project Description: Bioassay
Quarter 4
AR0021971

Dear Mr. Kelley:

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 = 1.3 %	CV = 5.73 %
	Fathead minnow	NOEL = 1.3 %	CV = 0.00 %

Permit Limit: Critical Dilution = 1.0 %
Maximum Coefficient of Variation (CV) < 40 %

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

All statistical interpretations generated by CETIS - Comprehensive Environmental Toxicity Information System (v2.1.4.6x64). CETIS created by Tidepool Scientific Software

Respectfully,



Blake Smith
Lab Supervisor

CETIS Summary Report

Report Date: 05 Dec-23 11:40 (p 1 of 1)
Test Code/ID: 23-332-0393-dp / 19-8124-3394

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Batch ID: 19-1385-4159	Test Type: Survival (48h)	Analyst: Ivey E. Moffett
Start Date: 29 Nov-23 09:50	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 01 Dec-23 10:48	Species: Daphnia pulex	Brine: Not Applicable
Test Length: 49h	Taxon:	Source: In-House Culture Age: <24
Sample ID: 15-1516-2769	Code: 23-332-0393	Project: WET Quarterly Compliance Test (4Q)
Sample Date: 28 Nov-23 10:30	Material: POTW Effluent	Source: Marion Water Department (AR0021971)
Receipt Date: 28 Nov-23 13:10	CAS (PC):	Station: Outfall 002
Sample Age: 23h (1 °C)	Client: City of Marion Water Department	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	23-332-0393	29 Nov-23 10:36	29 Nov-23 14:10	30 Nov-23 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	PMSD	TU	S
16-6370-2530	48h Survival Rate	Steel Many-One Rank Sum Test		1.3	>1.3	---	4.45%	76.9	1

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
16-6370-2530	48h Survival Rate	Control Resp	0.975	0.9	<<	Yes	Passes Criteria

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	0.9750	0.9056	1.0440	0.8750	1.0000	0.0250	0.0559	5.73%	0.00%
0	L	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%
0.42		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%
0.56		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%
0.75		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%
1		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%
1.3		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%

48h Survival Rate Detail

MD5: 5173BD4F1C4E0EF5F90371A8B7E62686

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	1.0000	1.0000	0.8750	1.0000	1.0000
0	L	1.0000	1.0000	1.0000	1.0000	1.0000
0.42		1.0000	1.0000	1.0000	1.0000	1.0000
0.56		1.0000	1.0000	1.0000	1.0000	1.0000
0.75		1.0000	1.0000	1.0000	1.0000	1.0000
1		1.0000	1.0000	1.0000	1.0000	1.0000
1.3		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	7/8	8/8	8/8
0	L	8/8	8/8	8/8	8/8	8/8
0.42		8/8	8/8	8/8	8/8	8/8
0.56		8/8	8/8	8/8	8/8	8/8
0.75		8/8	8/8	8/8	8/8	8/8
1		8/8	8/8	8/8	8/8	8/8
1.3		8/8	8/8	8/8	8/8	8/8

CETIS Measurement Report

Report Date: 05 Dec-23 11:40 (p 1 of 3)
Test Code/ID: 23-332-0393-dp / 19-8124-3394

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Batch ID: 19-1385-4159	Test Type: Survival (48h)	Analyst: Ivey E. Moffett
Start Date: 29 Nov-23 09:50	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 01 Dec-23 10:48	Species: Daphnia pulex	Brine: Not Applicable
Test Length: 49h	Taxon:	Source: In-House Culture Age: <24
Sample ID: 15-1516-2769	Code: 23-332-0393	Project: WET Quarterly Compliance Test (4Q)
Sample Date: 28 Nov-23 10:30	Material: POTW Effluent	Source: Marion Water Department (AR0021971)
Receipt Date: 28 Nov-23 13:10	CAS (PC):	Station: Outfall 002
Sample Age: 23h (1 °C)	Client: City of Marion Water Department	

CETIS Measurement Report

Report Date: 05 Dec-23 11:40 (p 2 of 3)
Test Code/ID: 23-332-0393-dp / 19-8124-3394

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Total Residual Chlorine-mg/L

Conc-%	Code	1	2
0	R	1	1
0	L	0	0
1.3		1	1

Conductivity-µS/cm

Conc-%	Code	1	2
0	R	501.6	436.7
0	L	184.4	186.2
1.3		458.9	462.3

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	8.1	8.2
0	L	8.1	8.2
0.42		8.1	8.2
0.56		8.1	8.2
0.75		8.1	8.2
1		8.1	8.2
1.3		8.2	8.4

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	10.3	9.3
0	L	8.9	7.9
0.42		10.5	9.3
0.56		10.4	9.2
0.75		10.4	9.4
1		10.4	9.4
1.3		10.3	8.9

Final pH-Units

Conc-%	Code	1	2
0	R	8.4	8.2
0	L	8.1	8.1
0.42		8.4	8.3
0.56		8.4	8.3
0.75		8.4	8.2
1		8.4	8.2
1.3		8.4	8.3

Initial pH-Units

Conc-%	Code	1	2
0	R	8.1	8.1
0	L	8.2	8.2
0.42		8.1	8.1
0.56		8.1	8.1
0.75		8.1	8.1
1		8.1	8.1
1.3		8.1	8.1

CETIS Measurement Report

Report Date: 05 Dec-23 11:40 (p 3 of 3)
Test Code/ID: 23-332-0393-dp / 19-8124-3394

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Final Temperature-°C

Conc-%	Code	1	2
0	R	23.9	24
0	L	23.8	24
0.42		23.8	24
0.56		24	24
0.75		23.9	24
1		23.8	24.1
1.3		23.9	24.1

Initial Temperature-°C

Conc-%	Code	1	2
0	R	25.3	24.6
0	L	24.3	23.8
0.42		25.4	24.5
0.56		25.6	24.5
0.75		25.5	24.4
1		25.6	24.5
1.3		25.6	24.4

CETIS Summary Report

Report Date: 05 Dec-23 11:41 (p 1 of 1)
Test Code/ID: 23-332-0393-fh / 21-0879-0540

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 18-0732-7149	Test Type: Survival (48h)	Analyst: Ivey E. Moffett
Start Date: 29 Nov-23 09:30	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 01 Dec-23 10:41	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 49h	Taxon:	Source: Aquatic Biosystems, CO Age: <48
Sample ID: 15-1516-2769	Code: 23-332-0393	Project: WET Quarterly Compliance Test (4Q)
Sample Date: 28 Nov-23 10:30	Material: POTW Effluent	Source: Marion Water Department (AR0021971)
Receipt Date: 28 Nov-23 13:10	CAS (PC):	Station: Outfall 002
Sample Age: 23h (1 °C)	Client: City of Marion Water Department	

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	23-332-0393	29 Nov-23 10:36	29 Nov-23 14:10	30 Nov-23 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
13-4358-8237	48h Survival Rate	Steel Many-One Rank Sum Test	1.3	>1.3	---	5.1%	76.9	1

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
13-4358-8237	48h Survival Rate	Control Resp	1	0.9	<<	Yes	Passes 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%
0.42		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.56		5	0.9750	0.9056	1.0440	0.8750	1.0000	0.0250	0.0559	5.73%	2.50%
0.75		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1.3		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

48h Survival Rate Detail

MD5: D0BFA41245871496585E991105E3CEB4

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
0.42		1.0000	1.0000	1.0000	1.0000	1.0000
0.56		1.0000	1.0000	1.0000	1.0000	0.8750
0.75		1.0000	1.0000	1.0000	1.0000	1.0000
1		1.0000	1.0000	1.0000	1.0000	1.0000
1.3		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
0.42		8/8	8/8	8/8	8/8	8/8
0.56		8/8	8/8	8/8	8/8	7/8
0.75		8/8	8/8	8/8	8/8	8/8
1		8/8	8/8	8/8	8/8	8/8
1.3		8/8	8/8	8/8	8/8	8/8

CETIS Measurement Report

Report Date: 05 Dec-23 11:41 (p 1 of 3)
Test Code/ID: 23-332-0393-fh / 21-0879-0540

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Batch ID: 18-0732-7149	Test Type: Survival (48h)	Analyst: Ivey E. Moffett
Start Date: 29 Nov-23 09:30	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW
Ending Date: 01 Dec-23 10:41	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 49h	Taxon:	Source: Aquatic Biosystems, CO Age: <48
Sample ID: 15-1516-2769	Code: 23-332-0393	Project: WET Quarterly Compliance Test (4Q)
Sample Date: 28 Nov-23 10:30	Material: POTW Effluent	Source: Marion Water Department (AR0021971)
Receipt Date: 28 Nov-23 13:10	CAS (PC):	Station: Outfall 002
Sample Age: 23h (1 °C)	Client: City of Marion Water Department	

CETIS Measurement Report

Report Date: 05 Dec-23 11:41 (p 2 of 3)
Test Code/ID: 23-332-0393-fh / 21-0879-0540

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Total Residual Chlorine-mg/L

Conc-%	Code	1	2
0	R	1	1
0	L	0	0
1.3		1	1

Conductivity-µS/cm

Conc-%	Code	1	2
0	R	501.6	436.7
0	L	184.4	186.2
1.3		458.9	462.3

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	7.5	8
0	L	7.4	7.6
0.42		7.6	8.4
0.56		7.6	8.5
0.75		7.4	8.7
1		7.5	8.8
1.3		7.6	8.8

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	10.3	9.3
0	L	8.9	7.9
0.42		10.5	9.3
0.56		10.4	9.2
0.75		10.4	9.4
1		10.4	9.4
1.3		10.3	8.9

Final pH-Units

Conc-%	Code	1	2
0	R	8.3	8.2
0	L	8.1	7.9
0.42		8.3	8.2
0.56		8.3	8.3
0.75		8.3	8.3
1		8.3	8.3
1.3		8.3	8.3

Initial pH-Units

Conc-%	Code	1	2
0	R	8.1	8.1
0	L	8.2	8.2
0.42		8.1	8.1
0.56		8.1	8.1
0.75		8.1	8.1
1		8.1	8.1
1.3		8.1	8.1

CETIS Measurement Report

Report Date: 05 Dec-23 11:41 (p 3 of 3)
Test Code/ID: 23-332-0393-fh / 21-0879-0540

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee , LLC.

Final Temperature-°C

Conc-%	Code	1	2
0	R	23.4	23.8
0	L	25	25.2
0.42		23.3	23.8
0.56		23.4	23.9
0.75		23.3	23.9
1		23.3	23.7
1.3		23.5	23.8

Initial Temperature-°C

Conc-%	Code	1	2
0	R	25.3	24.6
0	L	24.3	23.8
0.42		25.4	24.5
0.56		25.6	24.6
0.75		25.5	24.4
1		25.6	24.5
1.3		25.6	24.4

Additional Toxicity Test Information

1. Methods/Instrumentation used in chemical analysis:
 - Dissolved oxygen, DM 4: (SM 4500-O G-2016)
 - 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 6169894
 - Sodium Chloride is used as the reference toxicity chemical for invertebrate species
 - Current chemical ID: CS 8207709
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

02608

City of Marion Water Department
Mr. Scott Marshall
PO Box 814
Marion , AR 72364

Project Bioassay
Information :

Report Number : **23-332-0393**

REPORT OF ANALYSIS

Report Date : 12/15/2023

Received : 11/28/2023

Lab No : **96325**

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

Matrix: **Aqueous**

Sampled: **11/28/2023 10:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	145	mg/L	1	1	12/12/23 10:05	JJZ	2320B-2011
Calcium	11.3	mg/L	0.100	1	12/04/23 22:56	TJS	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	42.1	mg/L	0.100	1	12/04/23 22:56		EPA-200.7
Magnesium	3.38	mg/L	0.100	1	12/04/23 22:56	TJS	EPA-200.7

Lab No : **96326**

Sample ID : **Receiving Water**

Matrix: **Aqueous**

Sampled: **11/28/2023 9:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	138	mg/L	1	1	12/12/23 10:05	JJZ	2320B-2011
Calcium	43.2	mg/L	0.100	1	12/04/23 23:02	TJS	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	172	mg/L	0.100	1	12/04/23 23:02		EPA-200.7
Magnesium	15.5	mg/L	0.100	1	12/04/23 23:02	TJS	EPA-200.7

Lab No : **96327**

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

Matrix: **Aqueous**

Sampled: **11/29/2023 10:36**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	19	mg/L	1	1	12/12/23 10:05	JJZ	2320B-2011
Calcium	11.7	mg/L	0.100	1	12/04/23 23:07	TJS	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	43.3	mg/L	0.100	1	12/04/23 23:07		EPA-200.7
Magnesium	3.42	mg/L	0.100	1	12/04/23 23:07	TJS	EPA-200.7

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit

L Limit Exceeded

02608

City of Marion Water Department
Mr. Scott Marshall
PO Box 814
Marion , AR 72364

Project Bioassay
Information :

Report Number : **23-332-0393**

REPORT OF ANALYSIS

Report Date : 12/15/2023

Received : 11/28/2023

Lab No : **96328**

Sample ID : **Receiving Water**

Matrix: **Aqueous**

Sampled: **11/29/2023 9:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO ₃)	141	mg/L	1	1	12/12/23 10:05	JJZ	2320B-2011
Calcium	42.9	mg/L	0.100	1	12/04/23 23:12	TJS	EPA-200.7
Hardness as CaCO ₃ (SM-2340B)	171	mg/L	0.100	1	12/04/23 23:12		EPA-200.7
Magnesium	15.4	mg/L	0.100	1	12/04/23 23:12	TJS	EPA-200.7

**Qualifiers/
Definitions**

DF Dilution Factor
MQL Method Quantitation Limit

L Limit Exceeded



Kit ID:	224996
Initiated By:	Blake Smith
Initiated Date:	11/21/2023
Project Comment	Bioassay

CHAIN-OF-CUSTODY



City of Marion Water Department
Bioassay

23-332-0393
02608
11-28-2023
15:33:18

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
City of Marion Water Department	02608	City of Marion Water Department	
Site Name	Project Number	☐ RUSH – Additional charges apply ☐ Special Detection Limits(s) Date Results Needed	Method of Shipment ☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other
Bioassay Quarter 4 A (replacement) - 11/27-28/2023			
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
Marion - Bioassay	(870) 739-5413	jshempert.waterdept@yahoo.com	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
11/28/23	10:30 AM	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
11/28/23	10:30 AM	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
11/28/23	10:30 AM	Outfall 001 - Composite 1	Aqueous	C	1	Plastic - Quart	NONE	48 hr bioassay - renewal
11/28/23	9:30 AM	Receiving Water	Aqueous		2	Plastic - Gallon	NONE	Dilution Water
11/28/23	9:30 AM	Receiving Water	Aqueous		1	Plastic - Pint	HNO3 - Nitric Acid	Hardness
11/28/23	9:30 AM	Receiving Water	Aqueous		1	Plastic - Pint	NONE	Alkalinity

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	<i>Brandon Hill</i>						
Y/N	Y/N		Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
			<i>[Signature]</i>				<i>[Signature]</i>	12:10	11-28-23
			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
Blank/Cooler Temp			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
<i>71.35</i>			<i>[Signature]</i>		11-28-23	13:10	<i>[Signature]</i>	11-28-23	13:10



23-332-0393
02608
11-28-2023
15:33:18

1133
440
om

Handwritten signature/initials

Kit ID:	224997
Initiated By:	Blake Smith
Initiated Date:	11/21/2023
Project Comment	Bioassay

CHA

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
City of Marion Water Department	02608	City of Marion Water Department	
Site Name	Project Number	☐ RUSH – Additional charges apply ☐ Special Detection Limits(s) Date Results Needed	Method of Shipment ☐ Fed Ex ☐ UPS ☐ USPS ☐ Courier ☐ Client Drop Off Other
Bioassay Quarterly 4 B (replacement) - 11/28-29/2023			
LIMS Project ID	Project Manager Phone #	Project Manager Email	Site/Facility ID #
Marion - Bioassay	(870) 739-5413	jshempert.waterdept@yahoo.com	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
11/29/23	10:36 ^{am}	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
11/29/23	10:36 ^{am}	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
11/29/23	10:36 ^{am}	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Quart	NONE	48 hr bioassay - renewal
11/29/23	9:00 ^{am}	Receiving Water	Aqueous		2	Plastic - Gallon	NONE	Dilution Water
11/29/23	9:00 ^{am}	Receiving Water	Aqueous		1	Plastic - Pint	HNO3 - Nitric Acid	Hardness
11/29/23	9:00 ^{am}	Receiving Water	Aqueous		1	Plastic - Pint	NONE	Alkalinity

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	<i>Franka Hall</i>						
Y/N	Y/N		Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
			<i>[Signature]</i>				<i>[Signature]</i>	1215	
			Relinquished by: (SIGNATURE)				<i>[Signature]</i>	11-29-23	
Blank Cooler Temp			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
<i>FW 1.0C T-135</i>			<i>[Signature]</i>		11-29-23	1410	<i>[Signature]</i>	11-29-23	1410

NAME: Marion Water Dept.

ADDRESS:

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

PERMIT NUMBER

AR0021971

DISCHARGE NUMBER

MONITORING PERIOD

FACILITY:

LOCATION:

ATTN:

YEAR	MONTH	DAY	TO	YEAR	MONTH	DAY

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
P/F STATRE 48 HR ACUTE DAPHNIA PULEX M3D 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****	(9A)	0	QTRLY COMP24	
	PERMIT REQUIREMENT							PASS=0 FAIL=1			

P/F STATRE 48 HR ACUTE PIMEPHALES PROMELAS M6C 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	0	*****	(9A)	0	QTRLY COMP24	
	PERMIT REQUIREMENT							PASS=0 FAIL=1			

NOEL LETHAL STATRE 48 HR ACUTE D. PULEX 43D 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	1.3	*****	(23)	0	QTRLY COMP24	
	PERMIT REQUIREMENT							PER- CENT			

NOEL LETHAL STATRE 48 HR ACUTE PIMEPHALES M6C 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	1.3	*****	(23)	0	QTRLY COMP24	
	PERMIT REQUIREMENT							PER- CENT			

COEF OF VAR STATRE 48 HR ACUTE D. PULEX M3D 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	5.7	*****	(23)	0	QTRLY COMP24	
	PERMIT REQUIREMENT							PER- CENT			

COEF OF VAR STATRE 48 HR ACUTE PIMEPHALES M6C 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	0.0	*****	(23)	0	QTRLY COMP24	
	PERMIT REQUIREMENT							PER- CENT			

48 HOUR RENEWAL DAILY READINGS SHEET

SAMPLE ID:

Marion

REPORT #:

23-332-0393

DATE START:

11/29/23

		DAY 1	DAY 2	AFTER - DAY 1	AFTER - DAY 2	AFTER - DAY 1	AFTER - DAY 2
pH		INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL		8.2	8.2	8.1	8.1	8.1	7.9
R		8.1	8.1	8.4	8.2	8.3	8.2
1		8.1	8.1	8.4	8.3	8.3	8.2
2		8.1	8.1	8.4	8.3	8.3	8.3
3		8.1	8.1	8.4	8.2	8.3	8.3
4		8.1	8.1	8.4	8.2	8.3	8.3
5		8.1	8.1	8.4	8.3	8.3	8.3
DO	mg/L	INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL		8.9	7.9	8.1	8.2	7.4	7.6
R		10.3	9.3	8.1	8.2	7.5	8.0
0.42	1	10.5	9.3	8.1	8.2	7.6	8.4
0.56	2	10.4	9.2	8.1	8.2	7.6	8.5
0.75	3	10.4	9.4	8.1	8.2	7.4	8.7
1.0	4	10.4	9.4	8.1	8.2	7.5	8.8
1.3	5	10.3	8.9	8.2	8.4	7.6	8.8
TEMP.	(C°)	INITIAL	INITIAL	Daphnia pulex	Daphnia pulex	Fathead Minnow	Fathead Minnow
CONTROL		24.3	23.8	23.8	24.0	25.0	25.2
R		25.3	24.4	23.9	24.0	23.4	23.8
1		25.4	24.5	23.8	24.0	23.3	23.8
2		25.6	24.5	24.0	24.0	23.4	23.9
3		25.5	24.4	23.9	24.0	23.3	23.9
4		25.6	24.5	23.8	24.1	23.3	23.7
5		25.6	24.4	23.9	24.1	23.5	23.8
ANALYST:		lm	lm	lm	UR	lm	UR
DATE:		11/29/23	11/30/23	11/30/23	12/1/23	11/30/23	12/1/23

	CONDUCTIVITY (micromhos)		CHLORINE mg/L		DL = 0.02 mg/L
	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1 DPD Cl2 Reagent ID
CONTROL	184.4	186.2	40.02	40.02	23-REAG-2820
Rec. Stream	501.6	434.7	70.02	70.02	DAY 2 DPD Cl2 Reagent ID
EFFLUENT	458.9	462.3	70.02	70.02	23-REAG-2820
ANALYST:	lm	lm	lm	lm	
DATE:	11/29/23	11/30/23	11/29/23	12/5/23	

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

Tests are maintained at 25 ± 1 ° C / Incubator ID: BIO / Therm. ID: 120554

Samples stored in fridge at 0-6 ° C / Fridge ID: R6 / Therm. ID: T123

Samples warmed in waterbath then maintained in Bio2 until use / Waterbath Therm. ID: T124

Bio2 Therm. ID: T113

Comments / Observations:

48 HOUR SURVIVAL DATA SHEET (5 replicates)

SAMPLE ID: Marion
 REPORT #: 23-332-0393
 TEST START - DATE/TIME: 11/29/23 950 ANALYST: IM
 TEST END - DATE/TIME: 12/1/23 1048 ANALYST: IM
 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	7
	D	8	8	8
	E	8	8	8
0.42	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.50	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	IM 8
0.75	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
1.0	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
1.3	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
ANALYST:		IM	IM	IM
DATE:		11/29/23	11/30/23	12/1/23

TEST ORGANISM: Daphnia pulexORGANISM RN: 23-REAG- 0011

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

SAMPLE ID: Marion REPORT # 23-332-0393

DATE START: 11/29/23 DATE END: 12/1/23

DAPHNIA PULEX REFERENCE # : 23-REAG- 0011

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST DAY	CONTROL WATER	ALGAE	YCT
ACUTE	11/29/23	lm	0	23-REAG-6536	23-REAG-6473	23-REAG-6363
	11/30/23	lm	24 HRS	23-REAG-6564	23-REAG-6473	23-REAG-6363

TEST DAY	SAMPLE LAB ID:	RECEIVING STREAM LAB ID:
0	L96325	L96326
24 HRS	L96327	L96328

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: Marion
 REPORT #: 23.332-0393
 TEST START - DATE/TIME: 11/29/23 930 ANALYST: IM
 TEST END - DATE/TIME: 11/29/23 1041 ANALYST: IM
 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
0.42	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
0.56	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	IM 87
0.75	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
1.0	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
1.3	A	8	8	8
	B	8	8	8
	C	8	8	8
	D	8	8	8
	E	8	8	8
ANALYST:		IM	IM	IM
DATE:		11/28/23	11/30/23	12/1/23

TEST ORGANISM: Fathead minnow

ORGANISM RN: 23-REAG-6557

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

SAMPLE ID: Marion REPORT # 23-332-0393

DATE START: 11/29/23 DATE END: 12/1/23

FATHEAD MINNOW REFERENCE # 23-REAG- 6557

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST DAY	CONTROL WATER	SAMPLE LAB ID:	RECEIVING STREAM:
ACUTE	11/29/23	Im	0	23-REAG- 6536	L96325	L96326
	11/30/23	Im	24 HRS	23-REAG- 6564	L96327	L96328

(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: