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12/03/2018

City of Marion Water Department
Mr. Jim Shempert
PO Box 814
Marion, AR 72364

Ref: Analytical Testing
Report Number: 18-317-0191
Client Project Description: Bioassay
Quarter 4

Dear Mr. Jim Shempert:

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: *Daphnia pulex* NOEL > 1.3 % CV = 0.00 %
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 (v.1.9.1.4). CETIS created by Tidepool Scientific Software

Respectfully,

A handwritten signature in black ink, appearing to read "Blake Andres".

Blake Andres
Lab Supervisor

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

CETIS Test Evaluation Report

Report Date: 03 Dec-18 10:49 (1 of 1)
 Test Code: 18-317-0191 dp | 09-1265-8332

Facility: Marion Water Department
 Sample Site: Marion Water Department
 Sample Code: 18-317-0191
 Sample Date: 13 Nov-18 11:00
 Sample Age: 6h (1.4 °C)
 Project: WET Quarterly Compliance Test (4Q)

Test Name: Daphnia pulex 48-h Acute Survival Test
 Organism: Daphnia pulex (Water Flea)
 Protocol: EPA/821/R-02-012 (2002)
 Start Date: 13 Nov-18 16:48
 End Date: 15 Nov-18 10:45
 Duration: 42h
 Organism Age: <24

Permittee: City of Marion Water Department
 Address: PO Box 814
 Marion, AR 72364

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

Contact: Mr. Jim Shempert
 Phone: 870-739-5413, 870-739-5415(fax)
 Email: jshempert.waterdept@yahoo.com

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

Comments:

Acute Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
48h Survival Rate	NOEL/LOEL	1.3/>1.3	1	Passes IWC	Steel Many-One Rank Sum Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	TAC Limits			Decision
			Lower	Upper	Overlap	
48h Survival Rate	Control Resp	0.95	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	0.95	0.909	0.991	0.75	1	0.05	0.1118	11.77%	0.0%
0.42		5	0.975	0.9545	0.9955	0.875	1	0.025	0.0559	5.73%	-2.63%
0.56		5	1	1	1	1	1	0	0	0.00%	-5.26%
0.75		5	1	1	1	1	1	0	0	0.00%	-5.26%
1		5	1	1	1	1	1	0	0	0.00%	-5.26%
1.3		5	1	1	1	1	1	0	0	0.00%	-5.26%

CETIS Summary Report

Report Date: 03 Dec-18 10:50 (p 1 of 1)
 Test Code: 18-317-0191 dp | 09-1265-8332

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 03-8575-9434 Test Type: Survival (48h) Analyst: Ivey Elizabeth Wilkinson
 Start Date: 13 Nov-18 16:48 Protocol: EPA/821/R-02-012 (2002) Diluent: 20% DMW
 Ending Date: 15 Nov-18 10:45 Species: Daphnia pulex Brine: Not Applicable
 Duration: 42h Source: In-House Culture Age: <24

Sample ID: 09-5014-3798 Code: 18-317-0191 Client: City of Marion Water Department
 Sample Date: 13 Nov-18 11:00 Material: POTW Effluent Project: WET Quarterly Compliance Test (4Q)
 Receipt Date: 13 Nov-18 12:55 Source: Marion Water Department (AR0021971)
 Sample Age: 6h (1.4 °C) Station:

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	18-317-0191	14 Nov-18 09:45	14 Nov-18 12:25	14 Nov-18 00:00	2.4

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD
06-5623-6972	48h Survival Rate	Steel Many-One Rank Sum Test	1.3	> 1.3	n/a	76.92	7.36%

Test Acceptability

Analysis ID	Endpoint	Attribute	TAC Limits			Overlap	Decision
			Test Stat	Lower	Upper		
06-5623-6972	48h Survival Rate	Control Resp	0.95	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	0.9500	0.8112	1.0000	0.7500	1.0000	0.0500	0.1118	11.77%	0.00%
0	L	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
0.42		5	0.9750	0.9056	1.0000	0.8750	1.0000	0.0250	0.0559	5.73%	-2.63%
0.56		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
0.75		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
1		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
1.3		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	1.0000	1.0000	0.7500	1.0000	1.0000
0	L	1.0000	1.0000	1.0000	1.0000	1.0000
0.42		1.0000	0.8750	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	6/8	8/8	8/8
0	L	8/8	8/8	8/8	8/8	8/8
0.42		8/8	7/8	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: 03 Dec-18 10:50 (p 1 of 3)
Test Code: 18-317-0191 dp | 09-1265-8332

Daphnia pulex 48-h Acute Survival Test

Batch ID: 03-8575-9434 Test Type: Survival (48h)
Start Date: 13 Nov-18 16:48 Protocol: EPA/821/R-02-012 (2002)
Ending Date: 15 Nov-18 10:45 Species: Daphnia pulex
Duration: 42h Source: In-House Culture

Analyst: Ivey Elizabeth Wilkinson
Diluent: 20% DMW
Brine: Not Applicable
Age: <24

Sample ID: 09-5014-3798 Code: 18-317-0191
Sample Date: 13 Nov-18 11:00 Material: POTW Effluent
Receipt Date: 13 Nov-18 12:55 Source: Marion Water Department (AR0021971)
Sample Age: 6h (1.4 °C) Station:

Client: City of Marion Water Department
Project: WET Quarterly Compliance Test (4Q)

Waypoint Analytical Tennessee, LLC.

CETIS Measurement Report

Report Date: 03 Dec-18 10:50 (p 2 of 3)
Test Code: 18-317-0191 dp | 09-1265-8332

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
0.42			
0.56			
0.75			
1			
1.3		0	0

Conductivity-µS/cm

Conc-%	Code	1	2
0	R	367	343
0	L	177.6	141.8
0.42			
0.56			
0.75			
1			
1.3		316	336

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	7.8	8.7
0	L	7.9	8.8
0.42		7.3	8.6
0.56		7.8	8.2
0.75		7.8	8.1
1		7.8	7.7
1.3		8	8.7

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	8.1	8.2
0	L	7.7	8
0.42		8	8.2
0.56		8.2	8.1
0.75		8.2	8.1
1		8.2	8.1
1.3		8.3	8.3

Final pH-Units

Conc-%	Code	1	2
0	R	9.8	8.5
0	L	9.2	9.1
0.42		9.8	8.6
0.56		9.7	9.2
0.75		9.6	9.4
1		9.4	9.4
1.3		9.4	9.3

CETIS Measurement Report

Report Date: 03 Dec-18 10:50 (p 3 of 3)
Test Code: 18-317-0191 dp | 09-1265-8332

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Initial pH-Units

Conc-%	Code	1	2
0	R	7.9	8
0	L	8.1	7.8
0.42		7.9	7.9
0.56		8	7.9
0.75		8	7.9
1		8	7.9
1.3		8	7.9

Final Temperature-°C

Conc-%	Code	1	2
0	R	25	25
0	L	25	25
0.42		25	25
0.56		25	25
0.75		25	25
1		25	25
1.3		25	25

Initial Temperature-°C

Conc-%	Code	1	2
0	R	25	25
0	L	25	25
0.42		25	25
0.56		25	25
0.75		25	25
1		25	25
1.3		25	25

CETIS Test Evaluation Report

Report Date: 03 Dec-18 10:52 (1 of 1)
 Test Code: 18-317-0191 fh | 12-9395-9803

Facility: Marion Water Department
 Sample Site: Fathead Minnow 48-h Acute Survival Test
 Sample Code: 18-317-0191
 Sample Date: 13 Nov-18 11:00
 Sample Age: 5h (1.4 °C)
 Project: WET Quarterly Compliance Test (4Q)

Test Name: Fathead Minnow 48-h Acute Survival Test
 Organism: Pimephales promelas (Fathead Minnow)
 Protocol: EPA/821/R-02-012 (2002)
 Start Date: 13 Nov-18 16:00
 End Date: 15 Nov-18 10:25
 Duration: 42h
 Organism Age: <24

Permittee: City of Marion Water Department
 Address: PO Box 814
 Marion, AR 72364

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

Contact: Mr. Jim Shempert
 Phone: 870-739-5413, 870-739-5415(fax)
 Email: jshempert.waterdept@yahoo.com

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

Comments:

Acute Toxicity Evaluation

Endpoint	Criteria	Conc-%	IWC	Decision	Method
48h Survival Rate	NOEL/LOEL	1.3>1.3	1	Passes IWC	Steel Many-One Rank Sum Test

Test Acceptability Criteria

Endpoint	Attribute	Test Stat	95% LCL	95% UCL	Min	Max	Overlap	Decision
48h Survival Rate	Control Resp	0.95	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	0.95	0.909	0.991	0.75	1	0.05	0.1118	11.77%	0.0%
0.42		5	1	1	1	1	1	0	0	0.00%	-5.26%
0.56		5	1	1	1	1	1	0	0	0.00%	-5.26%
0.75		5	1	1	1	1	1	0	0	0.00%	-5.26%
1		5	1	1	1	1	1	0	0	0.00%	-5.26%
1.3		5	1	1	1	1	1	0	0	0.00%	-5.26%

CETIS Summary Report

Report Date: 03 Dec-18 10:52 (p 1 of 1)
 Test Code: 18-317-0191 fh | 12-9395-9803

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID: 15-8259-1502 **Test Type:** Survival (48h) **Analyst:** Ava Marie Davis
Start Date: 13 Nov-18 16:00 **Protocol:** EPA/821/R-02-012 (2002) **Diluent:** 20% DMW
Ending Date: 15 Nov-18 10:25 **Species:** Pimephales promelas **Brine:** Not Applicable
Duration: 42h **Source:** Aquatic Biosystems, CO **Age:** <24
Sample ID: 09-5014-3798 **Code:** 18-317-0191 **Client:** City of Marion Water Department
Sample Date: 13 Nov-18 11:00 **Material:** POTW Effluent **Project:** WET Quarterly Compliance Test (4Q)
Receipt Date: 13 Nov-18 12:55 **Source:** Marion Water Department (AR0021971)
Sample Age: 5h (1.4 °C) **Station:**

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	18-317-0191	14 Nov-18 09:45	14 Nov-18 12:25	14 Nov-18 00:00	2.4

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD
13-5753-4183	48h Survival Rate	Steel Many-One Rank Sum Test	1.3	> 1.3	n/a	76.92	6.53%

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
13-5753-4183	48h Survival Rate	Control Resp	0.95	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	0.9500	0.8112	1.0000	0.7500	1.0000	0.0500	0.1118	11.77%	0.00%
0	L	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
0.42		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
0.56		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
0.75		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
1		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%
1.3		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-5.26%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	1.0000	1.0000	1.0000	0.7500	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	8/8	6/8	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	9/9	8/8	8/8	8/8

CETIS Measurement Report

Report Date: 03 Dec-18 10:52 (p 1 of 3)
Test Code: 18-317-0191 fh | 12-9395-9803

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID:	15-8259-1502	Test Type:	Survival (48h)	Analyst:	Ava Marie Davis
Start Date:	13 Nov-18 16:00	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	20% DMW
Ending Date:	15 Nov-18 10:25	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	42h	Source:	Aquatic Biosystems, CO	Age:	<24
Sample ID:	09-5014-3798	Code:	18-317-0191	Client:	City of Marion Water Department
Sample Date:	13 Nov-18 11:00	Material:	POTW Effluent	Project:	WET Quarterly Compliance Test (4Q)
Receipt Date:	13 Nov-18 12:55	Source:	Marion Water Department (AR0021971)		
Sample Age:	5h (1.4 °C)	Station:			

CETIS Measurement Report

Report Date: 03 Dec-18 10:52 (p 2 of 3)
Test Code: 18-317-0191 fh | 12-9395-9803

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
0.42			
0.56			
0.75			
1			
1.3		0	0

Conductivity-µS/cm

Conc-%	Code	1	2
0	R	367	343
0	L	177.6	141.8
0.42			
0.56			
0.75			
1			
1.3		316	336

Final Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	7.7	8.1
0	L	8.2	8.1
0.42		7.5	8.5
0.56		7.6	8.4
0.75		7.6	8.3
1		7.6	8.4
1.3		7.4	8.3

Initial Dissolved Oxygen-mg/L

Conc-%	Code	1	2
0	R	8.1	8.2
0	L	7.7	8
0.42		8	8.2
0.56		8.2	8.1
0.75		8.2	8.1
1		8.2	8.1
1.3		8.3	8.3

Final pH-Units

Conc-%	Code	1	2
0	R	8.2	8
0	L	8.1	7.5
0.42		8.2	8.1
0.56		8.2	8.1
0.75		8.2	8.1
1		8.2	8.1
1.3		8.2	8.2

CETIS Measurement Report

Report Date: 03 Dec-18 10:52 (p 3 of 3)
Test Code: 18-317-0191 fh | 12-9395-9803

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Initial pH-Units

Conc-%	Code	1	2
0	R	7.9	8
0	L	8.1	7.8
0.42		7.9	7.9
0.56		8	7.9
0.75		8	7.9
1		8	7.9
1.3		8	7.9

Final Temperature-°C

Conc-%	Code	1	2
0	R	25	25
0	L	25	25
0.42		25	25
0.56		25	25
0.75		25	25
1		25	25
1.3		25	25

Initial Temperature-°C

Conc-%	Code	1	2
0	R	25	25
0	L	25	25
0.42		25	25
0.56		25	25
0.75		25	25
1		25	25
1.3		25	25

Additional Toxicity Test Information

1. Methods/Instrumentation used in chemical analysis:
 - Dissolved oxygen, DM 4: (SM 4500-O G-2011)
 - pH, PM 1: (SM 4500-H + B-2011)
 - Temperature, PM 1: (SM 2550 B-2011)
 - 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 0.02mg/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
 - 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 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.
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: Organisms are allowed to reach test temperature. Dilution water is added at half-hour intervals until organisms are contained in a culture media that consists of 80% dilution water.
5. 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 6150834
 - Sodium Chloride is used as the reference toxicity chemical for invertebrate species
 - Current chemical ID: CS6153098
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



Waypoint[™] ANALYTICAL

2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 ° Fax 901.213.2440
www.waypointanalytical.com

02608

City of Marion Water Department
Mr. Jim Shempert
31 Military Road
Marion , AR 72364

Project Bioassay
Information :

Report Date : 12/03/2018
Received : 11/13/2018

REPORT OF ANALYSIS

Report Number : 18-317-0191

Lab No : 89034

Matrix: Aqueous

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

Sampled: 11/14/2018 9:45

Test	Results	Units	SQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	126	mg/L	1	1	11/16/18 08:30	TKM	2320B-2011
Calcium	11.3	mg/L	0.500	1	11/26/18 21:07	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	41.1	mg/L	0.100	1	11/26/18 21:07	BKN	EPA-200.7
Magnesium	3.14	mg/L	0.100	1	11/26/18 21:07	BKN	EPA-200.7

Lab No : 89035

Matrix: Aqueous

Sample ID : **Receiving Water**

Sampled: 11/14/2018 10:15

Test	Results	Units	SQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	103	mg/L	1	1	11/16/18 08:30	TKM	2320B-2011
Calcium	49.4	mg/L	0.500	1	11/26/18 21:22	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	187	mg/L	0.100	1	11/26/18 21:22	BKN	EPA-200.7
Magnesium	15.5	mg/L	0.100	1	11/26/18 21:22	BKN	EPA-200.7

Lab No : 98581

Matrix: Aqueous

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

Sampled: 11/13/2018 11:00

Test	Results	Units	SQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	103	mg/L	1	1	11/16/18 08:30	TKM	2320B-2011
Calcium	11.0	mg/L	0.500	1	11/26/18 21:27	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	39.9	mg/L	0.100	1	11/26/18 21:27	BKN	EPA-200.7
Magnesium	3.03	mg/L	0.100	1	11/26/18 21:27	BKN	EPA-200.7

Qualifiers/
Definitions

DF Dilution Factor
MQL Method Quantitation Limit



2790 Whitten Road, Memphis, TN 38133
 Main 901.213.2400 • Fax 901.213.2440
 www.waypointanalytical.com

02608

City of Marion Water Department
 Mr. Jim Shempert
 31 Military Road
 Marion, AR 72364

Project Bioassay
 Information :

Report Date : 12/03/2018
 Received : 11/13/2018

REPORT OF ANALYSIS

Report Number : **18-317-0191**

Lab No : **98582**

Matrix: **Aqueous**

Sample ID : **Receiving Water**

Sampled: **11/13/2018 11:15**

Test	Results	Units	SQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	129	mg/L	1	1	11/16/18 08:30	TKM	2320B-2011
Calcium	48.9	mg/L	0.500	1	11/26/18 21:32	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	186	mg/L	0.100	1	11/26/18 21:32		EPA-200.7
Magnesium	15.4	mg/L	0.100	1	11/26/18 21:32	BKN	EPA-200.7

Qualifiers/Definitions	DF	Dilution Factor	SQL	Method	Quantitation Limit



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CHAIN-OF-CUSTODY

Kit ID:	0000105580
Initiated By:	Sydney Andres
Initiated Date:	10/23/2018
Project Comment	Bioassay



18-317-0191
 02608
 11-13-2018
 13:20:40

City of Marion Water Department
 Bioassay / 11/13/18

Company Name	Company Number	Client Project Manager/Contact	Purchase Order Number
City of Marion Water Department	02608	Mr. Jim Shempert	
Site Name	Project Number	Method of Shipment	
Bioassay Quarterly 4 B 11/13-14/2018		<input type="checkbox"/> RUSH - Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed	
LIMS Project ID	Project Manager Phone #	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
10-14-18	9:45A	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	HNO3 - Nitric Acid	hardness
10-14-18	9:45A	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Pint	NONE	Alkalinity
10-14-18	9:45A	Outfall 001 - Composite 2	Aqueous	C	1	Plastic - Quart	NONE	48 hr bioassay - renewal
10-14-18	10:15A	Receiving Water	Aqueous		2	Plastic - Gallon	NONE	Dilution Water
10-14-18	10:15A	Receiving Water	Aqueous		1	Plastic - Pint	HNO3 - Nitric Acid	Hardness
10-14-18	10:15A	Receiving Water	Aqueous		1	Plastic - Pint	NONE	Alkalinity

For Laboratory Use Only		Client Remarks/Comments	
Ice	Custody Seals	Sampled by (Name - Print)	Date
SN	WIN	Bobben	1140
Relinquished by: (SIGNATURE)		Received by: (SIGNATURE)	Date
Relinquished by: (SIGNATURE)		Received by: (SIGNATURE)	Date
Relinquished by: (SIGNATURE)		Received by: (SIGNATURE)	Date
Relinquished by: (SIGNATURE)		Received by: (SIGNATURE)	Date
Blank/Cooler Temp			
(11) 24c T-39			

2018 QUARTERLY

NAME:
ADDRESS:

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

PERMIT NUMBER	DISCHARGE NUMBER

FACILITY:
LOCATION:
ATTN:

MONITORING PERIOD

YEAR	MONTH	DAY	TO	YEAR	MONTH	DAY
2018	Dec					

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION			NO EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM			
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	*****	*****	*****	*****	0.0	*****	(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		