



Waypoint
ANALYTICAL

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02/01/2024

West Memphis Utilities
Mr. Paul Holloway

502 South Loop
West Memphis, AR 72301

Ref: Analytical Testing

Report Number: 24-024-0390

Client Project Description: Bioassay
AR0022039 Quarter 1

Dear Permittee:

The results of this WET (Whole Effluent Toxicity) test are acceptable according to test review criteria. There were no significant deficiencies found in sample handling, test performance, or reporting. The test results are within the limits established by your NPDES permit and were entered into the permittee's records in the database.

Results:

<i>Daphnia pulex</i>	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
2000.0 *Pimephales promelas* Acute Toxicity

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

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 Summary Report

Report Date:	01 Feb-24 14:05 (p 1 of 1)
Test Code/ID:	24-024-0390-dp / 18-7955-9255

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

1	24-024-0390	Sample Date	24 Jan-24 07:00	Receive Date	24 Jan-24 09:37	Renewal Date	25 Jan-24 00:00	Temp °C	19
Sample Renewals									
Batch ID:	14-1966-2533	Test Type:	Survival (48h)	Protocol:	EPA/821/R-02-012 (2002)	Ending Date:	25 Jan-24 11:52	Test Length:	49h
Start Date:	24 Jan-24 11:10	Species:	Daphnia pulex	Taxon:		Sample ID:	20-1941-3044	Sample Date:	23 Jan-24 07:00
Receipt Date:	24 Jan-24 09:37	CAS (PC):	POTW Effluent	Material:		Receipt Date:	24 Jan-24 09:37	Sample Age:	28h (1.9 °C)
Client: West Memphis Utilities									
Station: Outfall 001									
Project: WET Quarterly Compliance Test (1Q)									
Source: West Memphis Utilities (AR0022039)									
Age: <24									
In-House Culture									
Not Applicable									
20% DMW									
Analyte: Ilovet									
Diluent: 10% DMW									
Bottle: Not Applicable									
Source: In-House Culture									

Multiple Comparison Summary											
Analysis ID		Endpoint		Comparison Method							
01-178-5011		48h Survival Rate		Steel Many-One Rank Sum Test							
01-178-5011		48h Survival Rate		TAC Limits							
Attribute ID		Upper		Test Stat		Lower		Overlap			
Control Resp		1		0.9		<<		Yes		Passes Criteria	
18h Survival Rate Summary								Std Err		Std Dev	
Code		Count		Mean		95% LCL		95% UCL		Min	
Conc%										Max	

48h Survival Rate Detail		MD5: A6A98FC27B68D3F64186EDC5BFCDEF297	
0	R	1.0000	1.0000
0		1.0000	1.0000
0.4	L	1.0000	1.0000
0.6		0.9750	0.9056
0.8		0.9750	0.9056
1		1.0000	1.0000
1.3		5	5

[illegible]

48h Survival Rate Binomials		Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	8/8	8/8	8/8	8/8	8/8	8/8
0	L	8/8	8/8	8/8	8/8	8/8	8/8
0.4		8/8	8/8	8/8	8/8	8/8	8/8
0.6		8/8	8/8	8/8	8/8	8/8	8/8
0.8		8/8	8/8	8/8	8/8	8/8	8/8
1		8/8	8/8	8/8	8/8	8/8	8/8
1.3		8/8	8/8	8/8	8/8	8/8	8/8

Convergent Rounding (4 sf)

CETIS™ V2.1.4.6 X64 (002-439-330-4)

CETIS Measurement Report

Report Date: 01 Feb-24 14:05 (p 2 of 3)
 Test Code/ID: 24-024-0390-dp / 18-7955-9255

Waypoint Analytical Tennessee, LLC.

Daphnia pulex 48-h Acute Survival Test

Total Residual Chlorine-mg/L	Code	1	2
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Conc-%			
0	R	1	1
0	L	0	0
1.3			

Conductivity-µS/cm	Code	1	2
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Conc-%			
0	R	352.6	354.9
0	L	182.9	184.5
1.3		378.5	354.3

Final Dissolved Oxygen-mg/L	Code	1	2
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Conc-%			
0	R	8.4	8.7
0	L	8.1	8.6
0.4		8.4	8.8
0.6		8.5	8.8
0.8		8.6	8.8
1		8.7	8.8
1.3		9	8.8

Initial Dissolved Oxygen-mg/L	Code	1	2
-------------------------------	------	---	---

Conc-%			
0	R	9.9	8.9
0	L	8.5	8.4
0.4		9.8	9.6
0.6		9.8	9.6
0.8		9.8	9.6
1		9.7	9.5
1.3		9.8	9.7

Final pH-Units	Code	1	2
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Conc-%			
0	R	8.2	8
0	L	8	7.9
0.4		8.1	8.1
0.6		8.2	8.1
0.8		8.3	8.1
1		8.2	8.2
1.3		8.3	8.2

Initial pH-Units	Code	1	2
------------------	------	---	---

Conc-%			
0	R	7.9	7.6
0	L	8.1	7.4
0.4		7.9	7.7
0.6		7.9	7.8
0.8		7.9	7.8
1		8	7.9
1.3		7.9	7.9

Convergent Rounding (4 sf)	Code	1	2
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Conc-%			
0	R	7.9	7.6
0	L	8.1	7.4
0.4		7.9	7.7
0.6		7.9	7.8
0.8		7.9	7.8
1		8	7.9
1.3		7.9	7.9

Conc-%	Code	1	2
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Conc-%			
0	R	7.9	7.6
0	L	8.1	7.4
0.4		7.9	7.7
0.6		7.9	7.8
0.8		7.9	7.8
1		8	7.9
1.3		7.9	7.9

Conc-%	Code	1	2
--------	------	---	---

Conc-%			
0	R	7.9	7.6
0	L	8.1	7.4
0.4		7.9	7.7
0.6		7.9	7.8
0.8		7.9	7.8
1		8	7.9
1.3		7.9	7.9

Conc-%	Code	1	2
--------	------	---	---

Conc-%			
0	R	7.9	7.6
0	L	8.1	7.4
0.4		7.9	7.7
0.6		7.9	7.8
0.8		7.9	7.8
1		8	7.9
1.3		7.9	7.9

Conc-%	Code	1	2
--------	------	---	---

Conc-%			
0	R	7.9	7.6
0	L	8.1	7.4
0.4		7.9	7.7
0.6		7.9	7.8
0.8		7.9	7.8
1		8	7.9
1.3		7.9	7.9

Conc-%	Code	1	2
--------	------	---	---

Conc-%			
0	R	7.9	7.6
0	L	8.1	7.4
0.4		7.9	7.7
0.6		7.9	7.8
0.8		7.9	7.8
1		8	7.9
1.3		7.9	7.9

CETIS™ V2.1.4.6 x64 (002-439-330-4)

CETIS Measurement Report

Report Date: 01 Feb-24 14:05 (p 3 of 3)
 Test Code/ID: 24-024-0390-dp / 18-7955-9255
 Waypoint Analytical Tennessee, LLC.

Daphnia pulex 48-h Acute Survival Test

Final Temperature-°C		Conc-%		Code		Initial Temperature-°C		Conc-%		Code	
0	R	23.2	23.4	1	2	0	R	24.4	23.9	1	2
0	L	23.1	23.6			0	L	24.1	23.7		
0.4		23.3	23.4			0.4		24.5	23.6		
0.6		23.4	23.3			0.6		24.6	23.8		
0.8		23.4	23.4			0.8		24.5	24.1		
1		23.3	23.4			1		24.7	24.2		
1.3		23.4	23.4			1.3		24.6	24.1		

Convergent Rounding (4 sf)

CETIS™ V2.1.4.6 x64 (002-439-330-4)

Daphnia pulex 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Batch ID:	14-1996-2533	Test Type:	Survival (48h)	Analyst:	Ivey E. Moffatt
Start Date:	24 Jan-24 11:10	Protocol:	EP4/821/R-02-012 (2002)	Diluent:	20% DMW
Ending Date:	26 Jan-24 11:52	Species:	Daphnia pulex	Brine:	Not Applicable
Test Length:	49h	Taxon:		Source:	In-House Culture
Sample ID:	20-7941-3044	Code:	24-024-0390	Project:	WET Quarterly Compliance Test (1Q)
Sample Date:	23 Jan-24 07:00	Material:	POTW Effluent	Source:	West Memphis Utilities (AR0022039)
Receipt Date:	24 Jan-24 09:37	CAS (PC):		Station:	Outfall 001
Sample Age:	28h (1.9 °C)	Client:	West Memphis Utilities		

CETIS Summary Report

Report Date: 01 Feb-24 14:04 (p 1 of 1)
Test Code/ID: 24-024-0390-h / 00-7150-3897

Waypoint Analytical Tennessee, LLC.

Batch ID:	15-1783-5206	Test Type:	Survival (48h)	Analyst:	Ivey E. Moffett
Start Date:	24 Jan-24 10:58	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	20% DMW
Ending Date:	26 Jan-24 11:42	Species:	Firmephalas promelas	Etnr:	Not Applicable
Test Length:	49h	Taxon:		Source:	Aquatic Biosystems, CO
Sample ID:	20-7941-3044	Code:	24-024-0390	Project:	WET Quarterly Compliance Test (1Q)
Sample Date:	23 Jan-24 07:00	Material:	POTW Effluent	Source:	West Memphis Utilities (AR0022039)
Receipt Date:	24 Jan-24 09:37	CAS (PC):		Station:	Outfall 001
Sample Age:	28h (1.9 °C)	Client:	West Memphis Utilities		

Sample Renewals		
Renewal Sample Code	Sample Date	Temp °C
1	24 Jan-24 03:00	19

Multiple Comparison Summary		
Analysis ID	Endpoint	
02-8586-2527	48h Survival Rate	
Comparison Method		
✓ NOEL	LOEL	TOEL
	PMSD	TU
		S

Test Acceptability		
Analysis ID	Endpoint	
02-8586-2527	48h Survival Rate	
Steel Many-One Rank Sum Test		
1.3	>1.3	---
		3.22%
		76.9
		1

48h Survival Rate Summary		
Conc-%	Code	Count
0	R	5
0.4	L	5
0.6		5
0.8		5
1		5
1.3		5

48h Survival Rate Detail		
Conc-%	Code	Rep 1
0	R	1.0000
0.4	L	1.0000
0.6		1.0000
0.8		1.0000
1		1.0000
1.3		1.0000

48h Survival Rate Binomials		
Conc-%	Code	Rep 1
0	R	1.0000
0.4	L	1.0000
0.6		1.0000
0.8		1.0000
1		1.0000
1.3		1.0000

48h Survival Rate Binomials		
Conc-%	Code	Rep 1
0	R	1.0000
0.4	L	1.0000
0.6		1.0000
0.8		1.0000
1		1.0000
1.3		1.0000

CETIS Measurement Report		Report Date: 01 Feb-24 14:04 (p 1 of 3)	Test Code/ID: 24-024-0390-tn / 00-7150-3897
Fathead Minnow 48-h Acute Survival Test		Waypoint Analytical Tennessee, LLC.	
Batch ID: 15-1783-5206	Test Type: Survival (48h)	Analyst: Ivey E. Moffett	
Start Date: 24 Jan-24 10:58	Protocol: EPA/821/R-02-012 (2002)	Diluent: 20% DMW	
Ending Date: 26 Jan-24 11:42	Species: Pimephales promelas	Brine: Not Applicable	
Test Length: 48h	Taxon:	Source: Aquatic Biosystems, CO	Age: <48
Sample ID: 20-7941-3044	Code: 24-024-0390	Project: WET Quarterly Compliance Test (1Q)	
Sample Date: 23 Jan-24 07:00	Material: POTW Effluent	Source: West Memphis Utilities (AR0022039)	
Receipt Date: 24 Jan-24 09:37	CAS (PC):	Station: Outfall 001	
Sample Age: 28h (19 °C)	Client: West Memphis Utilities		

CETIS Measurement Report

Report Date:

01 Feb-24 14:04 (p 2 of 3)

Test Code/ID:

24-024-0390-tn / 00-7150-3897

Waypoint Analytical Tennessee, LLC.

Fathead Minnow 48-h Acute Survival Test

Total Residual Chlorine-mg/L	
Conc-%	Code
0	1
0	R
1.3	L

Conductivity-µS/cm	
Conc-%	Code
0	1
0	R
1.3	L

Final Dissolved Oxygen-mg/L	
Conc-%	Code
0	1
0	R
0.4	L
0.6	8
0.8	8
1	8
1.3	8

Initial Dissolved Oxygen-mg/L	
Conc-%	Code
0	1
0	R
0.4	L
0.6	8
0.8	8
1	8
1.3	8

Final pH-Units	
Conc-%	Code
0	1
0	R
0.4	L
0.6	8
0.8	8
1	8
1.3	8

Initial pH-Units	
Conc-%	Code
0	1
0	R
0.4	L
0.6	8
0.8	8
1	8
1.3	8

Convergent Rounding (4 sf)	
Conc-%	Code
0	1
0	R
0.4	L
0.6	8
0.8	8
1	8
1.3	8

CETIS Measurement Report

Report Date: 01 Feb-24 14:04 (p 3 of 3)
 Test Code/ID: 24-024-0390-1h / 00-7150-3897

Fathead Minnow 48-h Acute Survival Test

Waypoint Analytical Tennessee, LLC.

Final Temperature-°C		Conc-%	
Code	1	Code	2
R	24	R	24
L	23.6	L	23.5
	24.1		23.5
	23.6		23.5
	24		23.4
	23.8		23.4
	24		23.5
	23.5		23.5
	24		23.5
	23.8		23.5
	24.1		23.5
	24.5		23.5
	24.6		23.5
	24.7		23.5
	24.8		23.5
	24.9		23.5
	25.0		23.5
	25.1		23.5
	25.2		23.5
	25.3		23.5
	25.4		23.5
	25.5		23.5
	25.6		23.5
	25.7		23.5
	25.8		23.5
	25.9		23.5
	26.0		23.5
	26.1		23.5
	26.2		23.5
	26.3		23.5
	26.4		23.5
	26.5		23.5
	26.6		23.5
	26.7		23.5
	26.8		23.5
	26.9		23.5
	27.0		23.5
	27.1		23.5
	27.2		23.5
	27.3		23.5
	27.4		23.5
	27.5		23.5
	27.6		23.5
	27.7		23.5
	27.8		23.5
	27.9		23.5
	28.0		23.5
	28.1		23.5
	28.2		23.5
	28.3		23.5
	28.4		23.5
	28.5		23.5
	28.6		23.5
	28.7		23.5
	28.8		23.5
	28.9		23.5
	29.0		23.5
	29.1		23.5
	29.2		23.5
	29.3		23.5
	29.4		23.5
	29.5		23.5
	29.6		23.5
	29.7		23.5
	29.8		23.5
	29.9		23.5
	30.0		23.5
	30.1		23.5
	30.2		23.5
	30.3		23.5
	30.4		23.5
	30.5		23.5
	30.6		23.5
	30.7		23.5
	30.8		23.5
	30.9		23.5
	31.0		23.5
	31.1		23.5
	31.2		23.5
	31.3		23.5
	31.4		23.5
	31.5		23.5
	31.6		23.5
	31.7		23.5
	31.8		23.5
	31.9		23.5
	32.0		23.5
	32.1		23.5
	32.2		23.5
	32.3		23.5
	32.4		23.5
	32.5		23.5
	32.6		23.5
	32.7		23.5
	32.8		23.5
	32.9		23.5
	33.0		23.5
	33.1		23.5
	33.2		23.5
	33.3		23.5
	33.4		23.5
	33.5		23.5
	33.6		23.5
	33.7		23.5
	33.8		23.5
	33.9		23.5
	34.0		23.5
	34.1		23.5
	34.2		23.5
	34.3		23.5
	34.4		23.5
	34.5		23.5
	34.6		23.5
	34.7		23.5
	34.8		23.5
	34.9		23.5
	35.0		23.5
	35.1		23.5
	35.2		23.5
	35.3		23.5
	35.4		23.5
	35.5		23.5
	35.6		23.5
	35.7		23.5
	35.8		23.5
	35.9		23.5
	36.0		23.5
	36.1		23.5
	36.2		23.5
	36.3		23.5
	36.4		23.5
	36.5		23.5
	36.6		23.5
	36.7		23.5
	36.8		23.5
	36.9		23.5
	37.0		23.5
	37.1		23.5
	37.2		23.5
	37.3		23.5
	37.4		23.5
	37.5		23.5
	37.6		23.5
	37.7		23.5
	37.8		23.5
	37.9		23.5
	38.0		23.5
	38.1		23.5
	38.2		23.5
	38.3		23.5
	38.4		23.5
	38.5		23.5
	38.6		23.5
	38.7		23.5
	38.8		23.5
	38.9		23.5
	39.0		23.5
	39.1		23.5
	39.2		23.5
	39.3		23.5
	39.4		23.5
	39.5		23.5
	39.6		23.5
	39.7		23.5
	39.8		23.5
	39.9		23.5
	40.0		23.5
	40.1		23.5
	40.2		23.5
	40.3		23.5
	40.4		23.5
	40.5		23.5
	40.6		23.5
	40.7		23.5
	40.8		23.5
	40.9		23.5
	41.0		23.5
	41.1		23.5
	41.2		23.5
	41.3		23.5
	41.4		23.5
	41.5		23.5
	41.6		23.5
	41.7		23.5
	41.8		23.5
	41.9		23.5
	42.0		23.5
	42.1		23.5
	42.2		23.5
	42.3		23.5
	42.4		23.5
	42.5		23.5
	42.6		23.5
	42.7		23.5
	42.8		23.5
	42.9		23.5
	43.0		23.5
	43.1		23.5
	43.2		23.5
	43.3		23.5
	43.4		23.5
	43.5		23.5
	43.6		23.5
	43.7		23.5
	43.8		23.5
	43.9		23.5
	44.0		23.5
	44.1		23.5
	44.2		23.5
	44.3		23.5
	44.4		23.5
	44.5		23.5
	44.6		23.5
	44.7		23.5
	44.8		23.5
	44.9		23.5
	45.0		23.5
	45.1		23.5
	45.2		23.5
	45.3		23.5
	45.4		23.5
	45.5		23.5
	45.6		23.5
	45.7		23.5
	45.8		23.5
	45.9		23.5
	46.0		23.5
	46.1		23.5
	46.2		23.5
	46.3		23.5
	46.4		23.5
	46.5		23.5
	46.6		23.5
	46.7		23.5
	46.8		23.5
	46.9		23.5
	47.0		23.5
	47.1		23.5
	47.2		23.5
	47.3		23.5
	47.4		23.5
	47.5		23.5
	47.6		23.5
	47.7		23.5
	47.8		23.5
	47.9		23.5
	48.0		23.5
	48.1		23.5
	48.2		23.5
	48.3		23.5
	48.4		23.5
	48.5		23.5
	48.6		23.5
	48.7		23.5
	48.8		23.5
	48.9		23.5
	49.0		23.5
	49.1		23.5
	49.2		23.5
	49.3		23.5
	49.4		23.5
	49.5		23.5
	49.6		23.5
	49.7		23.5
	49.8		23.5
	49.9		23.5
	50.0		23.5
	50.1		23.5
	50.2		23.5
	50.3		23.5
	50.4		23.5
	50.5		23.5
	50.6		23.5
	50.7		23.5
	50.8		23.5
	50.9		23.5
	51.0		23.5
	51.1		23.5
	51.2		23.5
	51.3		23.5
	51.4		23.5
	51.5		23.5
	51.6		23.5
	51.7		23.5
	51.8		23.5
	51.9		23.5
	52.0		23.5
	52.1		23.5
	52.2		23.5
	52.3		23.5
	52.4		23.5
	52.5		23.5
	52.6		23.5
	52.7		23.5
	52.8		23.5
	52.9		23.5
	53.0		23.5
	53.1		23.5
	53.2		23.5
	53.3		23.5
	53.4		23.5
	53.5		23.5
	53.6		23.5
	53.7		23.5
	53.8		23.5
	53.9		23.5
	54.0		23.5
	54.1		23.5
	54.2		23.5
	54.3		23.5
	54.4		23.5
	54.5		23.5
	54.6		23.5
	54.7		23.5
	54.8		23.5
	54.9		23.5
	55.0		23.5
	55.1		23.5
	55.2		23.5
	55.3		23.5
	55.4		23.5
	55.5		23.5
	55.6		23.5
	55.7		23.5
	55.8		23.5
	55.9		23.5
	56.0		23.5
	56.1		23.5
	56.2		23.5
	56.3		23.5
	56.4		23.5
	56.5		23.5
	56.6		23.5
	56.7		23.5
	56.8		23.5
	56.9		23.5
	57.0		23.5
	57.1		23.5
	57.2		23.5
	57.3		23.5
	57.4		23.5
	57.5		23.5
	57.6		23.5
	57.7		23.5
	57.8		23.5
	57.9		23.5
	58.0		23.5
	58.1		23.5
	58.2		23.5
	58.3		23.5
	58.4		23.5
	58.5		23.5
	58.6		23.5
	58.7		23.5
	58.8		23.5
	58.9		23.5
	59.0		23.5
	59.1		23.5
	59.2		23.5
	59.3		23.5
	59.4		23.5
	59.5		23.5
	59.6		23.5
	59.7		23.5
	59.8		23.5
	59.9		23.5
	60.0		23.5
	60.1		23.5
	60.2		23.5
	60.3		23.5
	60.4		23.5
	60.5		23.5
	60.6		23.5
	60.7		23.5
	60.8		23.5
	60.9		23.5

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 & T1124
 - 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
2. Laboratory
 - Incubator Temperature: 25± 1°C
 - Incubator ID: Bioassay Room
 - Thermometer ID: TGI96
 - 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
 - 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.
 - 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 invertebrate 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, or sodium thiosulfate, etc., and the justification for such manipulations or deviations. Attach additional pages as needed.
 - None



2790 Whitten Road, Memphis, TN 38133
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www.waypointanalytical.com

Project Bioassay
Information : Outfall 001-Quarter 1-2024
FID-WWTP

Report Number : 24-024-0390

Report Date : 02/01/2024
Received : 01/24/2024

Lab No : 90548
Sample ID : **Outfall 001 1/22-23/24**

Matrix: **Aqueous**
Sampled: **1/23/2024 7:00**

Test	Results	Units	MOL	DF	Date / Time	By	Analytical Method
Alkalinity (as CaCO3)	84	mg/L	1	1	01/30/24 09:50	JJZ	Z320B-2011
Calcium	7.60	mg/L	0.100	1	01/31/24 04:25	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	24.7	mg/L	0.100	1	01/31/24 04:25	BKN	EPA-200.7
Magnesium	1.39	mg/L	0.100	1	01/31/24 04:25	BKN	EPA-200.7

Lab No : 90549
Sample ID : **Receiving Stream**

Matrix: **Aqueous**
Sampled: **1/24/2024 8:00**

Test	Results	Units	MOL	DF	Date / Time	By	Analytical Method
Alkalinity (as CaCO3)	45	mg/L	1	1	01/30/24 09:50	JJZ	Z320B-2011
Calcium	10.3	mg/L	0.100	1	01/31/24 19:48	SML	EPA-200.7
Hardness as CaCO3(SM-2340B)	34.4	mg/L	0.100	1	01/31/24 19:48	SML	EPA-200.7
Magnesium	2.10	mg/L	0.100	1	01/31/24 19:48	SML	EPA-200.7

Definitions/ DF Dilution Factor Method Quantitation Limit MQL

L

Limit Exceeded



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CHAIN-OF-CUSTODY

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24-024-0390
01753
01-24-2024
09:48:09

West Memphis Utilities
Biossaver

Kit ID:	224584
Initiated By:	Blake Smith
Initiated Date:	11/16/2023
Project Comment	West Memphis Utilities Biossaver

Company Name	West Memphis Utilities	Company Number	01753	Client Project Manager/Contact	Mr. Paul Holloway	Purchase Order Number	
Site Name	Outfall 001 - Quarter 1 - 2024	Project Number		Method of Shipment	☐ Fed Ex ☐ UPS ☒ USPS ☐ Courier ☐ Client Drop Off ☐ Other	Site/Facility ID #	MMWTP
LIMS Project ID	Project Manager Phone #	Project Manager Email	paul.holloway@sbglobal.net				
West Memphis - Biossaver	(870) 735-3355						

Date	Time	Sample ID	Matrix	Grab/Comp # of	Container Type	Preservation	Analyses
11/24/24	7:00 PM	Outfall 001 comp 1	Aqueous	C 1	Plastic - Pint	HNO3 - Nitric Acid	alkalinity
11/24/24	7:00 PM	Outfall 001 comp 1	Aqueous	C 1	Plastic - Quart	NONE	48 hr bioassay - renewal
11/23/24	7:00 PM	Outfall 001 comp 2	Aqueous	C 1	Plastic - Pint	NONE	alkalinity
11/23/24	7:00 PM	Outfall 001 comp 2	Aqueous	C 1	Plastic - Pint	HNO3 - Nitric Acid	hardness
11/24/24	7:00 PM	Outfall 001 comp 2	Aqueous	C 1	Plastic - Quart	NONE	48 hr bioassay - renewal
11/24/24	8:00	Receiving Stream	Aqueous	G 1	Plastic - Pint	NONE	alkalinity
11/24/24	8:00	Receiving Stream	Aqueous	G 1	Plastic - Pint	HNO3 - Nitric Acid	hardness

For Laboratory Use Only		Lab Comments		Sampled by (Name - Print) Robert Johnson		Client Remarks/Comments	
Ice	☒ N/A	Custody	☒ N/A	Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
Blank/Cooler Temp	19.4			Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
				Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time
				Relinquished by: (SIGNATURE)	Date Time	Received by: (SIGNATURE)	Date Time



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CHAIN-OF-CUSTODY

Kit ID:	224584
Initiated By:	Blake Smith
Initiated Date:	11/16/2023
Project Comment	West Memphis Utilities Blossay

Company Name	West Memphis Utilities	01/753	Mr. Paul Holloway	Client Project Manager/Contact	Purchase Order Number
Site Name	Outfall 001-Quarter 1 - 2024	Project Number	☐ RUSH - Additional charges apply ☐ Special Detection Limits Date Results Needed	Method of Shipment ☐ Fed Ex ☐ UPS ☒ USPS ☐ Courier ☒ Client Drop Off Other	
LIMS Project ID	West Memphis - Blossay	(870) 735-3355	Project Manager Phone #	Project Manager Email	Site/Facility ID #
Date	Time	Sample ID	Matrix	Grab/ # of Cont	Container Type
11/16/24	8:00 AM	Receiving Steam	Aqueous	G	4
					Plastic - Gallon
					NONE
					Dilution water
					Analyses



For Laboratory Use Only		Lab Comments		Sampled by (Name - Print) Robert Johnson		Client Remarks/Comments	
ice	☒ Y/N	Seals	☒ Y/N	Relinquished by: (SIGNATURE) Robert Johnson	Date	Time	
Custody	☒ Y/N	Blank/Cooler Temp	19.1	Relinquished by: (SIGNATURE) [Signature]	Date	Time	11/16/24
		Blank/Cooler Temp	19.1	Relinquished by: (SIGNATURE)	Date	Time	
		Blank/Cooler Temp	19.1	Received by: (SIGNATURE)	Date	Time	11/24/24 9:57

SAMPLE ID: West Meadows Utilities
REPORT #: 24-024-0390

DATE START: 1/24/24

pH	DAY 1		DAY 2		AFTER - DAY 1		AFTER - DAY 2		AFTER - DAY 1		AFTER - DAY 2	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
CONTROL	8.1	7.4	8.0	7.9	8.1	8.0	8.1	8.0	8.1	8.0	8.1	8.0
R	7.9	7.6	8.2	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
1	7.9	7.7	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.0
2	7.9	7.8	8.2	8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.0
3	7.9	7.8	8.3	8.3	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.0
4	8.0	7.9	8.2	8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.0
5	7.9	7.9	8.3	8.2	8.2	8.2	8.2	8.2	8.1	8.1	8.0	8.0
DO mg/L	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL
CONTROL	8.5	8.4	8.1	8.0	8.2	8.1	8.2	8.1	8.1	8.0	8.1	8.0
R	9.9	8.9	8.4	8.4	8.1	8.1	8.0	8.0	8.1	8.0	8.1	8.0
1	9.8	9.5	8.4	8.4	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
2	9.8	9.6	8.5	8.5	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
3	9.8	9.6	8.6	8.6	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
4	9.7	9.5	8.7	8.7	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
5	9.8	9.7	9.0	9.0	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
TEMP. (°C)	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL
CONTROL	24.1	23.7	23.1	23.0	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.5
R	24.4	23.9	23.2	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.5
1	24.5	23.6	23.6	23.5	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.5
2	24.6	23.8	23.4	23.3	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.6
3	24.5	24.1	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.6
4	24.7	24.2	23.3	23.3	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.8
5	24.6	24.1	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	24.0
ANALYST:	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m
DATE:	1/24/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24

CONDUCTIVITY (micromhos)	DAY 1		DAY 2		DAY 1		DAY 2		DAY 1		DAY 2	
	CONTROL	REAGENT	CONTROL	REAGENT	CONTROL	REAGENT	CONTROL	REAGENT	CONTROL	REAGENT	CONTROL	REAGENT
CONTROL	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
R	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
1	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
2	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
3	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
4	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
CHLORINE mg/L	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2
CONTROL	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02
R	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02
1	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02
2	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02
3	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02
4	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02
5	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02	70.02
DL = 0.02 mg/L	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2	DAY 1	DAY 2
CONTROL	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820
R	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820
1	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820
2	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820
3	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820
4	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820
5	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820	2820
ANALYST:	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m
DATE:	1/24/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24

Meter	ID	DAY 1		DAY 2		DAY 1		DAY 2		DAY 1		DAY 2	
		CONTROL	REAGENT	CONTROL	REAGENT	CONTROL	REAGENT	CONTROL	REAGENT	CONTROL	REAGENT	CONTROL	REAGENT
Rec. Stream	352.6	354.9	354.9	354.9	354.9	354.9	354.9	354.9	354.9	354.9	354.9	354.9	354.9
EFFLUENT	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5
ANALYST:	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m	1m
DATE:	1/24/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24	1/25/24
Temp	T148	DM 4	DM 4	DM 4	DM 4	DM 4	DM 4	DM 4	DM 4	DM 4	DM 4	DM 4	DM 4
Comments / Observations:	Bio2 Therm. ID: T113												

Tests are maintained at 25 ± 1 °C / Incubator ID: Bioassay Room / Therm. ID: TG196
Samples stored in fridge at 0-6 °C / Fridge ID: R6 / Therm. ID: TG210
Samples warmed in waterbath then maintained in Bio2 until use / Waterbath Therm. ID: T1124

REPORT # :	24-024-0398
SAMPLE ID :	WEST 14-0398
TEST START - DATE/TIME:	12/24 11:10 ANALYST: JM
TEST END - DATE/TIME :	12/24 11:52 ANALYST: JM
TEST TYPE:	RENEWAL

TEST ORGANISM: *Daphnia pulex*

TEST ORGANISM: *Daphnia pulex*

[illegible]

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

SAMPLE ID: *West Memphis*
REPORT # *24-024-039D*

DATE START: *1/24/24* DATE END: *1/26/24*

DAPHNIA PULEX REFERENCE # : *24-REAG-0013*

PARAMETER	DATE	INITIALS	DAY	CONTROL	ALGAE	YCT
ACUTE	1/24/24	1M	0	24-REAG-0413	24-REAG-0459	24-REAG-0241
TEST				WATER		

REFERENCE NUMBERS

TEST	SAMPLE	RECEIVING
DAY	LAB ID:	STREAM LAB ID:
0	790548	790550
24 HRS	790549	790550

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: Bioassay Room / Thermometer ID: TG196

ANALYST COMMENTS:

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

SAMPLE ID: West minnows
REPORT # 24-024-0390
DATE START: 1/24/24
DATE END: 1/26/24

FATHEAD MINNOW REFERENCE # 24-REAG-0458

REFERENCE NUMBERS

PARAMETER	DATE	INITIALS	TEST	CONTROL	LAB ID:	SAMPLE	RECEIVING
ACUTE	1/24/24	LM	0	24-REAG-0413	L90548	L90549	L90550
	1/25/24	LM	24 HRS	24-REAG-0385	L90549	L90549	L90550

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: Bioassay Room / Thermometer ID: TG196
(if applicable)

ANALYST COMMENTS: