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ANALYTICAL REPORT

PREPARED FOR

Attn: Brandi Andrews
Jacobs Engineering Group, Inc.
1004 N. Freya Street
Spokane, Washington 99202

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JOB DESCRIPTION

Spokane County Water Q1 and Q3

JOB NUMBER

192-19554-1

Eurofins Arkansas
8600 Kanis Rd
Little Rock AR 72204

See page two for job notes and contact information.

Eurofins Arkansas

Job Notes

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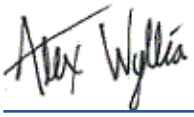
Authorization



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Authorized for release by
Alexandria Wyllia, Project Management Assistant I
Alexandria.Wyllia@et.eurofinsus.com
Designee for
John Overbey, Business Unit Manager
john.overbey@et.eurofinsus.com
(501)224-5060

Re: Chronic *Pimephales promelas* (Fathead minnow)
Sample ID: Spokane County Water
Job number: 192-19554-1
Permit No.: WA0093317

This report is the analytical results and supporting information for the samples submitted to Eurofins Arkansas. The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the Laboratory Manager or qualified designee.

Testing procedures and Quality Assurance were in accordance with “Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms” EPA-821-R-02-013, Fourth Edition, October 2002. The supporting chemistry data included with this report is intended for accessing the basic water quality of the effluent as required by this test method and is not intended to be utilized for discharge monitoring reports. Test results are summarized below:

Method 1000.0 Chronic *Pimephales promelas* (Fathead minnow) Survival and Growth Test:
The permit requirement is NOEC not less than 6.4%.
The following were concluded from the test:

Survival:	**NOEC**	**LOEC**	**LC50**	**Growth:**	**NOEC**	**LOEC**	**IC25**
	100	>100	>100		100	>100	>100

The sample therefore PASSED the Fathead minnow test.

Table of Contents

I. Test Acceptance Criteria

Pimephales promelas (Fathead Minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	97.5	Pass
Control Growth > or = 0.25 mg per Surviving minnow	0.652	Pass
Control Growth CV < or = 40% *	11.2	Pass
Growth Minimum Significant Difference 12 to 30%	19.6	Pass
Critical Dilution CV < or = 40% *	14.92	Pass

*EPA Region 6 Requirement consult permit

II. Test Design and QA

A. Introduction

1. Permit Number: WA0093317
2. Test Requirements: Test Methods 1000.0

B. Source of Effluent/Dilution Water:

1. Effluent Samples:
   a. Sampling Point: Spokane County Water
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.67	9.06	9.36
pH (standard units)	7.71	7.61	7.49
Alkalinity (mg/l as CaCO3)	93	73	66
Hardness (mg/l as CaCO3)	200	290	280
Conductivity (umhos/cm)	830	1001	1003
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	0.27	0.23	0.69

2. Dilution Water : Synthetic Moderately Hard

Analysis	192-19341-A-3	192-19341-A-2	192-19602-A-1
Dissolved oxygen (mg/l)	8.70	9.04	9.43
pH (standard units)	7.67	7.42	7.69
Alkalinity (mg/l as CaCO3)	59	57	63
Hardness (mg/l as CaCO3)	85	87	89
Conductivity (umhos/cm)	286	292	309
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	NA	NA	NA

C. Test Methods

1. Test Methods used:
   Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test methods 1000.0, Fathead Minnow Survival and Growth

2. Endpoint: No Observable Effects Concentration (NOEC)
3. Test Conditions:

Pimephales promelas (Fathead minnow) Survival and Growth Method 1000.0

Date & Time Test Initiated:	3/4/2025 at 1159
Date & Time Test Terminated:	3/11/2025 at 1333
Type & Volume of Test Chamber:	500 ml disposable beaker
Volume of Sample:	250 ml
Number of Organisms per Replicate:	10
Number of Replicates per Dilution:	4

4. Source of test organisms: In-house culture
5. Test temperature: 25 +/- 1 degree Celsius

D. Test Organisms

1. Scientific Name
   a. Test 1000.0 *Pimephales promelas*

III. Data Analysis

The data was analyzed using EPA method criteria and CETIS statistical software.

IV. Organism History

Pimephales promelas (Fathead minnow)

Age: <24 hours
Source: In-house culture
Water: Moderately Hard Synthetic

V. Results Summary for *Pimephales promelas* , Fathead minnow Larval Survival and Growth Test. EPA method 1000.0

Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (weight) of the larvae.

Effluent concentrations for this test were in accordance with EPA methodology and/or the NPDES permit.
Statistical analyses were performed on the observed data and the no observable effects concentration (NOECs) were as follows:

a.) NOEC Survival: 100
b.) NOEC Growth: 100

Summary of the 7-day Fathead Minnow Survival and Growth

Concentration(%)	Percent Survival	Mean Growth (mg)
Control	97.5	0.652
6.4	92.5	0.576
12.5	95	0.623
25	82.5	0.545
50	87.5	0.596
100	95	0.660

Appendix (Data): Test 1000.0

Pimephales promelas (Fathead minnow) 7-day Survival

Date and Time Test Initiated: 3/4/2025 at 1159
Date and Time Test Terminated: 3/11/2025 at 1333

Concentration	Replicate	Number of survivors						
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	A	10	10	10	10	10	10	10
	B	10	10	10	9	9	9	9
	C	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10
6.4	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10
	C	10	10	9	9	9	8	8
	D	10	10	10	9	9	9	9
12.5	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	9	9
	C	10	10	10	10	10	10	10
	D	10	10	9	9	9	9	9
25	A	10	9	7	6	6	6	6
	B	10	10	10	9	9	9	9
	C	9	9	9	9	9	9	9
	D	10	10	10	10	10	9	9
50	A	10	10	10	10	9	9	9
	B	10	10	10	9	9	8	8
	C	10	10	10	10	10	9	9
	D	10	10	10	10	10	9	9
100	A	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10
	D	10	10	9	9	9	8	8

Pimephales promelas (Fathead minnow) 7-Day Growth

Test Initiated: 3/4/2025 at 1159
Test Terminated: 3/11/2025 at 1333

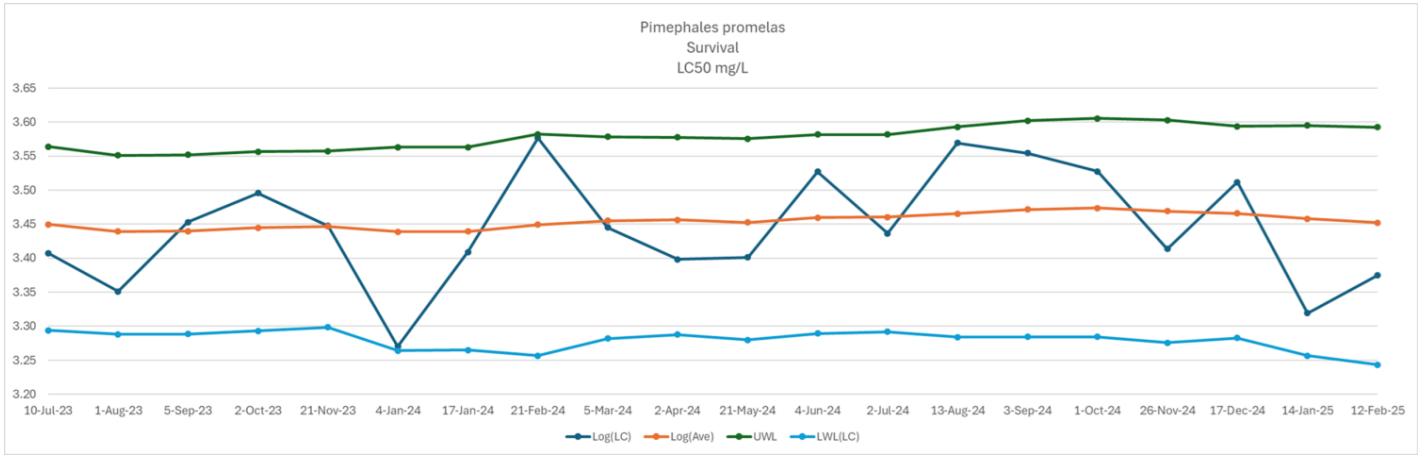
Concentration	Replicate	Weight of pan (g)	Weight of pan + fish (g)	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	0.79386	0.80061	0.00675	10	0.675
	B	0.79247	0.79807	0.0056	10	0.560
	C	0.79617	0.80256	0.00639	10	0.639
	D	0.79055	0.79789	0.00734	10	0.734
6.4	A	0.78673	0.79337	0.00664	10	0.664
	B	0.77965	0.78552	0.00587	10	0.587
	C	0.79873	0.80331	0.00458	10	0.458
	D	0.80076	0.80671	0.00595	10	0.595
12.5	A	0.77901	0.78467	0.00566	10	0.566
	B	0.78214	0.78837	0.00623	10	0.623
	C	0.77566	0.78165	0.00599	10	0.599
	D	0.80303	0.81007	0.00704	10	0.704
25	A	0.78216	0.78612	0.00396	10	0.396
	B	0.81006	0.81647	0.00641	10	0.641
	C	0.79589	0.801	0.00511	10	0.511
	D	0.79725	0.80357	0.00632	10	0.632
50	A	0.79336	0.79886	0.0055	10	0.550
	B	0.77352	0.77945	0.00593	10	0.593
	C	0.78437	0.79064	0.00627	10	0.627
	D	0.79601	0.80215	0.00614	10	0.614
100	A	0.79787	0.80494	0.00707	10	0.707
	B	0.80658	0.81357	0.00699	10	0.699
	C	0.79341	0.79988	0.00647	10	0.647
	D	0.79161	0.79748	0.00587	10	0.587

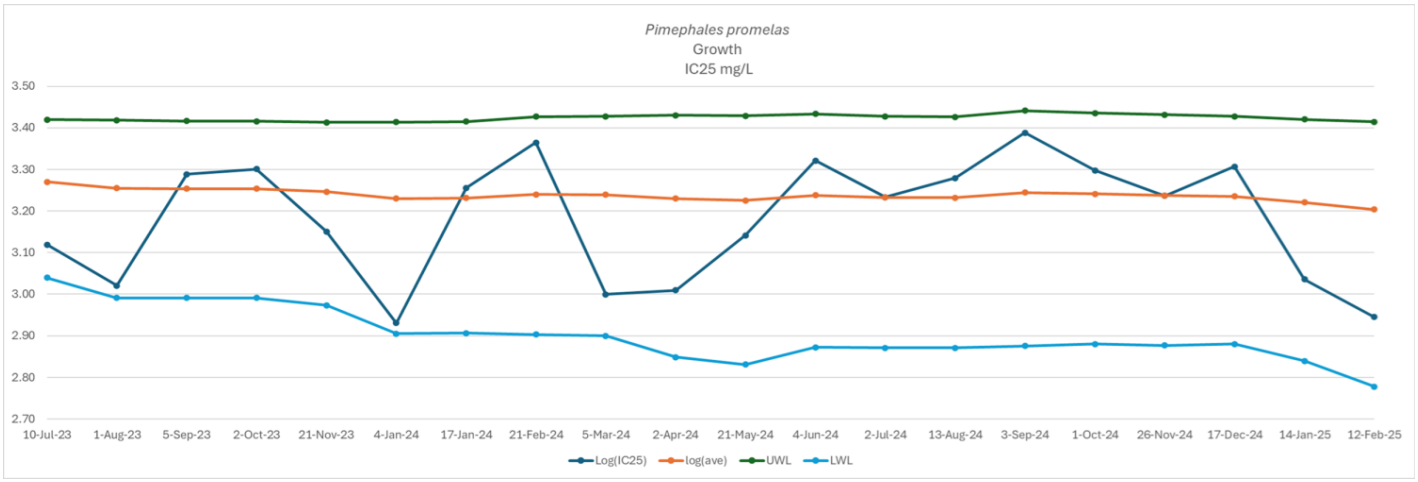
VI. Standard Reference Toxicants
Sodium Chloride in synthetic moderately hard water.

Pimephales promelas (Fathead minnow)
Chronic Reference Toxcity: 2/12/2025

Job No.	192-18837	
Survival LC-50:	2370	mg/L
Growth IC-25:	881.9	Mg/L

Appendix (Reference Toxicity): Test 1000.0
Chronic Toxicant, *Pimephales promelas* (Fathead minnow)





Appendix (Summary): Test 1000.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead minnow)
SURVIVAL AND GROWTH

NPDES No.: WA0093317
Date and Time Initiated: 3/4/2025 at 1159
Date and Time Terminated: 3/11/2025 at 1333
Dilution Water: Synthetic Moderately Hard

DATA TABLE FOR SURVIVAL

Effluent Conc.%	Percent Survival in replicate chambers				Mean percent survival			CV %
	A	B	C	D	24 hr	48 hr	7 days	
Control	100	90	100	100	100	100	97.5	5.13
6.4	100	100	80	90	100	100	92.5	10.35
12.5	100	90	100	90	100	100	95	6.08
25	60	90	90	90	97.5	95	82.5	18.18
50	90	80	90	90	100	100	87.5	5.71
100	100	100	100	80	100	100	95	10.53

DATA TABLE FOR GROWTH

Effluent Conc.%	Average dry weight, mg Replicate Chamber				Mean dry weight, mg	CV %
	A	B	C	D		
Control	0.675	0.560	0.639	0.734	0.652	11.16
6.4	0.664	0.587	0.458	0.595	0.576	14.92
12.5	0.566	0.623	0.599	0.704	0.623	9.44
25	0.396	0.641	0.511	0.632	0.545	21.22
50	0.550	0.593	0.627	0.614	0.596	5.66
100	0.707	0.699	0.647	0.587	0.660	8.40

CV = Coefficient of Variation = standard deviation * 100 / mean

Appendix (Summary): Test 1000.0
CHRONIC TOXICITY SUMMARY FORM
Pimephales promelas (Fathead minnow)
CHEMICAL PARAMETERS CHART

Dilution	Day						
Control	1	2	3	4	5	6	7
D.O. initial	8.70	9.05	9.04	9.00	9.43	9.23	9.19
D.O. Final	7.94	8.36	7.33	7.64	6.94	6.60	6.78
pH initial	7.67	7.71	7.42	7.54	7.69	7.79	7.81
pH Final	7.43	7.56	7.32	7.34	7.21	7.16	7.17

Dilution	Day						
25	1	2	3	4	5	6	7
D.O. initial	8.63	8.92	9.04	8.96	9.09	8.91	8.99
D.O. Final	7.36	8.28	7.22	7.76	7.12	6.65	7.44
pH initial	7.66	7.61	7.65	7.64	7.66	7.72	7.73
pH Final	7.49	7.67	7.39	7.44	7.40	7.31	7.40

Dilution	Day						
6.4	1	2	3	4	5	6	7
D.O. initial	8.72	9.01	9.05	8.94	9.28	9.09	9.00
D.O. Final	7.46	8.26	7.23	7.54	6.67	6.71	6.94
pH initial	7.72	7.65	7.57	7.55	7.68	7.76	7.80
pH Final	7.46	7.61	7.33	7.38	7.28	7.26	7.24

Dilution	Day						
50	1	2	3	4	5	6	7
D.O. initial	8.65	8.90	9.20	9.11	9.14	8.85	9.02
D.O. Final	7.31	8.25	7.28	7.48	6.71	6.74	6.82
pH initial	7.70	7.66	7.64	7.71	7.64	7.69	7.63
pH Final	7.62	7.76	7.50	7.47	7.38	7.37	7.34

Dilution	Day						
12.5	1	2	3	4	5	6	7
D.O. initial	8.67	9.04	9.08	8.95	9.27	8.97	8.95
D.O. Final	7.21	8.08	7.11	7.30	6.83	6.67	6.73
pH initial	7.70	7.63	7.51	7.62	7.73	7.79	7.76
pH Final	7.41	7.58	7.36	7.39	7.34	7.28	7.26

Dilution	Day						
100	1	2	3	4	5	6	7
D.O. initial	8.67	9.21	9.06	9.14	9.36	9.19	9.50
D.O. Final	7.36	8.13	7.21	7.61	6.99	6.79	6.94
pH initial	7.71	7.62	7.61	7.62	7.49	7.59	7.41
pH Final	7.82	7.90	7.60	7.58	7.52	7.47	7.42

CETIS Summary Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

Batch ID:	03-5340-1572	**Test Type:**	Growth-Survival (7d)	**Analyst:**			
Start Date:	04 Mar-25 11:59	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water		
Ending Date:	11 Mar-25 13:33	**Species:**	Pimephales promelas	**Brine:**			
Test Length:	7d 2h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture	**Age:**	<24

Sample ID:	16-7765-0019	**Code:**	275452	**Project:**	
Sample Date:	03 Mar-25 08:56	**Material:**	POTW Effluent	**Source:**	Jacobs Spokane County (WA0093317
Receipt Date:	04 Mar-25 08:10	**CAS (PC):**		**Station:**	BIO25030306
Sample Age:	27h	**Client:**			

Comments: DST makes setup time as 12:59

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	PMSD	TU
08-8160-2318	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	14.3%	1
10-9606-4107	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	100	>100	---	19.6%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU
20-7062-9409	7d Survival Rate	Linear Interpolation (ICPIN)	LC50	>100	---	---	<1
03-7003-0930	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	IC25	>100	---	---	<1

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
08-8160-2318	7d Survival Rate	Control Resp	0.975	0.8	>>	Yes	Passes Criteria
20-7062-9409	7d Survival Rate	Control Resp	0.975	0.8	>>	Yes	Passes Criteria
03-7003-0930	Mean Dry Biomass-mg	Control Resp	0.652	0.25	>>	Yes	Passes Criteria
10-9606-4107	Mean Dry Biomass-mg	Control Resp	0.652	0.25	>>	Yes	Passes Criteria
10-9606-4107	Mean Dry Biomass-mg	PMSD	0.1957	0.12	0.3	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	0.00%
6.4		4	0.9250	0.7727	1.0000	0.8000	1.0000	0.0479	0.0957	10.35%	5.13%
12.5		4	0.9500	0.8581	1.0000	0.9000	1.0000	0.0289	0.0577	6.08%	2.56%
25		4	0.8250	0.5863	1.0000	0.6000	0.9000	0.0750	0.1500	18.18%	15.38%
50		4	0.8750	0.7954	0.9546	0.8000	0.9000	0.0250	0.0500	5.71%	10.26%
100		4	0.9500	0.7909	1.0000	0.8000	1.0000	0.0500	0.1000	10.53%	2.56%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.652	0.5362	0.7678	0.56	0.734	0.03638	0.07277	11.16%	0.00%
6.4		4	0.576	0.4393	0.7127	0.458	0.664	0.04296	0.08593	14.92%	11.66%
12.5		4	0.623	0.5294	0.7166	0.566	0.704	0.02942	0.05884	9.44%	4.45%
25		4	0.545	0.3609	0.7291	0.396	0.641	0.05784	0.1157	21.22%	16.41%
50		4	0.596	0.5424	0.6496	0.55	0.627	0.01686	0.03372	5.66%	8.59%
100		4	0.66	0.5717	0.7483	0.587	0.707	0.02773	0.05546	8.40%	-1.23%

CETIS Summary Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

7d Survival Rate Detail MD5: 02F4C2AD42B4CBF75E81DD4BDA6E175E

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	0.9000	1.0000	1.0000
6.4		1.0000	1.0000	0.8000	0.9000
12.5		1.0000	0.9000	1.0000	0.9000
25		0.6000	0.9000	0.9000	0.9000
50		0.9000	0.8000	0.9000	0.9000
100		1.0000	1.0000	1.0000	0.8000

Mean Dry Biomass-mg Detail MD5: D3E464DE41F8799576CF2D5FD47092D9

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.675	0.56	0.639	0.734
6.4		0.664	0.587	0.458	0.595
12.5		0.566	0.623	0.599	0.704
25		0.396	0.641	0.511	0.632
50		0.55	0.593	0.627	0.614
100		0.707	0.699	0.647	0.587

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	9/10	10/10	10/10
6.4		10/10	10/10	8/10	9/10
12.5		10/10	9/10	10/10	9/10
25		6/10	9/10	9/10	9/10
50		9/10	8/10	9/10	9/10
100		10/10	10/10	10/10	8/10

CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

Analysis ID:	08-8160-2318	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:38	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	02F4C2AD42B4CBF75E81DD4BDA6E175	**Editor ID:**	009-809-445-9
Batch ID:	03-5340-1572	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	04 Mar-25 11:59	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	11 Mar-25 13:33	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	7d 2h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:** <24
Sample ID:	16-7765-0019	**Code:**	275452	**Project:**	
Sample Date:	03 Mar-25 08:56	**Material:**	POTW Effluent	**Source:**	Jacobs Spokane County (WA0093317
Receipt Date:	04 Mar-25 08:10	**CAS (PC):**		**Station:**	BIO25030306
Sample Age:	27h	**Client:**			

Comments: DST makes setup time as 12:59

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.1393	14.29%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.4	6	15.5	10	2	CDF	0.5438	Non-Significant Effect
		12.5	6	16	10	2	CDF	0.6105	Non-Significant Effect
		25	6	11.5	10	1	CDF	0.1083	Non-Significant Effect
		50	6	11.5	10	1	CDF	0.1083	Non-Significant Effect
		100	6	17.5	10	1	CDF	0.7867	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.975	0.8	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.133388	0.0266775	5	1.628	0.2032	Non-Significant Effect
Error	0.294883	0.0163824	18			
Total	0.428271		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	3.65	15.09	0.6008	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8385	0.884	0.0013	Non-Normal Distribution

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
6.4		4	0.9250	0.7727	1.0000	0.9500	0.8000	1.0000	0.0479	10.35%	5.13%
12.5		4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	2.56%
25		4	0.8250	0.5863	1.0000	0.9000	0.6000	0.9000	0.0750	18.18%	15.38%
50		4	0.8750	0.7954	0.9546	0.9000	0.8000	0.9000	0.0250	5.71%	10.26%
100		4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	2.56%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.3710	1.2420	1.5010	1.4120	1.2490	1.4120	0.0407	5.94%	0.00%
6.4		4	1.2950	1.0610	1.5290	1.3310	1.1070	1.4120	0.0735	11.35%	5.56%
12.5		4	1.3310	1.1810	1.4800	1.3310	1.2490	1.4120	0.0471	7.07%	2.97%
25		4	1.1580	0.8695	1.4470	1.2490	0.8861	1.2490	0.0907	15.67%	15.53%
50		4	1.2140	1.1010	1.3260	1.2490	1.1070	1.2490	0.0355	5.85%	11.50%
100		4	1.3360	1.0930	1.5780	1.4120	1.1070	1.4120	0.0762	11.41%	2.59%

CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

Analysis ID:	08-8160-2318	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:38	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	02F4C2AD42B4CBF75E81DD4BDA6E175	**Editor ID:**	009-809-445-9

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	0.9000	1.0000	1.0000
6.4		1.0000	1.0000	0.8000	0.9000
12.5		1.0000	0.9000	1.0000	0.9000
25		0.6000	0.9000	0.9000	0.9000
50		0.9000	0.8000	0.9000	0.9000
100		1.0000	1.0000	1.0000	0.8000

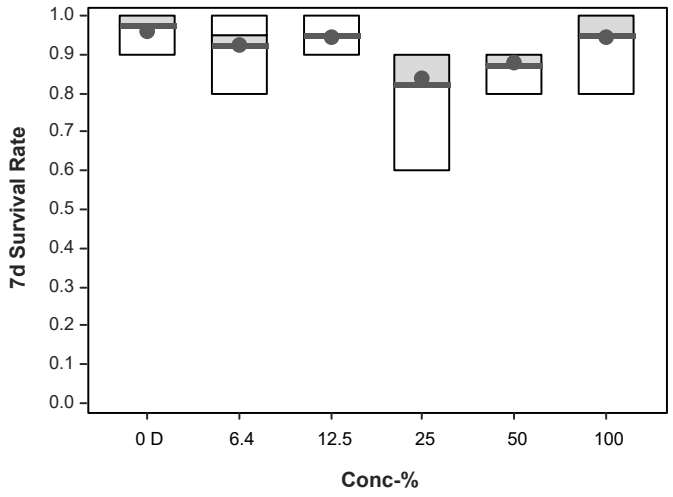
Angular (Corrected) Transformed Detail

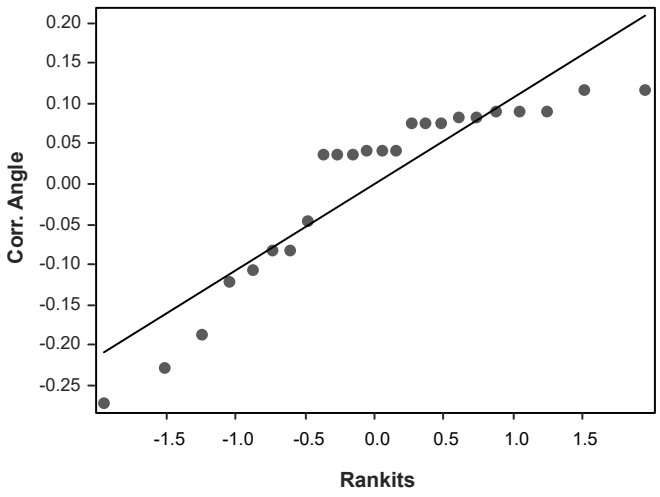
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.4120	1.2490	1.4120	1.4120
6.4		1.4120	1.4120	1.1070	1.2490
12.5		1.4120	1.2490	1.4120	1.2490
25		0.8861	1.2490	1.2490	1.2490
50		1.2490	1.1070	1.2490	1.2490
100		1.4120	1.4120	1.4120	1.1070

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	9/10	10/10	10/10
6.4		10/10	10/10	8/10	9/10
12.5		10/10	9/10	10/10	9/10
25		6/10	9/10	9/10	9/10
50		9/10	8/10	9/10	9/10
100		10/10	10/10	10/10	8/10

Graphics





CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

Analysis ID:	10-9606-4107	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:39	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	D3E464DE41F8799576CF2D5FD47092D9	**Editor ID:**	009-809-445-9
Batch ID:	03-5340-1572	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	04 Mar-25 11:59	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	11 Mar-25 13:33	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	7d 2h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:** <24
Sample ID:	16-7765-0019	**Code:**	275452	**Project:**	
Sample Date:	03 Mar-25 08:56	**Material:**	POTW Effluent	**Source:**	Jacobs Spokane County (WA0093317
Receipt Date:	04 Mar-25 08:10	**CAS (PC):**		**Station:**	BIO25030306
Sample Age:	27h	**Client:**			

Comments: DST makes setup time as 12:59

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.1276	19.57%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.4	6	1.433	2.407	0.1276	CDF	0.2500	Non-Significant Effect
		12.5	6	0.547	2.407	0.1276	CDF	0.6269	Non-Significant Effect
		25	6	2.018	2.407	0.1276	CDF	0.1011	Non-Significant Effect
		50	6	1.056	2.407	0.1276	CDF	0.3973	Non-Significant Effect
		100	6	-0.1509	2.407	0.1276	CDF	0.8739	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.652	0.25	>>	Yes	Passes Criteria
PMSD	0.1957	0.12	0.3	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.039998	0.0079996	5	1.423	0.2635	Non-Significant Effect
Error	0.1012	0.0056223	18			
Total	0.141199		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	4.268	15.09	0.5115	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9607	0.884	0.4525	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.652	0.5362	0.7678	0.657	0.56	0.734	0.03638	11.16%	0.00%
6.4		4	0.576	0.4393	0.7127	0.591	0.458	0.664	0.04296	14.92%	11.66%
12.5		4	0.623	0.5294	0.7166	0.611	0.566	0.704	0.02942	9.44%	4.45%
25		4	0.545	0.3609	0.7291	0.5715	0.396	0.641	0.05784	21.22%	16.41%
50		4	0.596	0.5424	0.6496	0.6035	0.55	0.627	0.01686	5.66%	8.59%
100		4	0.66	0.5717	0.7483	0.673	0.587	0.707	0.02773	8.40%	-1.23%

CETIS Analytical Report

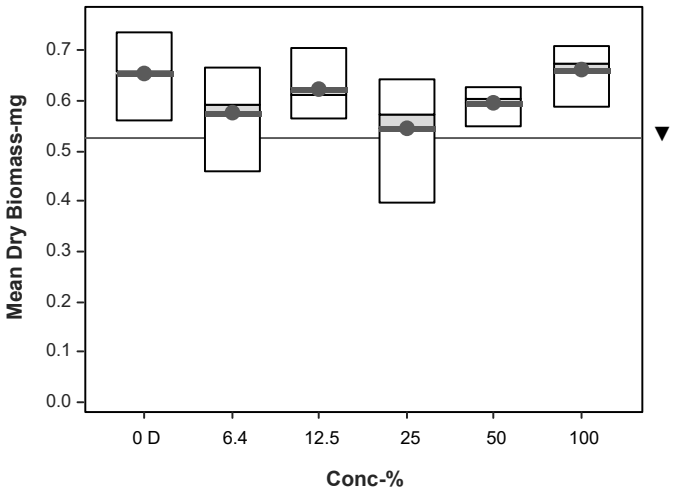
Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

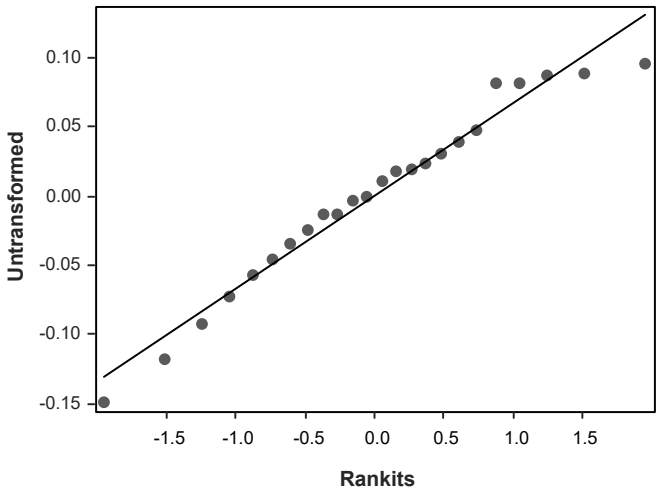
Analysis ID:	10-9606-4107	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:39	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	D3E464DE41F8799576CF2D5FD47092D9	**Editor ID:**	009-809-445-9

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.675	0.56	0.639	0.734
6.4		0.664	0.587	0.458	0.595
12.5		0.566	0.623	0.599	0.704
25		0.396	0.641	0.511	0.632
50		0.55	0.593	0.627	0.614
100		0.707	0.699	0.647	0.587

Graphics





CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

Analysis ID:	20-7062-9409	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	02F4C2AD42B4CBF75E81DD4BDA6E175	**Editor ID:**	009-809-445-9
Batch ID:	03-5340-1572	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	04 Mar-25 11:59	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	11 Mar-25 13:33	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	7d 2h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:** <24
Sample ID:	16-7765-0019	**Code:**	275452	**Project:**	
Sample Date:	03 Mar-25 08:56	**Material:**	POTW Effluent	**Source:**	Jacobs Spokane County (WA0093317
Receipt Date:	04 Mar-25 08:10	**CAS (PC):**		**Station:**	BIO25030306
Sample Age:	27h	**Client:**			

Comments: DST makes setup time as 12:59

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1748428	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.975	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC50	>100	---	---	<1	---	---

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	D	4	0.9750	1.0000	0.9000	1.0000	5.13%	0.00%	39/40	0.9750	0.00%
6.4		4	0.9250	0.9500	0.8000	1.0000	10.35%	5.13%	37/40	0.9375	3.85%
12.5		4	0.9500	0.9500	0.9000	1.0000	6.08%	2.56%	38/40	0.9375	3.85%
25		4	0.8250	0.9000	0.6000	0.9000	18.18%	15.38%	33/40	0.8833	9.40%
50		4	0.8750	0.9000	0.8000	0.9000	5.71%	10.26%	35/40	0.8833	9.40%
100		4	0.9500	1.0000	0.8000	1.0000	10.53%	2.56%	38/40	0.8833	9.40%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	0.9000	1.0000	1.0000
6.4		1.0000	1.0000	0.8000	0.9000
12.5		1.0000	0.9000	1.0000	0.9000
25		0.6000	0.9000	0.9000	0.9000
50		0.9000	0.8000	0.9000	0.9000
100		1.0000	1.0000	1.0000	0.8000

7d Survival Rate Binomials

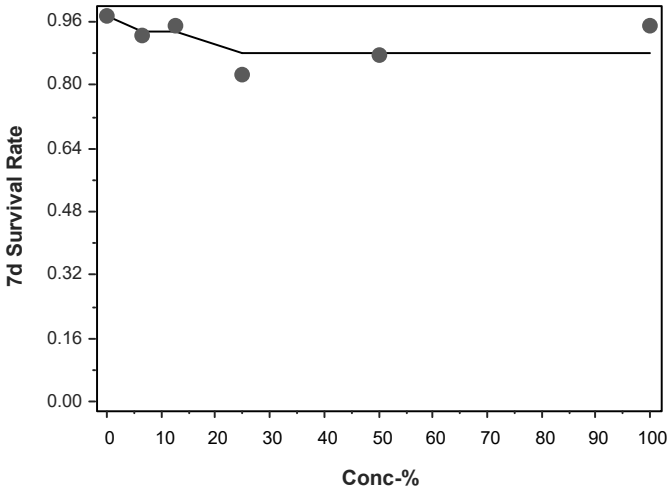
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	9/10	10/10	10/10
6.4		10/10	10/10	8/10	9/10
12.5		10/10	9/10	10/10	9/10
25		6/10	9/10	9/10	9/10
50		9/10	8/10	9/10	9/10
100		10/10	10/10	10/10	8/10

CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

Analysis ID:	20-7062-9409	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	02F4C2AD42B4CBF75E81DD4BDA6E175	**Editor ID:**	009-809-445-9

Graphics



CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

Analysis ID:	03-7003-0930	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	D3E464DE41F8799576CF2D5FD47092D9	**Editor ID:**	009-809-445-9
Batch ID:	03-5340-1572	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	04 Mar-25 11:59	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	11 Mar-25 13:33	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	7d 2h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:** <24
Sample ID:	16-7765-0019	**Code:**	275452	**Project:**	
Sample Date:	03 Mar-25 08:56	**Material:**	POTW Effluent	**Source:**	Jacobs Spokane County (WA0093317
Receipt Date:	04 Mar-25 08:10	**CAS (PC):**		**Station:**	BIO25030306
Sample Age:	27h	**Client:**			

Comments: DST makes setup time as 12:59

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	154051	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.652	0.25	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC25	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	D	4	0.652	0.657	0.56	0.734	11.16%	0.00%	0.652	0.00%
6.4		4	0.576	0.591	0.458	0.664	14.92%	11.66%	0.6	7.98%
12.5		4	0.623	0.611	0.566	0.704	9.44%	4.45%	0.6	7.98%
25		4	0.545	0.5715	0.396	0.641	21.22%	16.41%	0.6	7.98%
50		4	0.596	0.6035	0.55	0.627	5.66%	8.59%	0.6	7.98%
100		4	0.66	0.673	0.587	0.707	8.40%	-1.23%	0.6	7.98%

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.675	0.56	0.639	0.734
6.4		0.664	0.587	0.458	0.595
12.5		0.566	0.623	0.599	0.704
25		0.396	0.641	0.511	0.632
50		0.55	0.593	0.627	0.614
100		0.707	0.699	0.647	0.587

CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test **Eurofins Arkansas**

Analysis ID:	03-7003-0930	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:39	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	D3E464DE41F8799576CF2D5FD47092D9	**Editor ID:**	009-809-445-9

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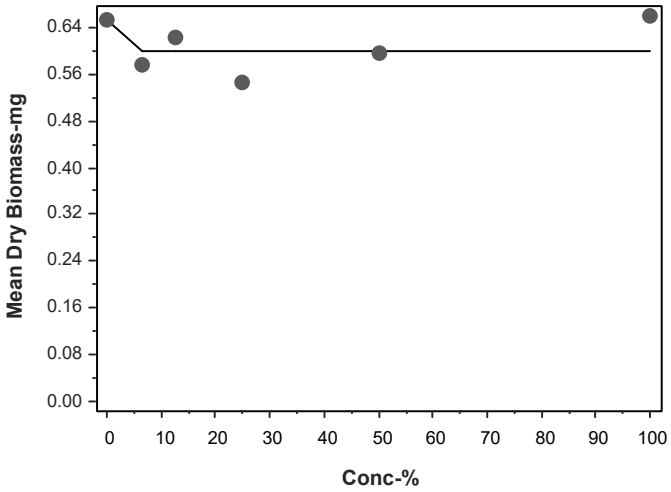


Re: Acute Biomonitoring utilizing *Pimephales promelas* (Fathead Minnow)
Spokane County Water
Client NPDES Permit No. WA0093317
Control No. 192-19554-1

This report is the analytical results and supporting information for the samples submitted to Eurofins Arkansas. The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the Lab Manager or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" EPA-821-R-02-012, Fifth Edition, October 2002. Test results are summarized below:

Acute *Pimephales promelas* (Fathead minnow) Survival Test. The following were concluded from the test:

The control failed to meet method requirements. The test is therefore invalid and will need to be repeated. The data is included for your review.

Table of Contents

I. Introduction and Summary

Biomonitoring testing of 96-hour renewal definitive toxicity *Pimephales promelas* were performed.

The *Pimephales promelas* test was conducted from March 4, 2025 at 1610 to March 8, 2025 at 1624.

The tests were performed in accordance with EPA-821-R-02-012. Statistical analyses were performed on the observed data.

The tests were conducted in temperature and light cycle controlled environmental chamber. The test temperature was 25 degrees C +/- 1 degree for the *Pimephales promelas*.

II. Control Acceptance Criteria

ORGANISM	CRITERIA	RESULTS	PASS/FAIL
Pimephales promelas	Control Survival >= 90%	87.5	FAIL
Pimephales promelas	Control Dilution CV <= 40	10.94	PASS
Pimephales promelas	Critical Dilution CV <= 40	20.38	PASS

III. Outlined Report

A. Introduction

Permit Number: WA0093317

Test Requirements: 96-hour renewal definitive toxicity test using:
Pimephales promelas

B. Effluent Samples:

Sampling Point: Spokane County Water

Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	8.67	9.06
pH (standard units)	7.71	7.61
Alkalinity (mg/l as CaCO3)	93	73
Hardness (mg/l as CaCO3)	200	290
Conductivity (umhos/cm)	830	1001
Residual Chlorine (mg/l)	<0.05	<0.05
Ammonia (mg/l)	0.27	0.23

C. Dilution Water Samples: Synthetic Moderately Hard
Chemical Data:

Analysis	192-19341-A-3	192-19341-A-2
Dissolved oxygen (mg/l)	8.70	9.04
pH (standard units)	7.67	7.42
Alkalinity (mg/l as CaCO3)	59	57
Hardness (mg/l as CaCO3)	85	87
Conductivity (umhos/cm)	286	292
Residual Chlorine (mg/l)	<0.05	<0.05
Ammonia (mg/l)	NA	NA

D. Test Methods
Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (Fifth Ed.), EPA-821-R-02-012, 48-hour acute definitive test.

Endpoints:
Death; the criteria employed to establish death are:
No movement
No reaction to gentle prodding

Criteria	*Pimephales promelas*
Type and Volume of Test Chamber	500 ml disposable beaker
Volume of Sample	250 ml
Organisms per chamber	10
Replicates per dilution	4
Test Temperature	25 deg. C
Test Initiated	March 4, 2025 at 1610
Test Terminated	March 8, 2025 at 1624
Feeding	None required
Age of Test Organisms	2 days

E. Test Organisms
Pimephales promelas

F. Quality Assurance - Toxicity Tests

Reference Toxicant: Sodium Chloride

Date of test:

Pimephales promelas: 2/24/2024

Synthetic moderately hard dilution water used

Organism	LC50	Warning Limits
Pimephales promelas	7.63 g/l	6.52-9.18 g/l

G. Organism History

Pimephales promelas (Fathead minnow)

Date: March 4, 2025 at 1610

Age: 2 days

Source: In-house culture

IV. Results Summary

Pimephales promelas are exposed in a static renewal system to different concentrations of effluent and dilution water. Effluent dilutions for this test were 6.4%, 12.5%, 25%, 50%, 100%. The low-flow concentration was 50%. Test results were based on survival.

Pimephales promelas

The *Pimephales promelas* test was conducted from March 4, 2025 at 1610 to March 8, 2025 at 1624.

Concentration	24 hour % Survival	48 hour % Survival	72 hour % Survival	96 hour % Survival
Control	95	92.5	87.5	87.5
6.4%	97.5	97.5	97.5	97.5
12.5%	95	95	90	90
25%	97.5	97.5	97.5	97.5
50%	95	95	87.5	85
100%	95	95	75	75

Appendix (Data)

Pimephales promelas
Survival Data

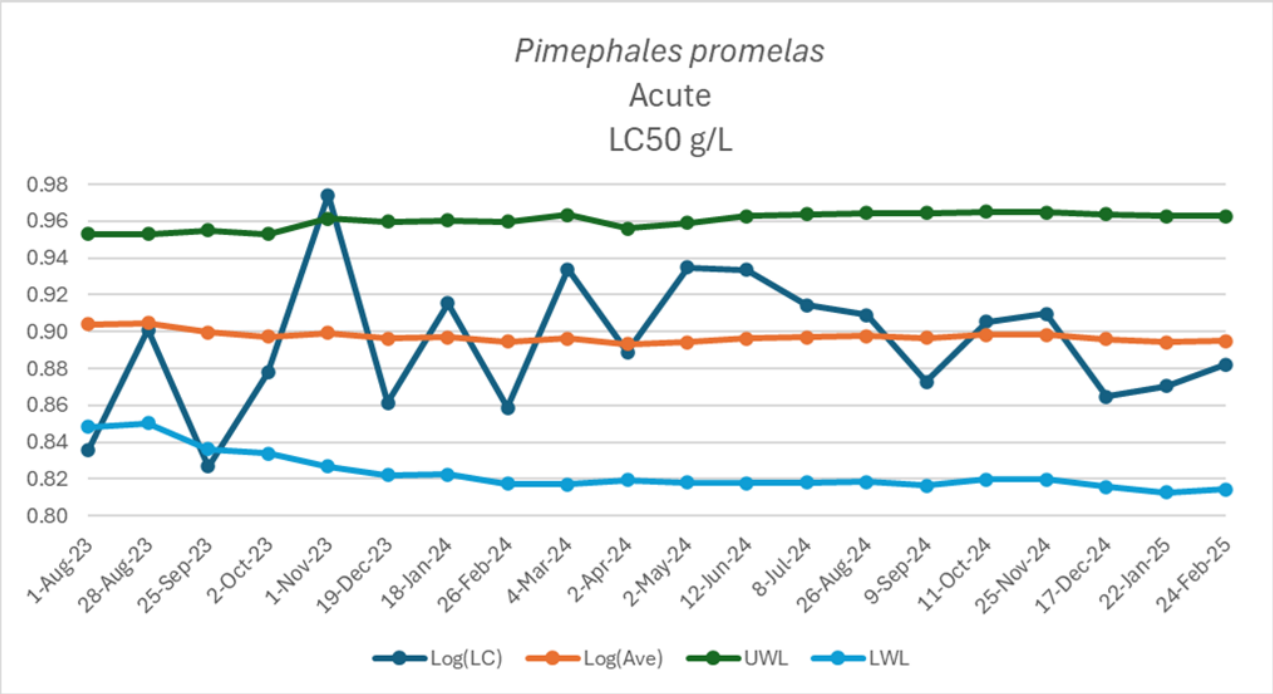
Number of organisms per chamber: 10 Age of organisms: 2 days
Volume of test chamber: 500 ml Volume of test solution: 250 ml

Effluent Concentration		Number of Survivors				% Survival	CV %
		24 Hours	48 Hours	72 Hours	96 Hours		
Control	rep. A	10	10	10	10	87.5	10.94
	rep. B	9	9	9	9		
	rep. C	9	9	8	8		
	rep. D	10	9	8	8		
6.4%	rep. A	10	10	10	10	97.5	5.13
	rep. B	10	10	10	10		
	rep. C	10	10	10	10		
	rep. D	9	9	9	9		
12.5%	rep. A	10	10	10	10	90	15.71
	rep. B	10	10	10	10		
	rep. C	9	9	9	9		
	rep. D	9	9	7	7		
25%	rep. A	10	10	10	10	97.5	5.13
	rep. B	10	10	10	10		
	rep. C	10	10	10	10		
	rep. D	9	9	9	9		
50%	rep. A	9	9	9	9	85	20.38
	rep. B	10	10	7	6		
	rep. C	9	9	9	9		
	rep. D	10	10	10	10		
100%	rep. A	10	10	7	7	75	7.70
	rep. B	8	8	7	7		
	rep. C	10	10	8	8		
	rep. D	10	10	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix (Reference Toxicant)

Acute Reference Toxicant, *Pimephales promelas* (Fathead Minnow)



Appendix (Water Chemistry)

Chemical Data for
Pimephales promelas

Day 1		Control	6.4%	12.5%	25%	50%	100%
DO, mg/l	Initial	8.70	8.72	8.67	8.63	8.65	8.67
DO, mg/l	Final	8.33	8.08	8.07	8.01	8.01	8.04
pH, su	Initial	7.67	7.72	7.70	7.66	7.70	7.71
pH, su	Final	7.72	7.75	7.77	7.82	7.92	8.04
Conductivity, umho/cm		286	350	382	418	559	830
Alkalinity, mg/l		59	NA	NA	NA	NA	93
Hardness, mg/l		85	NA	NA	NA	NA	200
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	<0.05

Day 2		Control	6.4%	12.5%	25%	50%	100%
DO, mg/l	Final	8.48	8.41	8.39	8.45	8.35	8.32
pH, su	Final	7.75	7.86	7.89	7.92	8.02	8.16

Day 3		Control	6.4%	12.5%	25%	50%	100%
DO, mg/l	Initial	9.04	9.05	9.08	9.04	9.20	9.06
DO, mg/l	Final	8.35	8.14	8.21	8.26	8.08	8.25
pH, su	Initial	7.42	7.57	7.51	7.65	7.64	7.61
pH, su	Final	7.78	7.80	7.81	7.87	7.95	8.03
Conductivity, umho/cm		292	333	378	466	641	1001
Alkalinity, mg/l		57	NA	NA	NA	NA	73
Hardness, mg/l		87	NA	NA	NA	NA	290
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	<0.05

Day 4		Control	6.4%	12.5%	25%	50%	100%
DO, mg/l	Final	8.65	8.72	8.76	8.63	8.69	8.60
pH, su	Final	7.77	7.82	7.90	7.90	7.99	8.11

CETIS Summary Report

Report Date: 13 Mar-25 17:48 (p 1 of 1)
Test Code/ID: 19554_FH / 21-1304-5991

Fathead Minnow 96-h Acute Survival Test **Eurofins Arkansas**

Batch ID:	04-0560-6068	**Test Type:**	Survival (96h)	**Analyst:**			
Start Date:	04 Mar-25 16:10	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Mod-Hard Synthetic Water		
Ending Date:	08 Mar-25 16:24	**Species:**	Pimephales promelas	**Brine:**			
Test Length:	4d 0h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture	**Age:**	2D

Sample ID:	19-9407-5250	**Code:**	19554	**Project:**			
Sample Date:	03 Mar-25 08:56	**Material:**	POTW Effluent	**Source:**	Jacobs Spokane County (WA0093317		
Receipt Date:	04 Mar-25 08:10	**CAS (PC):**		**Station:**	BIO25030306		
Sample Age:	31h	**Client:**					

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	PMSD	TU
10-0932-9031	96h Survival Rate	Dunnett Multiple Comparison Test	100	>100	---	22.2%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU
18-5883-0570	96h Survival Rate	Linear Interpolation (ICPIN)	LC50	>100	---	---	<1

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
10-0932-9031	96h Survival Rate	Control Resp	0.875	0.9	>>	Yes	Below Criteria
18-5883-0570	96h Survival Rate	Control Resp	0.875	0.9	>>	Yes	Below Criteria

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.8750	0.7227	1.0000	0.8000	1.0000	0.0479	0.0957	10.94%	0.00%
6.4		4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	-11.43%
12.5		4	0.9000	0.6750	1.0000	0.7000	1.0000	0.0707	0.1414	15.71%	-2.86%
25		4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	-11.43%
50		4	0.8500	0.5744	1.0000	0.6000	1.0000	0.0866	0.1732	20.38%	2.86%
100		4	0.7500	0.6581	0.8419	0.7000	0.8000	0.0289	0.0577	7.70%	14.29%

96h Survival Rate Detail MD5: E33236519867045BC3F233923F651842

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	0.9000	0.8000	0.8000
6.4		1.0000	1.0000	1.0000	0.9000
12.5		1.0000	1.0000	0.9000	0.7000
25		1.0000	1.0000	1.0000	0.9000
50		0.9000	0.6000	0.9000	1.0000
100		0.7000	0.7000	0.8000	0.8000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	9/10	8/10	8/10
6.4		10/10	10/10	10/10	9/10
12.5		10/10	10/10	9/10	7/10
25		10/10	10/10	10/10	9/10
50		9/10	6/10	9/10	10/10
100		7/10	7/10	8/10	8/10

CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test **Eurofins Arkansas**

Analysis ID:	10-0932-9031	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:46	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	E33236519867045BC3F233923F651842	**Editor ID:**	009-809-445-9
Batch ID:	04-0560-6068	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	04 Mar-25 16:10	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	08 Mar-25 16:24	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	4d 0h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:** 2D
Sample ID:	19-9407-5250	**Code:**	19554	**Project:**	
Sample Date:	03 Mar-25 08:56	**Material:**	POTW Effluent	**Source:**	Jacobs Spokane County (WA0093317
Receipt Date:	04 Mar-25 08:10	**CAS (PC):**		**Station:**	BIO25030306
Sample Age:	31h	**Client:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.1941	22.18%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.4	6	-1.477	2.407	0.2484	CDF	0.9956	Non-Significant Effect
		12.5	6	-0.4576	2.407	0.2484	CDF	0.9335	Non-Significant Effect
		25	6	-1.477	2.407	0.2484	CDF	0.9956	Non-Significant Effect
		50	6	0.1918	2.407	0.2484	CDF	0.7707	Non-Significant Effect
		100	6	1.645	2.407	0.2484	CDF	0.1847	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.875	0.9	>>	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.293922	0.0587844	5	2.761	0.0507	Non-Significant Effect
Error	0.383246	0.0212914	18			
Total	0.677168		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	6.477	15.09	0.2625	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9183	0.884	0.0535	Normal Distribution

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.8750	0.7227	1.0000	0.8500	0.8000	1.0000	0.0479	10.94%	0.00%
6.4		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	-11.43%
12.5		4	0.9000	0.6750	1.0000	0.9500	0.7000	1.0000	0.0707	15.71%	-2.86%
25		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	-11.43%
50		4	0.8500	0.5744	1.0000	0.9000	0.6000	1.0000	0.0866	20.38%	2.86%
100		4	0.7500	0.6581	0.8419	0.7500	0.7000	0.8000	0.0289	7.70%	14.29%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.2190	0.9879	1.4500	1.1780	1.1070	1.4120	0.0726	11.91%	0.00%
6.4		4	1.3710	1.2420	1.5010	1.4120	1.2490	1.4120	0.0407	5.94%	-12.51%
12.5		4	1.2660	0.9499	1.5820	1.3310	0.9912	1.4120	0.0994	15.70%	-3.87%
25		4	1.3710	1.2420	1.5010	1.4120	1.2490	1.4120	0.0407	5.94%	-12.51%
50		4	1.1990	0.8453	1.5530	1.2490	0.8861	1.4120	0.1112	18.54%	1.62%
100		4	1.0490	0.9426	1.1560	1.0490	0.9912	1.1070	0.0335	6.38%	13.92%

CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test **Eurofins Arkansas**

Analysis ID:	10-0932-9031	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:46	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	E33236519867045BC3F233923F651842	**Editor ID:**	009-809-445-9

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	0.9000	0.8000	0.8000
6.4		1.0000	1.0000	1.0000	0.9000
12.5		1.0000	1.0000	0.9000	0.7000
25		1.0000	1.0000	1.0000	0.9000
50		0.9000	0.6000	0.9000	1.0000
100		0.7000	0.7000	0.8000	0.8000

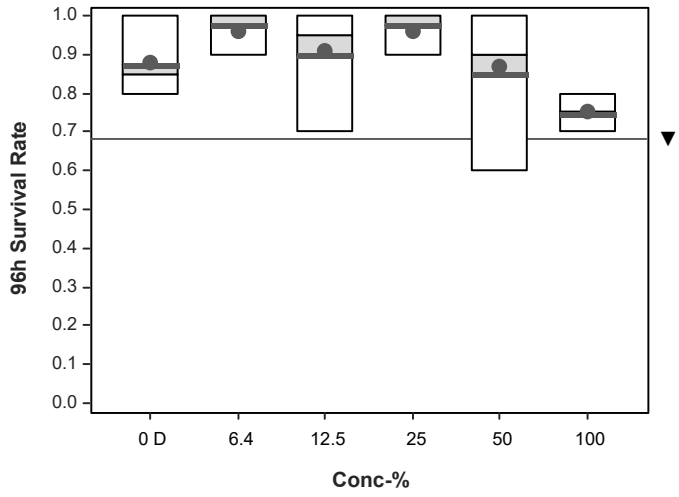
Angular (Corrected) Transformed Detail

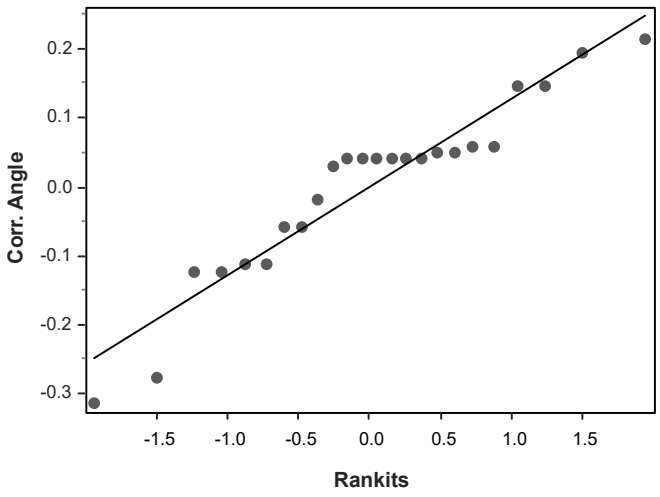
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.4120	1.2490	1.1070	1.1070
6.4		1.4120	1.4120	1.4120	1.2490
12.5		1.4120	1.4120	1.2490	0.9912
25		1.4120	1.4120	1.4120	1.2490
50		1.2490	0.8861	1.2490	1.4120
100		0.9912	0.9912	1.1070	1.1070

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	9/10	8/10	8/10
6.4		10/10	10/10	10/10	9/10
12.5		10/10	10/10	9/10	7/10
25		10/10	10/10	10/10	9/10
50		9/10	6/10	9/10	10/10
100		7/10	7/10	8/10	8/10

Graphics





CETIS Analytical Report

Report Date: 13 Mar-25 17:48 (p 1 of 2)
Test Code/ID: 19554_FH / 21-1304-5991

Fathead Minnow 96-h Acute Survival Test **Eurofins Arkansas**

Analysis ID:	18-5883-0570	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:47	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	E33236519867045BC3F233923F651842	**Editor ID:**	009-809-445-9
Batch ID:	04-0560-6068	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	04 Mar-25 16:10	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	08 Mar-25 16:24	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	4d 0h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:** 2D
Sample ID:	19-9407-5250	**Code:**	19554	**Project:**	
Sample Date:	03 Mar-25 08:56	**Material:**	POTW Effluent	**Source:**	Jacobs Spokane County (WA0093317
Receipt Date:	04 Mar-25 08:10	**CAS (PC):**		**Station:**	BIO25030306
Sample Age:	31h	**Client:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2049883	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.875	0.9	>>	Yes	Below Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC50	>100	---	---	<1	---	---

96h Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	D	4	0.8750	0.8500	0.8000	1.0000	10.94%	0.00%	35/40	0.9312	0.00%
6.4		4	0.9750	1.0000	0.9000	1.0000	5.13%	-11.43%	39/40	0.9312	0.00%
12.5		4	0.9000	0.9500	0.7000	1.0000	15.71%	-2.86%	36/40	0.9312	0.00%
25		4	0.9750	1.0000	0.9000	1.0000	5.13%	-11.43%	39/40	0.9312	0.00%
50		4	0.8500	0.9000	0.6000	1.0000	20.38%	2.86%	34/40	0.8500	8.72%
100		4	0.7500	0.7500	0.7000	0.8000	7.70%	14.29%	30/40	0.7500	19.46%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	0.9000	0.8000	0.8000
6.4		1.0000	1.0000	1.0000	0.9000
12.5		1.0000	1.0000	0.9000	0.7000
25		1.0000	1.0000	1.0000	0.9000
50		0.9000	0.6000	0.9000	1.0000
100		0.7000	0.7000	0.8000	0.8000

96h Survival Rate Binomials

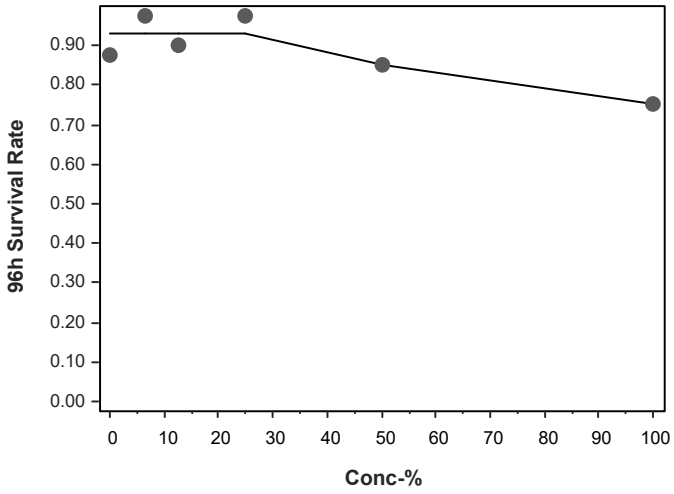
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	9/10	8/10	8/10
6.4		10/10	10/10	10/10	9/10
12.5		10/10	10/10	9/10	7/10
25		10/10	10/10	10/10	9/10
50		9/10	6/10	9/10	10/10
100		7/10	7/10	8/10	8/10

CETIS Analytical Report

Fathead Minnow 96-h Acute Survival Test **Eurofins Arkansas**

Analysis ID:	18-5883-0570	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	13 Mar-25 17:47	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	13 Mar-25 0:00	**MD5 Hash:**	E33236519867045BC3F233923F651842	**Editor ID:**	009-809-445-9

Graphics



Eurofins Arkansas
8600 Kanis Rd
Little Rock, AR 72204
Phone: 501-224-5060 Fax: 501-224-5075

Chain of Custody Record

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FXFO

192-19554 COC

Client Information	Sampler: Brandi Andrews	Lab PM: Overbey, John	Carrier Tracking No(s): 2860 2795 2032	COC No: 192-3442-1270.1
Client Contact: Brandi Andrews	Phone: 509-536-3710	E-Mail: john.overbey@et.eurofinsus.com	State of Origin: Wash.	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:	Analysis Requested		Job #:
Address: 1004 N. Freya Street	Due Date Requested: 30 Days			Preservation Codes: N - None
City: Spokane	TAT Requested (days): 30 Days			
State, Zip: WA, 99202	Compliance Project: Δ Yes Δ No			
Phone:	PO #: 148055071			
Email: brandi.andrews@jacobs.com	WO #:			
Project Name: Spokane County Water Q1 and Q3	Project #: 19200717			Other: L: 275452 T: 19554
Site: Manhole - Outfall	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1000_FH, 2000_96FHNR	Acute Fathead	Chronic Fathead	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N				
B102503306	3/2-3/25	0908-0856	C	Water				✓	✓		

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Brandi Andrews	3/3/25 1016	Jacobs			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by: D. BROWN	Date/Time: 3.4.25/0810	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.1

Ver: 10/10/2024

Eurofins Arkansas
8600 Kanis Rd
Little Rock, AR 72204
Phone: 501-224-5060 Fax: 501-224-5075

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Brandi Andrews	Lab PM: Overbey, John	Carrier Tracking No(s): 2861 1120 1045D	COC No: 192-3442-1270.1
Client Contact: Brandi Andrews	Phone: 509-536-3710	E-Mail: john.overbey@et.eurofinsus.com	State of Origin: Wash.	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:	Analysis Requested		Job #:
Address: 1004 N. Freya Street	Due Date Requested: 30 Days			Preservation Codes: N - None
City: Spokane	TAT Requested (days): 30 Days			
State, Zip: WA, 99202	Compliance Project: Δ Yes Δ No			
Phone:	PO #: 148055071			
Email: brandi.andrews@jacobs.com	WO #:			
Project Name: Spokane County Water Q1 and Q3	Project #: 19200717			
Site: Manhole Outfall	SSOW#:			Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1000_FH, 2000_96FHNR	Fathead - acute	Fathead - chronic	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N				
B10250305 08	3/4-5/25	0838-0840	C	Water				X	X		

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Brandi Andrews	3/5/25 1102			3-6-25 0742	
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		0.1

Ver: 10/10/2024

Eurofins Arkansas
8600 Kanis Rd
Little Rock, AR 72204
Phone: 501-224-5060 Fax: 501-224-5075

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Brandi Andrews	Lab PM: Overbey, John	Carrier Tracking No(s): 2861 9991 0921	COC No: 192-3442-1270.1
Client Contact: Brandi Andrews	Phone: 509-536-3710	E-Mail: john.overbey@et.eurofinsus.com	State of Origin: Wash.	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 1004 N. Freya Street	Due Date Requested: 30 Days			
City: Spokane	TAT Requested (days): 30 Days			
State, Zip: WA, 99202	Compliance Project: ∆ Yes ∆ No			
Phone: 509-536-37	PO #: 148055071			
Email: brandi.andrews@jacobs.com	WO #:			
Project Name: Spokane County Water Q1 and Q3	Project #: 19200717			
Site: Manhole-Outfall	SSOW#:			

Analysis Requested

Preservation Codes: N - None

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1000_FH, 2000_96FHNR	Fathead - acute	Fathead - chronic	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N				
B102503070604	3/6-7/25	0847 0855	C	Water				✓	✓		

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Brandi Andrews	3/7/25 1048	Jacobs	Andrew Tawney	3/8/25 0935	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.4

Ver: 10/10/2024

3/19/2025