

# Arkansas Analytical, Inc.

## Toxicity Test Results

**Paragould Light, Water & Cable**  
**NPDES PERMIT NUMBER: AR0033766**  
**Fourth Quarter 2019**  
**AFIN # 28-00470**

Fathead Minnow, *Pimephales promelas*, Larval Survival and Growth Test  
Test 1000.0

*Ceriodaphnia dubia*, Survival and Reproduction Test  
Test 1002.0

Prepared for: **Lisa Ellington**  
**401 Grant Lane**  
**Paragould, Arkansas 72450**

Prepared by: Arkansas Analytical, Inc.  
8100 National Drive  
Little Rock, Arkansas 72209  
**Lab Number K1910004**

Tuesday, October 22, 2019

## Plant location

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City of Paragould. The facility is located at 401 Grant Lane, Paragould, AR 72450, approximately 1.4 miles south of U.S. Highway 412 and 0.4 miles west of Arkansas Highway 69 on Grant Lane in Greene County, Arkansas

## Test Methods

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EPA Method 1000.0 *Pimephales promelas*, Larval survival and growth test

- Test chambers: 500 mL plastic cups
- Test solution volume: 250 mL
- Number of test organisms per chamber: 10
- Number of replicates per concentration: 5
- Test temperature 25°C ± 1°C
- Test concentrations: 0%, 32%, 42%, 56%, 80%, 100%
- Dilution water: Moderately hard synthetic
- No deviation from method

EPA Method 1002.0 *Ceriodaphnia dubia*, Survival and reproduction test

- Test chambers: 30 mL plastic cups
- Test solution volume: 15 mL
- Number of test organisms per chamber: 1
- Number of replicates per concentration: 10
- Test temperature 25°C ± 1°C
- Test concentrations: 0%, 32%, 42%, 56%, 80%, 100%
- Dilution water: Moderately hard synthetic
- No deviation from method

## Reference Toxicant Data

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### REFERENCE TOXICANT (Potassium Chloride)

<i>Ceriodaphnia dubia</i> 9/25/19-10/2/19		<i>Pimephales promelas</i> 9/25/19-10/2/19	
NOEC Survival:	500 ppm KCl	NOEC Survival:	500 ppm KCl
LOEC Survival:	1000 ppm KCl	LOEC Survival:	1000 ppm KCl
NOEC Reproduction:	250 ppm KCl	NOEC Growth:	500 ppm KCl
LOEC Reproduction:	500 ppm KCl	LOEC Growth:	500 ppm KCl

## Summary of Results

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### Paragould Light, Water & Cable

<i>Ceriodaphnia dubia</i>		<i>Pimephales promelas</i>	
NOEC Survival Parameter: <b>TOP3B</b>	100%	NOEC Survival Parameter: <b>TOP6C</b>	100%
Pass/Fail Survival Parameter: <b>TLP3B</b>	Pass	Pass/Fail Survival Parameter: <b>TLP6C</b>	Pass
NOEC Reproduction Parameter: <b>TPP3B</b>	100%	NOEC Growth Parameter: <b>TPP6C</b>	100%
Pass/Fail Reproduction Parameter: <b>TGP3B</b>	Pass	Pass/Fail Growth Parameter: <b>TGP6C</b>	Pass
%CV Reproduction Parameter: <b>TQP3B</b>	36.9%	%CV Growth Parameter: <b>TQP6C</b>	8.84%
PMSD Reproduction	45.9%	PMSD Growth	16.5%

## Conclusion

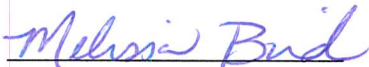
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*Pimephales promelas*, (Method 1000.0): The permit issued to the Paragould Light, Water & Cable, specifies that the **critical dilution is 100% effluent**. The effluent samples **did not** exhibit lethal or sublethal effects at the critical dilution, and, as such, **passed** both portions of the test.

*Ceriodaphnia dubia*, (Method 1002.0): The permit issued to the Paragould Light, Water & Cable, specifies the **critical dilution is 100% effluent**. The effluent samples **did not** exhibit lethal or sublethal effects at the critical dilution, and, as such, **passed** both portions of the test.

Biomonitoring Analysts: Melissa Bird, Emily Nichols, Jettie Parnell

Reviewed by:



Melissa Bird

## Appendices

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Appendix A.....	Chains of custody
Appendix B.....	Fathead minnow data & statistics
Appendix C.....	<i>Ceriodaphnia dubia</i> data & statistics
Appendix D.....	Water chemistry data
Appendix E.....	Reference toxicant control charts



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# CHAIN OF CUSTODY RECORD

CLIENT INFORMATION		BILLING INFORMATION		Project Description		Turnaround Time		Preservation Codes:	
Paragould, Light, Water & Cable		Paragould, Light, Water, & Cable		Chronic Toxicity		1 Day (100%) 2 Day (50%) 3 Day (25%)		1. Cool, 4 Degrees Centigrade 2. Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> ), pH < 2 3. Nitric Acid (HNO <sub>3</sub> ), pH < 2 4. Thiosulfate for Dechlorination 5. Hydrochloric Acid(HCl) 6. Sodium Hydroxide (NaOH), pH > 12	
401 Grant Lane		P.O. Box 9		Reporting Information		Telephone: 870-239-7795 Fax: 870-239-7791		<b>TEST PARAMETERS</b> 1. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Paragould, AR 72450		Paragould, AR 72450		PO #: 9519LE		Attn: Lisa Ellington NPDES Permit AR0033766		Preservative Code: 1 Bottle Type: P	
Attn: Lisa Ellington NPDES Permit AR0033766		Email: lellington@paragould.com		Signature: <i>Tiffani Newson</i>		Chronic Toxicity		Arkansas Analytical Work Order Number: <i>K1918004 A</i>	
Sampler(s) Signature		Sampler(s) Printed		SAMPLE IDENTIFICATION/ DESCRIPTION		SAMPLE		REMARKS / SAMPLE COMMENTS	
Field Number	SAMPLE COLLECTION Date/s	Times	Grab	Comp	Number of Bottles	Sample Matrix	EFFLUENT OUTFALL 001 -- Day 1	Chronic Toxicity	
	10/07/19 to 10/08/19	7:15 AM to 7:04 AM		X	4	Water		X	
1. Relinquished by: (Signature)		Date/Time		2. Received by: (Signature)		Date/Time			
<i>Lisa Ellington</i>		10/8/19 9:00		<i>VP5</i>		10/9/19 1357			
3. Relinquished by: (Signature)		Date/Time		4. Received by lab: (Signature)		Date/Time			
<i>VP5</i>				<i>Jennifer Johnson</i>					
<b>SAMPLE CONDITION UPON RECEIPT IN LAB</b> 1. CUSTODY SEALS: <input checked="" type="checkbox"/> Yes ___ No 2. CONTAINERS CORRECT: <input checked="" type="checkbox"/> Yes ___ No 3. COC/LABELS AGREE: <input checked="" type="checkbox"/> Yes ___ No 4. RECEIVED ON ICE: <input checked="" type="checkbox"/> Yes ___ No 5. TEMPERATURE ON RECEIPT: <i>2°C</i> 6. TEMPERATURE GUN ID: <i>HT#2</i> <b>FOR COMPLETION BY LAB ONLY</b>									



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# CHAIN OF CUSTODY RECORD

CLIENT INFORMATION		BILLING INFORMATION		Project Description		Turnaround Time		Preservation Codes:	
Paragould, Light, Water & Cable		Paragould, Light, Water, & Cable		Chronic Toxicity		1 Day (100%) 2 Day (50%) 3 Day (25%)		1. Cool, 4 Degrees Centigrade 2. Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> ), pH < 2 3. Nitric Acid (HNO <sub>3</sub> ), pH < 2 4. Thiosulfate for Dechlorination 5. Hydrochloric Acid(HCl) 6. Sodium Hydroxide (NaOH), pH > 12	
401 Grant Lane		P.O. Box 9		Reporting Information		Routine		TEST PARAMETERS	
Paragould, AR 72450		Paragould, AR 72450		Telephone: 870-239-7795		Fax: 870-239-7791		G = Glass, P = Plastics V = Septum, A = Amber	
PO #: 9519LE		Attn: Lisa Ellington		Email: lellington@paragould.com		Preservative Code: P		Bottle Type Code	
NPDES Permit AR0033766		NPPDES Permit AR0033766		NPPDES Permit AR0033766		Bottle Type:		Arkansas Analytical Work Order Number: KA910-004B	
Sampler(s) Signature: <i>Dilbert Newton</i>		Sampler(s) Printed: Tiffani Newton		SAMPLE IDENTIFICATION/ DESCRIPTION		Chronic Toxicity			
Field Number	SAMPLE COLLECTION Date/s	Times	Grab	Comp	Number of Bottles	Sample Matrix	Water	Effluent Outfall 001 -- Day 2	X
	10/08/19 to 10/09/19	7:23 AM to 7:15 AM		X	4				
1. Relinquished by: (Signature) <i>Steve Parker</i>		Date/Time: 10/9/19 9:00 AM		2. Received by: (Signature) <i>WRS</i>		3. RECEIVED ON ICE: Yes ___ No ___		REMARKS / SAMPLE COMMENTS	
3. Relinquished by: (Signature) <i>WRS</i>		Date/Time: 10-10-19, 1100		4. Received by lab: (Signature) <i>Sydney James</i>		1. CUSTODY SEALS: Yes ___ No ___ 2. CONTAINERS CORRECT: Yes ___ No ___ 3. COC/LABELS AGREE: Yes ___ No ___ 4. RECEIVED ON ICE: Yes ___ No ___ 5. TEMPERATURE ON RECEIPT: <i>1°C</i> 6. TEMPERATURE GUN ID: <i>HTT#2</i>			
FOR COMPLETION BY LAB ONLY									



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# CHAIN OF CUSTODY RECORD

CLIENT INFORMATION		BILLING INFORMATION		Project Description		Turnaround Time		Preservation Codes:	
Paragould, Light, Water & Cable		Paragould, Light, Water, & Cable		Chronic Toxicity		1 Day (100%) 2 Day (50%) 3 Day (25%)		1. Cool, 4 Degrees Centigrade 2. Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> ), pH < 2 3. Nitric Acid (HNO <sub>3</sub> ), pH < 2 4. Thiosulfate for Dechlorination 5. Hydrochloric Acid(HCl) 6. Sodium Hydroxide (NaOH), pH > 12	
401 Grant Lane		P.O. Box 9		Reporting Information		Routine		TEST PARAMETERS	
Paragould, AR 72450		Paragould, AR 72450		Telephone: 870-239-7795		Fax: 870-239-7791		Bottle Type Code G = Glass, P = Plastic V = Septum, A = Amber	
PO #: 9519LE		Attn: Lisa Ellington		Email: lellington@paragould.com		Preservative Code: 1		Bottle Type Code	
NPDES Permit AR0033766		NPAWS Permit AR0033766		Sample(s) Signature: <i>Thani Newson</i>		Sample(s) Printed: <i>Thani Newson</i>		Arkansas Analytical Work Order Number: <i>K1910004</i>	
Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Number of Comp Bottles	Sample Matrix	IDENTIFICATION/ DESCRIPTION	SAMPLE	Chronic Toxicity	REMARKS / SAMPLE COMMENTS
	10/09/19 to 10/10/19	7:49 AM to 7:01 AM		X	4	Water	Effluent Outfall 001 -- Day 3	X	
1. Relinquished by: (Signature)		Date/Time		2. Received by: (Signature)		Date/Time		<b>SAMPLE CONDITION UPON RECEIPT IN LAB</b> 1. CUSTODY SEALS: Yes ___ No ___ 2. CONTAINERS CORRECT: Yes ___ No ___ 3. COC/LABELS AGREE: Yes ___ No ___ 4. RECEIVED ON ICE: Yes ___ No ___ 5. TEMPERATURE ON RECEIPT: <i>24</i> 6. TEMPERATURE GUN ID: <i>1471#2</i> <b>FOR COMPLETION BY LAB ONLY</b>	
Steve Parker		10/10/19 9:00		VP					
3. Relinquished by: (Signature)		Date/Time		4. Received by lab: (Signature)		Date/Time			
VP		10-11-19 1:35		<i>Shanda Johnson</i>					

**CETIS Summary Report**

Report Date: 21 Oct-19 15:20 (p 1 of 2)  
 Test Code: K1910004FH | 02-8198-1039

Fathead Minnow 7-d Larval Survival and Growth Test Arkansas Analytical, Inc.

<b>Batch ID:</b> 15-0460-6962	<b>Test Type:</b> Growth-Survival (7d)	<b>Analyst:</b> Melissa Bird
<b>Start Date:</b> 09 Oct-19 14:55	<b>Protocol:</b> EPA/821/R-02-013 (2002)	<b>Diluent:</b> Mod-Hard Synthetic Water
<b>Ending Date:</b> 16 Oct-19 13:40	<b>Species:</b> Pimephales promelas	<b>Brine:</b> Not Applicable
<b>Duration:</b> 6d 23h	<b>Source:</b> Aquatox, AR	<b>Age:</b> <24
<b>Sample ID:</b> 07-2444-2359	<b>Code:</b> K1910004FH	<b>Client:</b> Paragould
<b>Sample Date:</b> 08 Oct-19 07:04	<b>Material:</b> Industrial Effluent	<b>Project:</b> WET Quarterly Compliance Test (4Q)
<b>Receipt Date:</b> 09 Oct-19 13:57	<b>Source:</b> Paragould (AR0033766)	
<b>Sample Age:</b> 32h (2 °C)	<b>Station:</b> Outfall 001	

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K1910004B	09 Oct-19 07:15	10 Oct-19 11:00	11 Oct-19 00:00	1
2	K1910004C	10 Oct-19 07:01	11 Oct-19 11:35	13 Oct-19 00:00	2

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-8916-0510	7d Survival Rate	Steel Many-One Rank Sum Test	100	> 100	n/a	1	8.29%
06-8857-0130	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	100	> 100	n/a	1	16.5%

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Decision
				Lower	Upper	Overlap	
01-8916-0510	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
06-8857-0130	Mean Dry Biomass-mg	Control Resp	0.5962	0.25	>>	Yes	Passes Criteria

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
32		5	0.9600	0.8920	1.0000	0.9000	1.0000	0.0245	0.0548	5.71%	4.00%
42		5	0.9600	0.8489	1.0000	0.8000	1.0000	0.0400	0.0894	9.32%	4.00%
56		5	0.9600	0.8920	1.0000	0.9000	1.0000	0.0245	0.0548	5.71%	4.00%
80		5	0.9600	0.8920	1.0000	0.9000	1.0000	0.0245	0.0548	5.71%	4.00%
100		5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	2.00%

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	5	0.5962	0.5308	0.6616	0.541	0.662	0.02356	0.05268	8.84%	0.00%
32		5	0.5802	0.5286	0.6318	0.531	0.644	0.0186	0.04158	7.17%	2.68%
42		5	0.6384	0.5254	0.7514	0.507	0.747	0.04069	0.09099	14.25%	-7.08%
56		5	0.5118	0.3962	0.6274	0.403	0.623	0.04164	0.09312	18.19%	14.16%
80		5	0.5126	0.439	0.5862	0.418	0.578	0.0265	0.05925	11.56%	14.02%
100		5	0.5174	0.4754	0.5594	0.489	0.576	0.01513	0.03383	6.54%	13.22%



# CETIS Summary Report

Report Date: 21 Oct-19 15:20 (p 2 of 2)  
Test Code: K1910004FH | 02-8198-1039

## Fathead Minnow 7-d Larval Survival and Growth Test

Arkansas Analytical, Inc.

### 7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	1.0000	1.0000	1.0000	1.0000	1.0000
32		0.9000	1.0000	1.0000	0.9000	1.0000
42		1.0000	1.0000	1.0000	0.8000	1.0000
56		1.0000	0.9000	1.0000	0.9000	1.0000
80		0.9000	1.0000	1.0000	0.9000	1.0000
100		1.0000	1.0000	1.0000	1.0000	0.9000

### Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	0.578	0.662	0.541	0.559	0.641
32		0.584	0.644	0.56	0.582	0.531
42		0.601	0.689	0.747	0.507	0.648
56		0.623	0.403	0.484	0.456	0.593
80		0.511	0.578	0.541	0.515	0.418
100		0.505	0.505	0.576	0.512	0.489

### 7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	10/10	10/10	10/10	10/10	10/10
32		9/10	10/10	10/10	9/10	10/10
42		10/10	10/10	10/10	8/10	10/10
56		10/10	9/10	10/10	9/10	10/10
80		9/10	10/10	10/10	9/10	10/10
100		10/10	10/10	10/10	10/10	9/10

**CETIS Summary Report**

Report Date: 04 Nov-19 07:14 (p 1 of 2)  
 Test Code: K1910004CD | 06-8674-9047

Cladoceran 7-d Survival and Reproduction Test Arkansas Analytical, Inc.

<b>Batch ID:</b> 02-0102-6881	<b>Test Type:</b> Reproduction-Survival (7d)	<b>Analyst:</b> Melissa Bird
<b>Start Date:</b> 09 Oct-19 14:40	<b>Protocol:</b> EPA/600/4-91/002 (1994)	<b>Diluent:</b> Mod-Hard Synthetic Water
<b>Ending Date:</b> 16 Oct-19 13:00	<b>Species:</b> Ceriodaphnia dubia	<b>Brine:</b> Not Applicable
<b>Duration:</b> 6d 22h	<b>Source:</b> In-House Culture	<b>Age:</b> <24
<b>Sample ID:</b> 02-6512-8134	<b>Code:</b> K1910004CD	<b>Client:</b> Paragould
<b>Sample Date:</b> 08 Oct-19 07:04	<b>Material:</b> Industrial Effluent	<b>Project:</b> WET Quarterly Compliance Test (4Q)
<b>Receipt Date:</b> 09 Oct-19 13:57	<b>Source:</b> Paragould (AR0033766)	
<b>Sample Age:</b> 32h (2 °C)	<b>Station:</b> Outfall 001	

**Sample Renewals**

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K1910004B	09 Oct-19 07:15	10 Oct-19 11:00	11 Oct-19 00:00	1
2	K1910004C	10 Oct-19 07:01	11 Oct-19 11:35	13 Oct-19 00:00	2

**Multiple Comparison Summary**

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
03-7064-4510	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a
15-4698-4524	Reproduction	Dunnett Multiple Comparison Test	100	> 100	n/a	1	45.9%

**Test Acceptability**

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
03-7064-4510	7d Survival Rate	Control Resp	0.9	0.8	>>	Yes	Passes Criteria	
15-4698-4524	Reproduction	Control Resp	25.8	15	>>	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	10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
32		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
42		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
56		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
80		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%

**Reproduction Summary**

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	<del>25.8</del>	20.17	31.43	13	36	2.489	7.871	<del>30.51%</del>	0.00%
32		10	31.6	22.38	40.82	15	55	4.078	12.89	40.81%	-22.48%
42		10	31.1	21.17	41.03	5	50	4.391	13.88	44.64%	-20.54%
56		10	39.3	29.25	49.35	21	59	4.442	14.05	35.75%	-52.33%
80		10	35.3	26.9	43.7	23	59	3.712	11.74	33.25%	-36.82%
100		10	42.2	37.23	47.17	32	51	2.195	6.941	16.45%	-63.57%

*Arg neonates  
 per surviving female  
 in control:*

*$\bar{x} = 25.7$   
 $CV = 36.9\%$*

**CETIS Summary Report**

Report Date: 04 Nov-19 07:14 (p 2 of 2)  
 Test Code: K1910004CD | 06-8674-9047

**Cladoceran 7-d Survival and Reproduction Test**

Arkansas Analytical, Inc.

**7d Survival Rate Detail**

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
32		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
42		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

**Reproduction Detail**

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	28	34	19	17	23	13	27	35	36	26
32		20	28	24	15	49	35	21	38	55	31
42		21	29	26	21	44	50	5	45	41	29
56		31	21	47	28	23	54	50	30	50	59
80		50	31	59	24	28	23	40	37	26	35
100		32	35	42	50	42	37	45	51	37	51

**7d Survival Rate Binomials**

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1
32		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
42		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
56		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
80		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING

Fathead Minnow

Lab # / Sample ID **K910004**

Test Start (Date/Time) **10-9-19 / 1455**

Client: **Paragould**

Test End (Date/Time) **10-16-19 / 1340**

		Day of Test							notes
		1	2	3	4	5	6	7	
<b>Control</b>	<b>MHS 041</b>	<b>10-9</b>	<b>10-10</b>	<b>10-11</b>	<b>10-12</b>	<b>10-13</b>	<b>10-14</b>	<b>10-15</b>	
D.O. (mg/L)	INITIAL	7.5	8.4	8.3	8.8	8.5	8.5	8.2	
	FINAL	7.7	7.5	7.7	9.0	7.4	7.3	7.7	
pH (s.u.)	INITIAL	7.3	8.1	7.2	8.5	8.3	8.0	8.3	
	FINAL	8.5	8.6	8.7	8.5	8.5	8.5	8.6	
temp (C)	INITIAL	23	23	21	21	22	23	20	
	FINAL	25	25	25	25	25	25	25	
ALKALINITY (mg/L)		68							
HARDNESS (mg/L)		80							
CONDUCTIVITY (umhc)		309							
CHLORINE (mg/L)		40.05							
CONC:	<b>32%</b>								
D.O. (mg/L)	INITIAL	8.4	8.5	8.5	8.8	8.5	8.7	8.6	
	FINAL	6.6	7.2	7.9	8.4	7.2	7.4	7.5	
pH (s.u.)	INITIAL	7.6	8.2	7.3	8.7	8.6	8.1	8.4	
	FINAL	8.5	8.5	8.6	8.5	8.4	8.6	8.6	
temp (C)	INITIAL	24	23	23	22	21	23	22	
	FINAL	25	25	25	25	25	25	25	
CONC:	<b>42%</b>								
D.O. (mg/L)	INITIAL	8.7	8.7	8.7	8.9	8.8	8.8	8.9	
	FINAL	6.5	7.1	7.7	8.1	7.1	7.4	7.6	
pH (mg/L)	INITIAL	7.7	8.2	7.9	9.0	8.6	8.3	8.4	
	FINAL	8.5	8.5	8.6	8.5	8.5	8.7	8.6	
temp (C)	INITIAL	24	23	23	22	21	24	21	
	FINAL	25	25	25	25	25	25	25	
CONC:	<b>56%</b>								
D.O. (mg/L)	INITIAL	8.8	9.1	8.9	9.1	8.9	8.9	9.1	
	FINAL	6.6	7.2	7.5	7.8	7.1	7.5	7.4	
pH (s.u.)	INITIAL	7.9	8.2	7.7	8.8	8.6	8.3	8.5	
	FINAL	8.5	8.5	8.6	8.5	8.5	8.7	8.6	
temp (C)	INITIAL	24	22	23	22	21	24	21	
	FINAL	25	25	25	25	25	25	25	
CONC:	<b>80%</b>								
D.O. (mg/L)	INITIAL	9.0	9.0	8.7	8.9	9.0	8.9	9.4	
	FINAL	6.4	7.4	7.2	7.7	7.7	7.5	7.5	
pH (s.u.)	INITIAL	8.0	8.2	7.9	8.7	8.6	8.3	8.5	
	FINAL	8.5	8.6	8.6	8.7	8.5	8.8	8.7	
temp (C)	INITIAL	25	23	24	22	21	24	21	
	FINAL	25	25	25	25	25	25	25	
CONC:	<b>100%</b>								
D.O. (mg/L)	INITIAL	9.8	9.2	8.9	9.0	9.3	9.5	9.8	
	FINAL	6.0	7.1	7.1	7.6	7.2	7.6	7.5	
pH (s.u.)	INITIAL	8.1	8.2	8.0	8.6	8.6	8.3	8.9	
	FINAL	8.4	8.6	8.6	8.7	8.7	8.9	8.7	
temp (C)	INITIAL	25	23	23	22	21	25	21	
	FINAL	25	25	25	25	25	25	25	
CONC:	<b>100%</b>	<b>A</b>	<b>A</b>	<b>B</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>C</b>	
ALKALINITY (mg/L)		92		112		124			
HARDNESS (mg/L)		40		46		46			
CONDUCTIVITY (umhc)		4102		490		551			
CHLORINE (mg/L)		40.05		40.05		40.05			

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING

Ceriodaphnia Dubia

Lab # / Sample ID **K1910004**

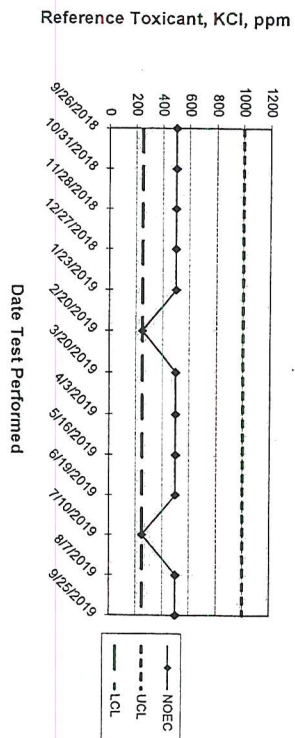
Test Start (Date/Time) **10-9-19/1440**

Client: **Paragould**

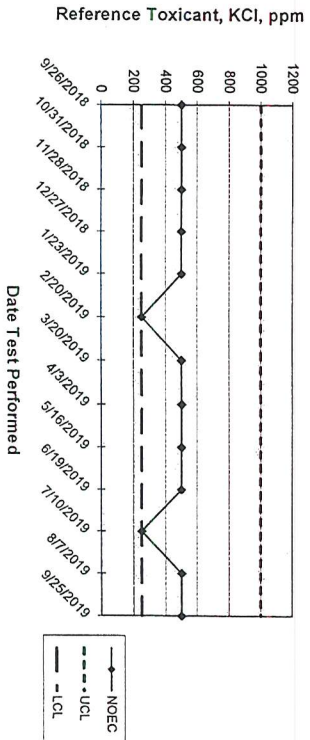
Test End (Date/Time) **10-16-19/1300**

		Day of Test							notes/remarks
		1	2	3	4	5	6	7	
<b>Control</b>	MHS 041	10-9	10-10	10-11	10-12	10-13	10-14	10-15	
D.O. (mg/L)	INITIAL	7.5	8.4	8.3	8.8	8.5	8.5	8.2	
	FINAL	7.9	8.4	8.1	8.4	8.2	8.6	8.0	
pH (s.u.)	INITIAL	7.3	8.1	7.2	8.5	8.3	8.0	8.3	
	FINAL	8.8	8.8	7.8	8.8	8.8	8.3	8.7	
temp (C)	INITIAL	23	23	21	21	22	23	22	
	FINAL	25	25	25	25	25	25	25	
ALKALINITY (mg/L)		168							
HARDNESS (mg/L)		80							
CONDUCTIVITY (umhos/cm)		304							
CHLORINE (mg/L)		40.05							
CONC: 32%									
D.O. (mg/L)	INITIAL	8.4	8.9	8.5	8.8	8.5	8.7	8.6	
	FINAL	7.8	8.8	8.2	8.4	8.2	8.1	8.0	
pH (s.u.)	INITIAL	7.6	8.2	7.3	8.7	8.6	8.1	8.4	
	FINAL	8.7	9.1	8.1	8.8	8.8	8.6	8.7	
temp (C)	INITIAL	24	23	23	22	21	23	22	
	FINAL	25	25	25	25	25	25	25	
CONC: 42%									
D.O. (mg/L)	INITIAL	8.7	8.7	8.7	8.9	8.5	8.8	8.9	
	FINAL	7.9	9.1	8.3	8.5	8.2	8.2	8.3	
pH (mg/L)	INITIAL	7.7	8.2	7.5	9.0	8.6	8.2	8.4	
	FINAL	8.7	9.3	8.2	8.8	8.8	8.7	8.8	
temp (C)	INITIAL	24	23	23	22	21	24	21	
	FINAL	25	25	25	25	25	25	25	
CONC: 56%									
D.O. (mg/L)	INITIAL	8.8	9.1	8.9	9.1	8.9	8.9	9.1	
	FINAL	7.9	9.1	8.3	8.5	8.2	8.2	8.4	
pH (s.u.)	INITIAL	7.9	8.2	7.7	8.8	8.6	8.3	8.5	
	FINAL	8.7	9.2	8.3	8.8	8.8	8.7	8.9	
temp (C)	INITIAL	24	22	23	21	21	24	21	
	FINAL	25	25	25	25	25	25	25	
CONC: 80%									
D.O. (mg/L)	INITIAL	9.0	9.0	8.7	8.9	9.0	8.9	9.4	
	FINAL	7.9	8.9	8.3	8.5	8.4	8.3	8.4	
pH (s.u.)	INITIAL	8.0	8.2	7.9	8.7	8.6	8.3	8.5	
	FINAL	8.7	9.2	8.4	8.8	8.9	8.7	8.9	
temp (C)	INITIAL	25	23	24	22	21	24	21	
	FINAL	25	25	25	25	25	25	25	
CONC: 100%									
D.O. (mg/L)	INITIAL	9.8	9.2	8.9	9.0	9.3	9.5	9.8	
	FINAL	7.9	9.0	8.3	8.5	8.4	8.4	8.6	
pH (s.u.)	INITIAL	8.1	8.2	8.0	8.6	8.6	8.3	8.5	
	FINAL	8.7	9.3	8.5	8.8	8.9	8.9	9.0	
temp (C)	INITIAL	25	23	23	22	21	25	21	
	FINAL	25	25	25	25	25	25	25	
CONC: 100%		A	A	B	B	C	C	C	
ALKALINITY (mg/L)		92		112		124			
HARDNESS (mg/L)		40		46		46			
CONDUCTIVITY (umhos/cm)		462		490		551			
CHLORINE (mg/L)		40.05		40.05		40.05			

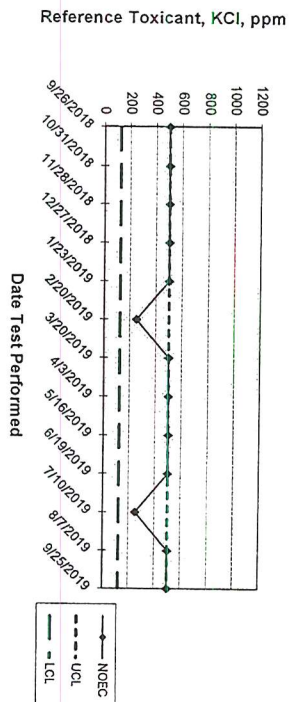
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