

# Arkansas Analytical, Inc.

## Toxicity Test Results

**Paragould Light, Water & Cable**  
**NPDES PERMIT NUMBER: AR0033766**  
**Fourth Quarter 2021**  
**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 K2110003**

Thursday, October 28, 2021

## 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: Receiving water
- 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: Receiving water
- No deviation from method

## Reference Toxicant Data

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### REFERENCE TOXICANT (Potassium Chloride)

<i>Ceriodaphnia dubia</i> 9/28/21-10/4/21		<i>Pimephales promelas</i> 9/28/21-10/5/21	
NOEC Survival:	250 ppm KCl	NOEC Survival:	500 ppm KCl
LOEC Survival:	500 ppm KCl	LOEC Survival:	1000 ppm KCl
NOEC Reproduction:	250 ppm KCl	NOEC Growth:	500 ppm KCl
LOEC Reproduction:	500 ppm KCl	LOEC Growth:	1000 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>	28.2%	%CV Growth Parameter: <b>TQP6C</b>	15.4%
PMSD Reproduction	40.7%	PMSD Growth	16.5%
Chronic Toxicity NOEC Parameter: <b>51710</b>	Lethality: 100% Sub-lethality: 100%	Chronic Toxicity NOEC Parameter: <b>51714</b>	Lethality: 100% Sub-lethality: 100%

## 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, Camille Foscue, 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		<b>Routine</b> Telephone: 870-239-7795 Fax: 870-239-7791		<b>TEST PARAMETERS</b> Bottle Type Code	
Paragould, AR 72450		Paragould, AR 72450		Email: lellington@paragould.com NPDES Permit AR0033766		Preservative Code: P Bottle Type:		G = Glass, P = Plastic V = Septum, A = Amber	
PO #: 9521LE Attn: Lisa Ellington		Signature: <i>Lisa Ellington</i>		Printed: <b>Tiffany Newson</b>		SAMPLE IDENTIFICATION/ DESCRIPTION Chronic Toxicity		Arkansas Analytical Work Order Number: <b>K211003</b> A	
Field Number	SAMPLE COLLECTION Dates	Sampler(s) Signature	Sampler(s) Printed	Grab	Number of Bottles	Sample Matrix	Effluent Outfall	DATE	TIME
	10/04/2021 to 10/05/2021				4	Water	001 -- Day 1		
1. Relinquished by: (Signature) <i>Stor Parker</i>		2. Received by: (Signature) <i>UPS</i>		3. Relinquished by: (Signature) <b>UPS</b>		4. Received by lab: (Signature) <i>Tammy Riddle</i>		5. TEMPERATURE ON RECEIPT: <b>10</b> 6. TEMPERATURE GUN ID: <b>#1714</b> <b>FOR COMPLETION BY LAB ONLY</b>	
Date/Time <b>10/5/21 9:00am</b>		Date/Time <b>10-6-21 740</b>		<b>SAMPLE CONDITION UPON RECEIPT IN LAB</b> 1. CUSTODY SEALS: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 2. CONTAINERS CORRECT: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 3. COGLABELS AGREE: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 4. RECEIVED ON ICE: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>REMARKS / SAMPLE COMMENTS</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%)		1. Cool, 4 Degrees Centigrade			
401 Grant Lane		P.O. Box 9				2 Day (50%)		2. Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> ), pH < 2			
Paragould, AR 72450		Paragould, AR 72450		Reporting Information		3 Day (25%)		3. Nitric Acid (HNO <sub>3</sub> ), pH < 2			
PO #: 9521LE				Telephone: 870-239-7795		Routine		4. Thiosulfate for Dechlorination			
Attn: Lisa Ellington				Fax: 870-239-7791		Preservative Code:		5. Hydrochloric Acid(HCl)			
NPDES Permit AR0033766				Email: lellington@paragould.com		Bottle Type:		6. Sodium Hydroxide (NaOH), pH > 12			
						1		Bottle Type Code			
						P		G = Glass, P = Plastic V = Septum, A = Amber			
Field Number	SAMPLE COLLECTION Dates	Times/s	Grab	Number of Comp Bottles	Sample Matrix	IDENTIFICATION/ DESCRIPTION	SAMPLE	TEST PARAMETERS	REMARKS / SAMPLE COMMENTS		
	10/05/2021 to 10/06/2021	7:31 AM to 7:21 AM		X 4	Water	Effluent Outfall 001 -- Day 2	Chronic Toxicity		K2110003 B		
1. Relinquished by: (Signature)		Date/Time		2. Received by: (Signature)		SAMPLE CONDITION UPON RECEIPT IN LAB		REMARKS / SAMPLE COMMENTS			
		10/6/21 9:00				1. CUSTODY SEALS: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 2. CONTAINERS CORRECT: <input type="checkbox"/> Yes <input type="checkbox"/> No 3. COC/LABELS AGREE: <input type="checkbox"/> Yes <input type="checkbox"/> No 4. RECEIVED ON ICE: <u>Melted</u> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 5. TEMPERATURE ON RECEIPT: <u>5</u> TEMPERATURE GUN ID: <u>HTT#24</u> <b>FOR COMPLETION BY LAB ONLY</b>					
3. Relinquished by: (Signature)		Date/Time		4. Received by lab: (Signature)							
		10.7.21 10/6									





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# CHAIN OF CUSTODY RECORD

CLIENT INFORMATION		BILLING INFORMATION		Project Description		Turnaround Time		Preservation Codes:			
Paragould, Light, Water & Cable 401 Grant Lane Paragould, AR 72450		Paragould, Light, Water, & Cable P.O. Box 9 Paragould, AR 72450		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			
PO #9521LE		Reporting Information		Telephone: 870-239-7795		Routine		TEST PARAMETERS			
Attn: Lisa Ellington		Telephone: 870-239-7791		Fax: 870-239-7791		Preservative Code:		1			
NPDES Permit AR0033766		Email: lellington@paragould.com		Bottle Type:		P		Arkansas Analytical Work Order Number:			
Signature: <i>Lisa Ellington</i> Sampler(s) Signature		Signature: <i>Fuzz Symons</i> Sampler(s) Printed		SAMPLE COLLECTION		IDENTIFICATION/DESCRIPTION		Dilution Water for Chronic Toxicity			
Field Number	Dates	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE		TEST PARAMETERS		REMARKS / SAMPLE COMMENTS
	10/04/2021	8:13 AM	X		1	Water	PLWC River Water - 8-Mile Creek	X			
	10/04/2021	8:14 AM	X		1	Water	PLWC River Water - 8-Mile Creek	X			
	10/04/2021	8:15 AM	X		1	Water	PLWC River Water - 8-Mile Creek	X			
1. Relinquished by: (Signature)		Date/Time		2. Received by: (Signature)		SAMPLE CONDITION UPON RECEIPT IN LAB		REMARKS / SAMPLE COMMENTS			
<i>Steve Parker</i>		10/5/21 9:00am		UPS		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>HTH4</i>					
3. Relinquished by: (Signature)		Date/Time		4. Received by lab: (Signature)		FOR COMPLETION BY LAB ONLY					
UPS		10-6-21 1440		<i>Tammy Riddell</i>							



**CETIS Summary Report**

Report Date: 28 Oct-21 10:58 (p 1 of 2)  
 Test Code/ID: K2110003FH / 05-3080-6715

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

Arkansas Analytical

Batch ID: 12-7618-0302	Test Type: Growth-Survival (7d)	Analyst: Jettie Parnell
Start Date: 06 Oct-21 15:07	Protocol: EPA/821/R-02-013 (2002)	Diluent: Receiving Water
Ending Date: 13 Oct-21 14:23	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatox, AR <span style="float:right">Age: &lt;24</span>
Sample ID: 17-2507-7821	Code: K2110003FH	Project: WET Quarterly Compliance Test (4Q)
Sample Date: 05 Oct-21 07:16	Material: POTW Effluent	Source: Paragould (AR0033766)
Receipt Date: 06 Oct-21 14:40	CAS (PC):	Station:
Sample Age: 32h (1 °C)	Client: Paragould	

Receiving water was sampled 10/4/21, 8:13-8:15.

**Sample Renewals**

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K2110003B	06 Oct-21 07:21	07 Oct-21 10:10	07 Oct-21 00:00	5
2	K2110003C	07 Oct-21 07:15	08 Oct-21 10:30	08 Oct-21 00:00	1

**Multiple Comparison Summary**

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD	S
07-0988-9545	7d Survival Rate	Dunnett Multiple Comparison Test	100	>100	n/a	1	8.74%	1
08-9664-2673	Mean Dry Weight-mg	Dunnett Multiple Comparison Test	100	>100	n/a	1	16.5%	1

**Test Acceptability**

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
07-0988-9545	7d Survival Rate	Control Resp	0.98	0.8	>>	Yes	Passes Criteria

**7d Survival Rate Summary**

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	0.00%
32		5	0.9400	0.8720	1.0000	0.9000	1.0000	0.0245	0.0548	5.83%	4.08%
42		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.04%
56		5	0.9400	0.8720	1.0000	0.9000	1.0000	0.0245	0.0548	5.83%	4.08%
80		5	0.9000	0.7758	1.0000	0.8000	1.0000	0.0447	0.1000	11.11%	8.16%
100		5	0.9600	0.8920	1.0000	0.9000	1.0000	0.0245	0.0548	5.71%	2.04%

**Mean Dry Weight-mg Summary**

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	R	5	0.6004	0.4853	0.7155	0.456	0.682	0.04145	0.09268	15.44%	0.00%
32		5	0.5834	0.5128	0.654	0.497	0.647	0.02543	0.05686	9.75%	2.83%
42		5	0.571	0.5245	0.6175	0.534	0.625	0.01674	0.03742	6.55%	4.90%
56		5	0.5466	0.4954	0.5978	0.503	0.597	0.01843	0.0412	7.54%	8.96%
80		5	0.5244	0.4034	0.6454	0.394	0.651	0.04358	0.09745	18.58%	12.66%
100		5	0.5878	0.5335	0.6421	0.546	0.653	0.01955	0.04372	7.44%	2.10%

CETIS Summary Report

Report Date: 28 Oct-21 10:58 (p 2 of 2)  
Test Code/ID: K2110003FH / 05-3080-6715

Fathead Minnow 7-d Larval Survival and Growth Test

Arkansas Analytical

7d Survival Rate Detail

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

Mean Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	R	0.682	0.456	0.576	0.609	0.679
32		0.616	0.566	0.497	0.647	0.591
42		0.625	0.534	0.539	0.588	0.569
56		0.552	0.503	0.507	0.597	0.574
80		0.578	0.651	0.394	0.479	0.52
100		0.653	0.561	0.568	0.611	0.546

7d Survival Rate Binomials

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

# CETIS Summary Report

Report Date: 28 Oct-21 11:05 (p 1 of 2)  
 Test Code/ID: K2110003CD / 04-2291-5149

## Ceriodaphnia 7-d Survival and Reproduction Test

Arkansas Analytical

Batch ID: 08-3201-0375	Test Type: Reproduction-Survival (7d)	Analyst: Jettie Parnell
Start Date: 06 Oct-21 15:23	Protocol: EPA/821/R-02-013 (2002)	Diluent: Receiving Water
Ending Date: 12 Oct-21 14:05	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 5d 23h	Taxon: Branchiopoda	Source: In-House Culture Age: <24
Sample ID: 02-3251-2913	Code: K2110003CD	Project: WET Quarterly Compliance Test (4Q)
Sample Date: 05 Oct-21 07:16	Material: POTW Effluent	Source: Paragould (AR0033766)
Receipt Date: 06 Oct-21 14:40	CAS (PC):	Station:
Sample Age: 32h (1 °C)	Client: Paragould	

Receiving water sampled 10/4/21, 8:13-8:15.

### Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K2110003B	06 Oct-21 07:21	07 Oct-21 10:10	07 Oct-21 00:00	5
2	K2110003C	07 Oct-21 07:15	08 Oct-21 10:30	08 Oct-21 00:00	1

### Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD	S
11-0919-3230	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	n/a	1	n/a	1
14-5515-4822	Reproduction	Steel Many-One Rank Sum Test	100	>100	n/a	1	40.7%	1

### Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
11-0919-3230	7d Survival Rate	Control Resp	0.8	0.8	>>	Yes	Passes Criteria	
14-5515-4822	Reproduction	Control Resp	22.4	15	>>	Yes	Passes Criteria	
14-5515-4822	Reproduction	PMSD	0.4075	0.13	0.47	Yes	Passes Criteria	

### 7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	0.8000	0.4984	1.0000	0.0000	1.0000	0.1333	0.4216	52.70%	0.00%
32		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	-12.50%
42		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-25.00%
56		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-25.00%
80		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	-12.50%
100		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	-12.50%

### Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	<u>22.4</u>	14.34	30.46	2	34	3.563	11.27	<u>50.30%</u>	0.00%
32		10	25.5	18.15	32.85	5	37	3.25	10.28	40.30%	-13.84%
42		10	27.5	24.4	30.6	22	35	1.368	4.327	15.73%	-22.77%
56		10	20.5	16.41	24.59	11	28	1.809	5.72	27.90%	8.48%
80		10	23.2	17.85	28.55	5	31	2.365	7.48	32.24%	-3.57%
100		10	<u>25.5</u>	17.13	33.87	0	36	3.701	11.7	<u>45.89%</u>	-13.84%

*Avg. neonates per surviving female*  
 Control:  $\bar{X} = 27.1$   $CV = 21.8\%$   
 100%.:  $\bar{X} = 28.3$   $CV = 28.2\%$

*10-28-21 mb*

**CETIS Summary Report**

Report Date: 28 Oct-21 11:05 (p 2 of 2)  
 Test Code/ID: K2110003CD / 04-2291-5149

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

Arkansas Analytical

**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	L	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
32		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
42		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	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	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	0.0000	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	L	25	5	20	33	24	34	2	32	19	30
32		27	34	34	31	5	26	16	15	37	30
42		35	23	22	28	24	29	34	26	26	28
56		15	11	17	28	24	25	24	26	15	20
80		26	23	25	5	30	21	31	26	27	18
100		36	36	34	21	0	15	26	20	34	33

**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	L	1/1	0/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
32		1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1
42		1/1	1/1	1/1	1/1	1/1	1/1	1/1	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	0/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING

Fathead Minnow

Lab # / Sample ID **K2110003**

Test Start (Date/Time) **10/16/21-1507**

Client: **Paragovld**

Test End (Date/Time) **10/13/21-1423**

		Day of Test							notes
		1	2	3	4	5	6	7	
<b>Control</b>	<b>R10</b>	10/6	10/7	10/8	10/9	10/10	10/11	10/12	
D.O. (mg/L)	INITIAL	8.5	8.8	8.7	8.2	8.3	8.3	8.0	
	FINAL	7.9	8.1	7.7	8.1	7.8	7.5	7.0	
pH (s.u.)	INITIAL	7.7	8.0	7.8	7.6	7.6	7.8	7.6	
	FINAL	7.9	7.9	7.5	7.6	7.7	7.6	7.0	
temp (C)	INITIAL	21	21	21	20	21	21	21	
	FINAL	25	25	25	25	25	25	25	
ALKALINITY (mg/L)		54							
HARDNESS (mg/L)		34							
CONDUCTIVITY (umhc)		113							
CHLORINE (mg/L)		0.05							
<b>CONC: 32%</b>									
D.O. (mg/L)	INITIAL	8.5	8.7	8.7	8.5	8.5	8.5	8.2	
	FINAL	7.7	7.9	7.6	8.1	7.9	7.4	6.9	
pH (s.u.)	INITIAL	7.5	7.7	7.8	7.4	7.4	7.6	7.5	
	FINAL	7.7	7.7	7.4	7.5	7.5	7.4	8.2	
temp (C)	INITIAL	21	21	21	21	21	21	21	
	FINAL	25	25	25	25	25	25	25	
<b>CONC: 42%</b>									
D.O. (mg/L)	INITIAL	8.6	8.7	8.6	8.6	8.6	8.6	8.3	
	FINAL	7.6	7.9	7.7	8.1	7.8	7.4	6.7	
pH (mg/L)	INITIAL	7.6	7.7	7.8	7.4	7.4	7.6	7.5	
	FINAL	7.6	7.7	7.4	7.5	7.5	7.5	8.0	
temp (C)	INITIAL	21	21	21	21	21	20	21	
	FINAL	25	25	25	25	25	25	25	
<b>CONC: 56%</b>									
D.O. (mg/L)	INITIAL	8.6	8.6	8.6	8.7	8.7	8.7	8.3	
	FINAL	7.8	7.9	7.7	8.0	7.7	7.5	6.5	
pH (s.u.)	INITIAL	7.6	7.7	7.7	7.4	7.4	7.6	7.5	
	FINAL	7.7	7.7	7.5	7.5	7.6	7.5	7.9	
temp (C)	INITIAL	22	21	21	20	21	20	21	
	FINAL	25	25	25	25	25	25	25	
<b>CONC: 80%</b>									
D.O. (mg/L)	INITIAL	8.5	8.6	8.7	8.7	8.8	8.8	8.3	
	FINAL	7.8	7.9	7.8	8.0	7.7	7.2	6.4	
pH (s.u.)	INITIAL	7.7	7.7	7.7	7.5	7.5	7.6	7.5	
	FINAL	7.7	7.7	7.6	7.6	7.7	7.6	7.8	
temp (C)	INITIAL	22	21	21	21	21	20	21	
	FINAL	25	25	25	25	25	25	25	
<b>CONC: 100%</b>									
D.O. (mg/L)	INITIAL	8.7	8.7	8.6	8.8	9.0	9.1	8.5	
	FINAL	7.7	7.8	7.8	8.0	7.8	7.4	6.7	
pH (s.u.)	INITIAL	7.7	7.7	7.7	7.5	7.5	7.7	7.6	
	FINAL	7.7	7.8	7.7	7.7	7.7	7.7	7.6	
temp (C)	INITIAL	22	21	21	21	21	21	21	
	FINAL	25	25	25	25	25	25	25	
<b>CONC:</b>		<b>A</b>	<b>B</b>	<b>C</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>C</b>	
ALKALINITY (mg/L)		84	106	118	84	106	118		
HARDNESS (mg/L)		40	70	52	40	70	52		
CONDUCTIVITY (umhc)		451	540	603	451	540	603		
CHLORINE (mg/L)		0.05	0.05	0.05	0.05	0.05	0.05		

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING

Ceriodaphnia Dubia

Lab # / Sample ID **K2110003**

Test Start (Date/Time) **10/16/21-1523**

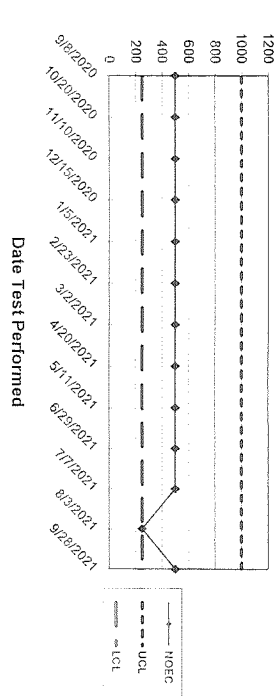
Client: **Paragould**

Test End (Date/Time) **10/12/21-1405**

		Day of Test							notes/remarks
		1	2	3	4	5	6	7	
<b>Control</b>	MH <b>RW</b>	10/6	10/7	10/8	10/9	10/10	10/11	10/12	
D.O. (mg/L)	INITIAL	8.5	8.8	8.7	8.2	8.3	8.3	8.0	
	FINAL	8.6	8.8	8.5	8.2	8.0	8.3	—	
pH (s.u.)	INITIAL	7.7	8.0	7.8	7.6	7.6	7.3	7.6	
	FINAL	7.9	8.0	7.6	7.8	7.7	7.2	—	
temp (C)	INITIAL	21	21	21	20	21	21	21	
	FINAL	25	25	25	25	25	25	—	
ALKALINITY (mg/L)		54							
HARDNESS (mg/L)		34							
CONDUCTIVITY (umhos/cm)		113							
CHLORINE (mg/L)		0.05							
<b>CONC: 32%</b>									
D.O. (mg/L)	INITIAL	8.5	8.7	8.7	8.5	8.5	8.5	8.2	
	FINAL	8.7	8.9	7.7	8.0	7.0	7.7	—	
pH (s.u.)	INITIAL	7.5	7.7	7.8	7.4	7.4	7.6	7.5	
	FINAL	8.0	8.1	7.6	7.6	7.5	7.4	—	
temp (C)	INITIAL	21	21	21	21	21	21	21	
	FINAL	25	25	25	25	25	25	—	
<b>CONC: 42%</b>									
D.O. (mg/L)	INITIAL	8.6	8.9	8.6	8.6	8.6	8.6	8.3	
	FINAL	8.7	9.0	7.7	7.9	7.4	8.2	—	
pH (mg/L)	INITIAL	7.6	7.7	7.8	7.4	7.4	7.6	7.5	
	FINAL	8.0	8.3	7.7	7.6	7.5	7.6	—	
temp (C)	INITIAL	21	21	21	21	21	20	21	
	FINAL	25	25	25	25	25	25	—	
<b>CONC: 50%</b>									
D.O. (mg/L)	INITIAL	8.6	8.6	8.6	8.7	8.7	8.7	8.3	
	FINAL	8.7	9.2	7.9	8.0	7.1	8.4	—	
pH (s.u.)	INITIAL	7.6	7.7	7.7	7.4	7.4	7.6	7.5	
	FINAL	8.1	8.4	7.7	7.7	7.6	7.8	—	
temp (C)	INITIAL	21	21	21	20	21	20	21	
	FINAL	25	25	25	25	25	25	—	
<b>CONC: 80%</b>									
D.O. (mg/L)	INITIAL	8.5	8.6	8.7	8.7	8.8	8.8	8.3	
	FINAL	8.7	9.0	7.8	7.9	7.2	8.4	—	
pH (s.u.)	INITIAL	7.7	7.7	7.7	7.5	7.5	7.6	7.5	
	FINAL	8.1	8.3	7.8	7.7	7.6	7.9	—	
temp (C)	INITIAL	22	21	21	20	21	20	21	
	FINAL	25	25	25	25	25	25	—	
<b>CONC: 100%</b>									
D.O. (mg/L)	INITIAL	8.7	8.7	8.6	8.8	9.0	9.1	8.5	
	FINAL	8.7	9.0	7.8	8.7	8.1	8.6	—	
pH (s.u.)	INITIAL	7.7	7.7	7.7	7.5	7.5	7.7	7.6	
	FINAL	8.2	8.3	7.9	7.8	7.7	8.0	—	
temp (C)	INITIAL	22	21	21	21	21	21	21	
	FINAL	25	25	25	25	25	25	—	
<b>CONC:</b>		A	B	C	A	B	C	C	
ALKALINITY (mg/L)		84	106	118	144	106	118	—	
HARDNESS (mg/L)		40	70	52	40	70	52	—	
CONDUCTIVITY (umhos/cm)		451	540	603	451	540	603	—	
CHLORINE (mg/L)		0.05	0.05	0.05	0.05	0.05	0.05	—	

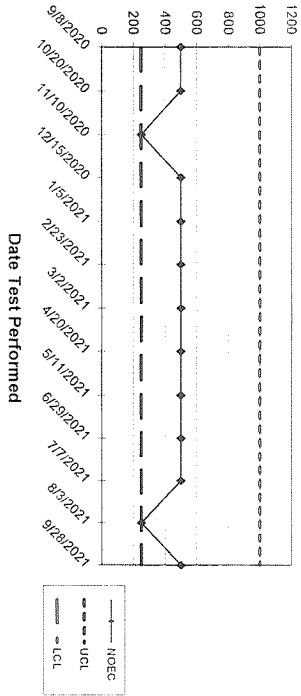
**ARKANSAS ANALYTICAL, INC.**  
**FATHEAD MINNOW SURVIVAL 7 Day**  
**QUALITY ASSURANCE**

Reference Toxicant, KCl, ppm



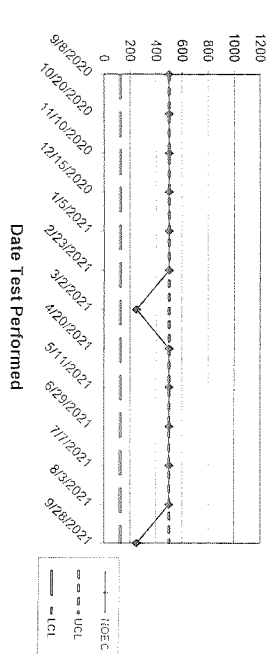
**ARKANSAS ANALYTICAL, INC.**  
**FATHEAD MINNOW GROWTH 7 Day**  
**QUALITY ASSURANCE**

Reference Toxicant, KCl, ppm



**ARKANSAS ANALYTICAL, INC.**  
**CERIODAPHRINA DUBIA SURVIVAL**  
**QUALITY ASSURANCE**

Reference Toxicant, KCl, ppm



**ARKANSAS ANALYTICAL, INC.**  
**CERIODAPHRINA DUBIA REPRODUCTION**  
**QUALITY ASSURANCE**

Reference Toxicant, KCl, ppm

