

Customer: Allen County Sanitary Engineer  
Facility: Shawnee No. 2 WWTP  
Outfall: Effluent 001  
Report Date: 7/17/20  
Ohio EPA Permit No.: 2PK00002\*JD  
Alloway Lab #: L20-16001-01

## Report of Chronic Biomonitoring

Samples Collected on:

7/6/20  
7/8/20  
7/10/20

*Pimephales promelas*  
*Ceriodaphnia dubia*

Allen County Sanitary Engineer  
Shawnee No. 2 WWTP  
3640 Spencerville Road  
Lima, OH 45805

Customer: Allen County Sanitary Engineer  
Facility: Shawnee No. 2 WWTP  
Outfall: Effluent 001  
Report Date: 7/17/20  
Ohio EPA Permit No.: 2PK00002\*JD  
Alloway Lab #: L20-16001-01

Date: 7/17/20

Mike Santaguida  
Allen County Sanitary Engineer  
3640 Spencerville Road  
Lima, OH 45805

Dear Mr. Santaguida:

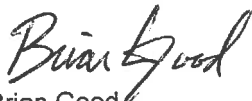
Enclosed is the report of the biomonitoring on the sample listed above. The objective of the chronic biomonitoring was to determine the effects, both the acute endpoint (mortality) and chronic endpoints (mortality and growth, or reproduction), from the test water. Fathead minnow larvae (*Pimephales promelas*) and neonate water fleas (*Ceriodaphnia dubia*) were the test organisms.

Acute toxicity was determined by locating the median lethal concentration (LC50) and the median effective concentration (EC50). Growth was determined from the dry weight of surviving *Pimephales promelas* larvae. Reproduction was monitored daily by counting the number of young produced by each female *Ceriodaphnia dubia*.

Dissolved oxygen, pH, and temperature were recorded daily at each renewal and at the end of each 24-hour exposure period. Results may be found in Appendix C "Parameter Data Sheets". Samples were analyzed for alkalinity, hardness and conductivity. These results may also be found in Appendix C.

Alloway (Lima, Ohio) performs biomonitoring testing in accordance with procedures established by the Environmental Protection Agency. The Standard Operating Procedures for the testing is on file with the Ohio EPA.

Please call if you have any questions or need additional information.



Brian Good  
Bioassay Lab Manager

Outfall: Effluent 001  
Report Date: 7/17/20  
Ohio EPA Permit No.: 2PK00002\*JD

1. Facility Name	Allen County Sanitary Engineer Shawnee No. 2 WWTP
2. Facility Address	3640 Spencerville Road Lima, OH 45805
3. Ohio EPA Permit No.	2PK00002*JD
4. NPDES No.	OH0023850
5. Facility Contact	Mike Santaguida
6. Telephone No.	419-605-7560
7. Consulting Laboratory	Alloway
8. Lab Contact	Brian Good
9. Lab Telephone No.	419-223-1362
10. Receiving water(s) of discharge	Ottawa River
11. Outfall(s) tested	Effluent 001
12. Is your current Standard Operating Procedure (SOP) Manual on file with Ohio EPA? Yes If yes, indicate date in which SOP was submitted to the EPA:	<u>6/19/2017</u>

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and based on my inquiry of those individuals immediately responsible for obtaining information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

*ML Santaguida*  
Signature

Mike Santaguida  
Name (typed or printed)

7/29/20  
Date

Superintendent  
Title

Customer: Allen County Sanitary Engineer  
 Facility: Shawnee No. 2 WWTP  
 Outfall: Effluent 001  
 Ohio EPA Permit No.: 2PK00002\*JD  
 Date of *P. promelas* Test: 7/7-14/20  
 Date of *C. dubia* Test: 7/7-13/20

**Summary of Chronic Toxicity Test Results**  
***Pimephales promelas***

	4500 Form Value	MDL	4500 Comments Required
<b>Effluent/Outfall:</b>			
Chronic Toxicity, <i>Pimephales promelas</i> - TUc	AA	1.0	
Acute Toxicity, <i>Pimephales promelas</i> - TUa	AA	0.2	
<b>Upstream:</b>			
96 Hr. Acute Toxicity, <i>Pimephales promelas</i> - % Affected	AA	2.5	
7 day Chronic Toxicity, <i>Pimephales promelas</i> - % Affected	AA	2.5	

**Summary of Chronic Toxicity Test Results**  
***Ceriodaphnia dubia***

	4500 Form Value	MDL	4500 Comments Required
<b>Effluent/Outfall:</b>			
Chronic Toxicity, <i>Ceriodaphnia dubia</i> - TUc	1.5	1.0	Reproduction
Acute Toxicity, <i>Ceriodaphnia dubia</i> - TUa	0.95	0.2	
<b>Upstream:</b>			
48 Hr. Acute Toxicity, <i>Ceriodaphnia dubia</i> - % Affected	AA	10.0	
7 day Chronic Toxicity, <i>Ceriodaphnia dubia</i> - % Affected	AA	10.0	

AA = below detectable

**Conclusion/Comments:**

Customer: Allen County Sanitary Engineer  
 Facility: Shawnee No. 2 WWTP  
 Outfall: Effluent 001  
 Ohio EPA Permit No.: 2PK00002\*JD  
 Date of Test: 7/7-14/20

### Chronic Toxicity Test Results

#### Results of a 7-Day Pimephales promelas Survival and Growth Test

Test Solutions	Cumulative Percent Mortality* (Cumulative Percent Adversely Affected)*							Mean Dry Weight*	
	Test Day							Mean	SD
	1	2	3	4	5	6	7		
Primary Control Upstream	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.798	0.083
Secondary Control Lab	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.992	0.014
20%	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	2.5% (2.5%)	0.807	0.135
40%	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	2.5% (2.5%)	2.5% (2.5%)	0.856	0.106
60%	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.863	0.067
80%	0.0% (0.0%)	0.0% (0.0%)	2.5% (2.5%)	2.5% (2.5%)	2.5% (2.5%)	5.0% (5.0%)	5.0% (5.0%)	0.954	0.023
100%	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	2.5% (2.5%)	5.0% (5.0%)	7.5% (7.5%)	0.908	0.054
LC50 Values (%):	>100	>100	>100	>100	>100	>100	>100	<b>Calculated TUC for Survival</b>  <1.0	
95% Confidence Limits	LL								
EC50 Values (%):	>100	>100	>100	>100	>100	>100	>100	<b>Calculated TUC for Growth (100/IC25)</b>  <1.0	
95% Confidence Limits	LL								
7-Day NOEC for Mortality (%)	100			7-Day NOEC for Growth (%)		100		<b>Method(s) used to determine Values:</b>  IC Pin, Dunnett's	
7-Day LOEC for Mortality (%)	>100			7-Day LOEC for Growth (%)		>100			
Chronic Value for Mortality (%)	>100			Chronic Value for Growth (%)		>100			
IC25 (%)	>100			IC50 (%)		>100			

\*indicates significant differences from the primary control with an \* (p<0.05)

Chronic Value = square root of (NOEC x LOEC)

**COMMENTS:**

Customer: Allen County Sanitary Engineer  
 Facility: Shawnee No. 2 WWTP  
 Outfall: Effluent 001  
 Ohio EPA Permit No.: 2PK00002\*JD  
 Date of Test: 7/7-13/20

### Chronic Toxicity Test Results

#### Results of a Ceriodaphnia dubia Survival and Reproduction Test

Test Solutions	Cumulative Percent Mortality* (Cumulative Percent Adversely Affected)* Test Day							Number of Young Produced
	1	2	3	4	5	6	7	Mean
	Primary Control Upstream	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	-- (--)
Secondary Control Lab	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	-- (--)	26.1
20%	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	-- (--)	29.4
40%	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	-- (--)	25.4
60%	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	10.0% (10.0%)	10.0% (10.0%)	-- (--)	22.3
80%	10.0% (10.0%)	10.0% (10.0%)	10.0% (10.0%)	10.0% (10.0%)	10.0% (10.0%)	10.0% (10.0%)	-- (--)	19.3
100%	10.0% (10.0%)	40.0% (40.0%)	40.0% (40.0%)	40.0% (40.0%)	40.0% (40.0%)	40.0% (40.0%)	-- (--)	12.2
LC50 Values (%):	>100	104.9				116.8	---	Calculated TUc Value for Survival <1.0
95% Confidence Limits	LL					91.3		
	UL					>100		
EC50 Values (%):	>100	104.9				116.8	---	Calculated TUc Value for Reproduction 1.5
95% Confidence Limits	LL					91.3		
	UL					>100		
NOEC for Mortality (%)		100				NOEC for Reproduction (%)	60	Method(s) used to determine Values:  IC Pin, Wilcoxon Rank Sum Test, Fisher's, Probit
LOEC for Mortality (%)		>100				LOEC for Reproduction (%)	80	
Chronic Value for Mortality (%)		>100				Chronic Value for Reprod (%)	69.3	
IC25 (%)		66.3				IC50 (%)	94.3	

\*indicates significant differences from the primary control with an \* (p<0.05)

Chronic Value = square root of (NOEC x LOEC)

**COMMENTS:**

Customer: Allen County Sanitary Engineer  
 Facility: Shawnee No. 2 WWTP  
 Outfall: Effluent 001  
 Report Date: 7/17/20  
 Ohio EPA Permit No.: 2PK00002\*JD

### Sampling Summary for Chronic Toxicity Tests

Sample Location & Description		Sample	Sample Collection	
			Beginning	Ending
Final Effluent:				
Outfall No.:	Effluent 001	1st	7/5/20 @ 00:00	7/6/20 @ 09:40
Type (Grab/Comp):	Comp	2nd	7/7/20 @ 10:00	7/8/20 @ 10:00
Volume Collected:	5 Gal.	3rd	7/9/20 @ 09:30	7/10/20 @ 09:30
Upstream Station:				
Waterbody:	Ottawa River			
Station No.:	801	1st		7/6/20 @ 09:34
Type (Grab/Comp):	Grab	2nd		7/8/20 @ 10:08
Volume Collected:	5 Gal.	3rd		7/10/20 @ 10:12
Samples collected by: Alloway				

**PIMEPHALES PROMELAS CHRONIC TOXICITY TEST CONDITIONS**

Summary of Toxicity Test Conditions (Ohio EPA 1998; EPA-821R-02-013, Oct. 2002)	
1. Test Species and Age:	<i>Pimephales promelas</i> < 24 hours old
2. Test Type and Duration:	Static renewal; 7 days
3. Test Dates:	7/7-14/20
4. Test Temperature (°C):	25°C ± 1°C
5. Light Quality:	Ambient laboratory illumination
6. Photoperiod:	16 h light, 8 h dark
7. Feeding Regime:	Feed 0.1 g (0.1 to 0.2 mL) newly hatched brine shrimp nauplii three times daily (M-F) at 4-h intervals. On weekends 0.1g of nauplii are fed at the beginning of the workday, after renewal, and at the end of the workday. Sufficient larvae are added to provide an excess. Fish are not fed during the final 12-h of the test.
8. Size of Test Vessel:	500 mL plastic cup
9. Volume and Depth of Test Solutions:	250 mL, 6.7 cm deep
10. No. of Test Organisms per Test Vessel:	10 per test vessel
11. No. of Test Vessels per Test Solution:	4 per solution tested
12. Total No. of Test Organisms per Test Solution:	40 per solution tested
13. Test Concentrations (as percent by volume effluent):	100, 80, 60, 40 and 20% effluent (001)
14. Renewal of Test Solutions:	Daily - day 0, 1 - 7/6/20 ; day 2, 3 - 7/8/20 ; day 4, 5, 6 - 7/10/20
15. Dilution Control Water:	Upstream grab from the receiving stream
16. Secondary Control Water:	Lab rearing unit water
17. Aeration During Test:	None
18. Endpoints Measured:	Mortality, and atypical behavior or appearance; and growth (dry weight).
19. If secondary control water used as diluent due to toxicity in primary control water, indicate number of consecutive tests conducted with alternative diluent:	



**CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST CONDITIONS**

Summary of Toxicity Test Conditions (Ohio EPA 1998; EPA-821R-02-013, Oct. 2002)	
1. Test Species and Age:	<i>Ceriodaphnia dubia</i> <24 hours (8H window)
2. Test Type and Duration:	Static renewal; Until 60% or more of surviving control females have three broods (maximum test duration 8 days)
3. Test Dates:	7/7-13/20
4. Test Temperature (°C):	25°C ± 1°C
5. Light Quality:	Ambient laboratory illumination
6. Photoperiod:	16 h light, 8 h dark
7. Feeding Regime:	Fed 0.1 mL YCT and 0.1 mL (3.5 million cells) <i>Selenastrum capricornutum</i> .
8. Size of Test Vessel:	1 fl. oz. (30 mL) clear plastic cup
9. Volume and Depth of Test Solutions:	15 mL, 20 mm deep
10. No. of Test Organisms per Test Vessel:	1 per test vessel
11. No. of Test Vessels per Test Solution:	10 per solution tested
12. Total No. of Test Organisms per Test Solution:	10 per solution tested
13. Test Concentrations (as percent by volume effluent):	100, 80, 60, 40 and 20% effluent (001)
14. Renewal of Test Solutions:	Daily - day 0, 1 - 7/6/20 ; day 2, 3 - 7/8/20 ; day 4, 5, 6 - 7/10/20
15. Dilution Control Water:	Upstream grab from the receiving stream
16. Secondary Control Water:	Lab rearing unit water
17. Aeration During Test:	None
18. Endpoints Measured:	Mortality, and atypical behavior or appearance; and reproduction (number of young produced).
19. If secondary control water used as diluent due to toxicity in primary control water, indicate number of consecutive tests conducted with alternative diluent:	

## **Appendix A**

### **Field Data**



**Alloway**  
Your Resource for Defensible Data

# Chain of Custody Record

This is a legal document that authorizes Alloway to perform testing on samples submitted under this agreement.

Project: L20-16001



**Report To:** Rick Boerger  
**Name:** Allen County Sanitary Engineer  
**Company:** 3226 North Cole St.  
**Address:** Lima, OH 45805

**Invoice To (if Different):**  
**Name:**  
**Company:**  
**Address:**

**Phone #:** 419-225-8048  
**E-mail:** rboerger@allencountyohio.com  
**Fax #:**  
**PO#:**

**Project Name:** Bioassay - Shawnee II - DAY 1

**Turnaround:** (rush charges may apply)  
 3 Working Days   
 5 Working Days

Sampler	Customer Sample ID / Sample Location	Sample Date	Sample Time	Composite	Grab	Matrix Code	Number of Containers	Preservation Code #	2 Working Days <input type="checkbox"/>	3 Working Days <input type="checkbox"/>	5 Working Days <input type="checkbox"/>	Routine <input checked="" type="checkbox"/>
1	Effluent	7/6/20	9:40	X		WW	1	1				Toxicity
2	Upstream	7/6/20	9:34		X	SW	1	1				Toxicity
3												
4												
5												
6												
7												
8												

**Relinquished by:** *Jim Furry*

Matrix Codes:	Method of Delivery	Time	Date
WW - wastewater gw - groundwater dw - drinking water sw - surface water W - water oil - oil S - solid sg - sludge l - leachate a - acid p - product o - other	<input type="checkbox"/> UPS <input type="checkbox"/> Fed Ex <input type="checkbox"/> Client <input type="checkbox"/> Alloway Pick Up <input checked="" type="checkbox"/> Alloway Sampling <input type="checkbox"/> Other		

**Received by:** *Jim Furry*

**Received for Laboratory By:** (circle one) Lima Marion

**(Signature)** *Jim Furry* 7/6/20 10:45 A

Matrix Codes:	Method of Delivery	Time	Date
WW - wastewater gw - groundwater dw - drinking water sw - surface water W - water oil - oil S - solid sg - sludge l - leachate a - acid p - product o - other	<input type="checkbox"/> UPS <input type="checkbox"/> Fed Ex <input type="checkbox"/> Client <input type="checkbox"/> Alloway Pick Up <input checked="" type="checkbox"/> Alloway Sampling <input type="checkbox"/> Other		

Preservation Codes:	Sample Receiving (For Lab Use Only)
1 - None 2 - HNO <sub>3</sub> 3 - H <sub>2</sub> SO <sub>4</sub> 4 - HCl 5 - NaOH 6 - NaOH & Zinc Acetate 7 - Sodium Thiosulfate 8 - Ascorbic Acid Sulfite 9 - Maleic Acid Dihydrogen Citrate 10 - EDA 11 - Ammonium Chloride 12 - (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> & NH <sub>4</sub> OH	Ice Present? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Proper Preservation? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Container Temperature: 10°C

**Transported to:** Lima Marion  
**By:** \_\_\_\_\_  
**Received By:** \_\_\_\_\_  
**Date:** \_\_\_\_\_  
**Time:** \_\_\_\_\_

**Transported to:** Lima Marion  
**By:** \_\_\_\_\_  
**Received By:** \_\_\_\_\_  
**Date:** \_\_\_\_\_  
**Time:** \_\_\_\_\_



# Alloway

Your Resource for Defensible Data

# Chain of Custody Record

This is a legal document that authorizes Alloway to perform testing on samples submitted under this agreement.

- 1101 North Cole Street, Lima, OH 45805
- (P) 419-223-1362 (F) 419-227-3792
- 1776 Marlon-Waldo Road, Marion OH 43302
- (P) 740-389-5991 (F) 740-389-1481
- 1502 W. Fourth Street, Mansfield, OH 44906
- (P) 419-525-1644 (F) 419-524-5575

<b>Report To:</b> Rick Boerger Name: Allen County Sanitary Engineer Company: 3226 North Cole St. Address: Lima, OH 45805		<b>Invoice To (if Different):</b> Name: Company: Address: PO#:	
Phone #: 419-225-8048 E-mail: rboerger@allencountyohio.com	Project Name: <b>Bioassay - Shawnee II - DAY 2</b>		
Sampler: <i>Michael S. Henry</i> Customer: <i>Michael S. Henry</i>	Sample Date: <i>7/27/20</i> Sample Time: <i>10:00</i>	Composite: <b>X</b>	Number of Containers: <b>1</b>
Sample ID / Sample Location: <b>Effluent</b>	Matrix Code: <b>WW</b>	Grab:	Preservation Code #: <b>1</b>
Sample ID / Sample Location: <b>Upstream</b>	Matrix Code: <b>SW</b>	Grab: <b>X</b>	Preservation Code #: <b>1</b>
3			
4			
5			
6			
7			
8			
<b>Relinquished by:</b>		<b>Received by:</b>	<b>Time:</b>
1			
2			
3			
4			
5			
6			
<b>Received for Laboratory By: (circle one)</b> <b>Mansfield</b> <b>Lima</b> <b>Marion</b>		Date: <i>7/28/20</i>	Time: <i>10:59</i>
<b>(Signature)</b>		<b>Received By:</b>	<b>Time:</b>

Notes/Comments:

Turnaround: (Rush Charges May Apply)

Next Day  3 Working Days

2 Working Days  6 Working Days

Routine

Analysis Required

Toxicity

Toxicity

Alloway LIMS # For Lab Use Only

Matrix Codes:

1 - None

2 - HNO<sub>3</sub>

3 - H<sub>2</sub>SO<sub>4</sub>

4 - HCl

5 - NaOH

6 - NaOH & Zinc Acetate

7 - Sodium Thiosulfate

8 - Ascorbic Acid Sulfite

9 - Maleic Acid Dihydrogen Citrate

10 - EDTA

11 - Ammonium Chloride

12 - (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> & NH<sub>4</sub>OH

Method of Delivery

UPS

Fed Ex

Client

Alloway Pick Up

Alloway Sampling

Other

Preservation Codes:

13 - Zinc Acetate

14 - Sodium Sulfite

15 - Potassium Dihydrogen Citrate

16 - Sodium Sulfite/Sodium Bisulfate

Ice Present?

Proper Preservation?

Container Temperature: *T-20 21°C*

Transported to: Lima  
Marion

By: *[Signature]*

Received By: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Transported to: Lima  
Marion

By: \_\_\_\_\_

Received By: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_



**Appendix B**  
**Raw Data Sheets**

**CONDITION OF ORGANISMS\* IN REPLICATE TEST VESSELS  
7-DAY PIMEPHALES PROMELAS CHRONIC TOXICITY TEST**

Industry/Toxicant: Allen County, Shawnee No. 2 WWTP Person(s) Conducting Test: BG, JDP, EMS, TAG  
 Address: 3640 Spencerville Road, Lima, OH 45805 Beginning: Date 7/7/20 Time 1140  
 Effluent Serial No.: 001 NPDES Permit No.: 2PK00002\*JD Ending: Date 7/14/20 Time 0930  
 Age of *Pimephales promelas*: < 24 Hours  
 Dilution Water Used: Upstream

Day	Lab Control				Upstream Control				20% Effluent				40% Effluent							
	1	2	3	4	Total	1	2	3	4	Total	1	2	3	4	Total	1	2	3	4	Total
start	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G
1	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G
2	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G
3	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G
4	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G
5	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G
6	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G
7	10G	10G	10G	10G	40G	10G	10G	10G	10G	40G	9G 1D	10G	10G	10G	39G 1D	10G	10G	10G	10G	39G 1D

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
 LA = Lab Accident (not used in analyses of data).

**CONDITION OF ORGANISMS\* IN REPLICATE TEST VESSELS  
7-DAY PIMEPHALES PROMELAS CHRONIC TOXICITY TEST**

Industry/Toxicant: Allen County, Shawnee No. 2 WWTP  
 Address: 3640 Spencerville Road, Lima, OH 45805  
 Effluent Serial No.: 001 NPDES Permit No.: 2PK00002\*JD

Person(s) Conducting Test: BG, JDP, EMS, TAG  
 Beginning: Date 7/7/20 Time 1140  
 Ending: Date 7/14/20 Time 0930  
 Age of *Pimephales promelas*: < 24 Hours  
 Dilution Water Used: Upstream

Day	60% Effluent				80% Effluent				100% Effluent				Total					
	1	2	3	4	1	2	3	4	1	2	3	4		1	2	3	4	Total
start	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	40G	40G
1	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	40G	40G
2	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	10G	40G	40G
3	10G	10G	10G	10G	10G	10G	10G	10G	9G	10G	10G	10G	10G	10G	10G	10G	39G	40G
4	10G	10G	10G	10G	10G	10G	10G	10G	9G	10G	10G	10G	10G	10G	10G	10G	39G	40G
5	10G	10G	10G	10G	10G	10G	10G	10G	9G	10G	10G	10G	10G	10G	10G	10G	39G	40G
6	10G	10G	10G	10G	10G	10G	10G	10G	9G	10G	10G	10G	10G	10G	10G	10G	38G	40G
7	10G	10G	10G	10G	10G	10G	10G	10G	9G	10G	10G	10G	10G	10G	10G	10G	38G	40G

DJA

DJA

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
 LA = Lab Accident (not used in analyses of data).



**WEIGHT OF FISH IN REPLICATE TEST VESSELS  
7-DAY PIMEPHALES PROMELAS CHRONIC TOXICITY TEST**

Discharge: Allen County, Shawnee No. 2 WWTP Date of Test: 7/7/20 - 7/14/20  
 Address: 3640 Spencerville Road, Lima, OH 45805  
 Effluent Serial No.: 001 NPDES Permit No.: 2PK00002\*JD Pimephales promelas Age at Start: < 24 Hours  
 Drying Temperature (C°): 60 Drying Time (h): 24 Date Weighed: 7/15/20 Analyst: EMS

Balance Calibration Check: 1.00000 grams Date: 7/2/20 Analyst: DDP Dilution Water Used: Upstream

Test Solution	Replicate	A Number of Fish Weighed	B Dry Weight (g) of Boat	C Dry Weight (g) Boat + Fish	D No. of Original Fish	E = C-B Total Dry Weight of Fish (mg)	F = E/D Avg. Dry Weight of Fish (mg)
Fish at Start of Test			1.09888		10	1.26	0.126
Lab Control	1	10	1.09673	1.10652	10	9.79	.979
	2	10	1.09736	1.10726	10	9.90	.990
	3	10	1.10297	1.11310	10	10.13	1.013
	4	10	1.08894	1.09882	10	9.88	.988
Upstream Control	1	10	1.12478	1.13150	10	6.78	.678
	2	10	1.10465	1.11273	10	8.08	.808
	3	10	1.09455	1.10308	10	8.53	.853
	4	10	1.13382	1.14237	10	8.55	.855
20% Effluent	1	9	1.12596	1.13264	10	6.68	.668
	2	10	1.09304	1.10139	10	8.35	.835
	3	10	1.10102	1.11084	10	9.82	.982
	4	10	1.07924	1.08608	10	7.44	.744
40% Effluent	1	10	1.09521	1.09475	10	9.54	.954
	2	10	1.10362	1.11284	10	9.22	.922
	3	9	1.09332	1.10039	10	7.17	.717
	4	10	1.12795	1.13626	10	8.31	.831

Reviewed By: BB 7/17/20

BB 7/17/20

**WEIGHT OF FISH IN REPLICATE TEST VESSELS  
7-DAY PIMEPHALES PROMELAS CHRONIC TOXICITY TEST**

Discharge: Allen County, Shawnee No. 2 WWTP

Date of Test: 7/7/20 - 7/14/20

Address: 3640 Spencerville Road, Lima, OH 45805

*Pimephales promelas* Age at Start: < 24 Hours

NPDES Permit No.: 2PK00002\*JD

Effluent Serial No.: 001

Drying Time (h): 24

60

Drying Temperature (C°):

Dilution Water Used: Upstream

Test Solution	Replicate	A Number of Fish Weighed	B Dry Weight (g) of Boat	C Dry Weight (g) Boat + Fish	D No. of Original Fish	E = C-B Total Dry Weight of Fish (mg)	F = E/D Avg. Dry Weight of Fish (mg)
<b>60% Effluent</b>	1	10	1.12913	1.13866	10	9.53	.953
	2	10	1.08627	1.09493	10	8.66	.866
	3	10	1.13232	1.14026	10	7.94	.794
	4	10	1.10699	1.11537	10	8.38	.838
<b>80% Effluent</b>	1	10	1.12398	1.13358	10	9.60	.960
	2	9	1.08959	1.09881	10	9.22	.922
	3	10	1.09706	1.10683	10	9.77	.977
	4	9	1.08337	1.09292	10	9.55	.955
<b>100% Effluent</b>	1	9	1.09971	1.10829	10	8.58	.858
	2	9	1.09874	1.10740	10	8.66	.866
	3	9	1.09790	1.10754	10	9.64	.964
	4	10	1.08660	1.09603	10	9.43	.943
	1				10		
	2				10		
	3				10		
	4				10		

Larval Fish Growth and Survival Test-7 Day Growth

Start Date: 7/7/2020 Test ID: Shaw0720p Sample ID: L20-16001-01  
 End Date: 7/14/2020 Lab ID: ALL-ALLOWAY Sample Type: DMR-Discharge Monitoring Report  
 Sample Date: Protocol: EPAFW02-EPA/821/R-02-01 Test Species: PP-Pimephales promelas  
 Comments:

Conc-%	1	2	3	4
Upstr Control	0.6780	0.8080	0.8530	0.8550
20	0.6680	0.8350	0.9820	0.7440
40	0.9540	0.9220	0.7170	0.8310
60	0.9530	0.8660	0.7940	0.8380
80	0.9600	0.9220	0.9770	0.9550
100	0.8580	0.8660	0.9640	0.9430

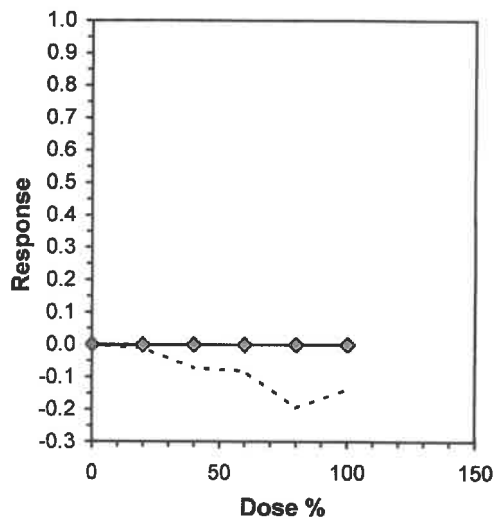
Conc-%	Mean	N-Mean	Transform: Untransformed					N	t-Stat	1-Tailed Critical	MSD	Isotonic	
			Mean	Min	Max	CV%	Mean					N-Mean	
Upstr Control	0.7985	1.0000	0.7985	0.6780	0.8550	10.421	4				0.8643	1.0000	
20	0.8073	1.0110	0.8073	0.6680	0.9820	16.727	4	-0.144	2.410	0.1465	0.8643	1.0000	
40	0.8560	1.0720	0.8560	0.7170	0.9540	12.419	4	-0.946	2.410	0.1465	0.8643	1.0000	
60	0.8628	1.0805	0.8628	0.7940	0.9530	7.774	4	-1.057	2.410	0.1465	0.8643	1.0000	
80	0.9535	1.1941	0.9535	0.9220	0.9770	2.414	4	-2.549	2.410	0.1465	0.8643	1.0000	
100	0.9078	1.1368	0.9078	0.8580	0.9640	5.907	4	-1.797	2.410	0.1465	0.8643	1.0000	

Auxiliary Tests	Statistic	Critical	Skew	Kurt						
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.97629	0.916	-0.0077	0.19241						
Bartlett's Test indicates equal variances (p = 0.19)	7.47935	15.0863								
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.14653	0.18351	0.014	0.00739	0.14554	5, 18

Treatments vs Upstr Control

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



## CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST

Solution Tested: Lab Control Person(s) Conducting Test: BG, JDP, EMS, TAG  
 Industry/Toxicant: Allen County, Shawnee No. 2 WWTP Beginning Date: 7/7/20 Time: 1210  
 Address: 3640 Spencerville Road, Lima, OH 45805 Ending Date: 7/13/20 Time: 1417  
 Effluent Serial No.: 001 Age of *Ceriodaphnia dubia*: <24h EC  
 NPDES Permit No.: 2PK00002\*JD Dilution Water Used: Upstream

Rep.	NO. YOUNG PRODUCED / CONDITION OF ADULT*								TOTAL PER REP		
	DAY of TEST								No. Young	No. Broods	
	0	1	2	3	4	5	6	7			
1	0/G	0/G	0/G	4/G	0/G	8/G	13/G	/	25	3	
2	/	/	/	4	0	9	16	/	29	3	
3	/	/	/	0	4	10	14	/	28	3	
4	/	/	/	0	7	9	12	/	28	3	
5	/	/	/	3	9	0	14	/	26	3	
6	/	/	/	3	0	7	14	/	24	3	
7	/	/	/	3	9	0	11	/	23	3	
8	/	/	/	0	4	7	12	/	23	3	
9	/	/	/	0	4	10	14	/	28	3	
10	0/G	0/G	0/G	0/G	5/G	10/G	12/G	/	27	3	
<b>Total Adult Cond.</b>	10G	10G	10G	10G	10G	10G	10G				
									<b>SUM</b>	261	30
									<b>MEAN</b>	26.1	3.0
									<b>S.D.</b>	2.2	0.0

JDP  
7/14

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
 LA = Lab Accident (not used in analyses of data).

Reviewed by: \_\_\_\_\_

## CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST

Solution Tested: <u>Upstream Control</u>	Person(s) Conducting Test: <u>BG, JDP, EMS, TAG</u>
Industry/Toxicant: <u>Allen County, Shawnee No. 2 WWTP</u>	Beginning Date: <u>7/7/20</u> Time: <u>1210</u>
Address: <u>3640 Spencerville Road, Lima, OH 45805</u>	Ending Date: <u>7/13/20</u> Time: <u>1417</u>
Effluent Serial No.: <u>001</u>	Age of <i>Ceriodaphnia dubia</i> : <u>424H</u>
NPDES Permit No.: <u>2PK00002*JD</u>	Dilution Water Used: <u>Upstream</u>

Rep.	NO. YOUNG PRODUCED / CONDITION OF ADULT*								TOTAL PER REP		
	DAY of TEST								No. Young	No. Broods	
	0	1	2	3	4	5	6	7			
1	0/G	0/G	0/G	3/G	5/G	11/G	11/G	11/G	20	3	
2	/	/	/	3	7	0	21	/	31	3	
3	/	/	/	3	1	8	18	/	30	3	
4	/	/	/	3	6	0	16	/	25	3	
5	/	/	/	3	0	7	10	/	22	3	
6	/	/	/	4/G	8/G	0/G	14/G	/	26	3	
7	/	/	/	0/LA	-	-	-	-	-	-	
8	/	/	/	0/G	6/G	12/G	10/G	/	34	3	
9	/	/	/	0/G	5/G	11/G	10/G	/	32	3	
10	0/G	0/G	0/G	4/G	0/G	9/G	15/G	/	28	3	
<b>Total Adult Cond.</b>	10G	10G	10G	9G 1LA	9G 1LA	9G 1LA	9G 1LA		<b>SUM</b>	248	27
									<b>MEAN</b>	27.6	3.0
									<b>S.D.</b>	4.7	0.0

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
 LA = Lab Accident (not used in analyses of data).

## CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST

Solution Tested: <u>20% Effluent</u>	Person(s) Conducting Test: <u>BG, JDP, EMS, TAG</u>
Industry/Toxicant: <u>Allen County, Shawnee No. 2 WWTP</u>	Beginning Date: <u>7/7/20</u> Time: <u>1200</u>
Address: <u>3640 Spencerville Road, Lima, OH 45805</u>	Ending Date: <u>7/13/20</u> Time: <u>1417</u>
Effluent Serial No.: <u>001</u>	Age of <i>Ceriodaphnia dubia</i> : <u>624H</u>
NPDES Permit No.: <u>2PK00002*JD</u>	Dilution Water Used: <u>Upstream</u>

Rep.	NO. YOUNG PRODUCED / CONDITION OF ADULT*								TOTAL PER REP		
	DAY of TEST								No. Young	No. Broods	
	0	1	2	3	4	5	6	7			
1	0/G	0/G	0/G	3/G	0/G	9/G	12/G	/	24	3	
2	/	/	/	4	0	7	17	/	28	3	
3	/	/	/	4	9	0	19	/	32	3	
4	/	/	/	3	6	10	22	/	41	3	
5	/	/	/	0	9	0	16	/	25	2	
6	/	/	/	4	9	0	10	/	23	3	
7	/	/	/	4	1	9	19	/	33	3	
8	/	/	/	4	0	8	17	/	24	3	
9	/	/	/	0	4	10	17	/	31	3	
10	0/G	0/G	0/G	4/G	0/G	9/G	20/G	/	33	3	
<b>Total Adult Cond.</b>	10G	10G	10G	10G	10G	10G	10G		<b>SUM</b>	294	29
									<b>MEAN</b>	29.4	2.9
									<b>S.D.</b>	5.7	0.3

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
 LA = Lab Accident (not used in analyses of data).

## CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST

Solution Tested: <u>40% Effluent</u>	Person(s) Conducting Test: <u>BG, JDP, EMS, TAG</u>
Industry/Toxicant: <u>Allen County, Shawnee No. 2 WWTP</u>	Beginning Date: <u>7/7/20</u> Time: <u>1210</u>
Address: <u>3640 Spencerville Road, Lima, OH 45805</u>	Ending Date: <u>7/13/20</u> Time: <u>1417</u>
Effluent Serial No.: <u>001</u>	Age of <i>Ceriodaphnia dubia</i> : <u>&lt;24H</u>
NPDES Permit No.: <u>2PK00002*JD</u>	Dilution Water Used: <u>Upstream</u>

Rep.	NO. YOUNG PRODUCED / CONDITION OF ADULT*								TOTAL PER REP		
	DAY of TEST								No. Young	No. Broods	
	0	1	2	3	4	5	6	7			
1	0/G	0/G	0/G	4/G	0/G	9/G	16/G	/	29	3	
2	/	/	/	4	0	10	14	/	28	3	
3	/	/	/	3	0	6	17	/	26	3	
4	/	/	/	0	5	8	16	/	29	3	
5	/	/	/	3	4	1	13	/	21	3	
6	/	/	/	3	1	5	11	/	20	3	
7	/	/	/	4	0	5	5	/	24	3	
8	/	/	/	4	0	6	11	/	21	3	
9	/	/	/	0	4	9	17	/	30	3	
10	0/G	0/G	0/G	3/G	7/G	0/G	16/G	/	26	3	
<b>Total Adult Cond.</b>	10G	10G	10G	10G	10G	10G	10G		<b>SUM</b>	254	30
									<b>MEAN</b>	25.4	3.0
									<b>S.D.</b>	3.7	0.0

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
 LA = Lab Accident (not used in analyses of data).

## CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST

Solution Tested: 60% Effluent Person(s) Conducting Test: BG, JDP, EMS, TAG  
 Industry/Toxicant: Allen County, Shawnee No. 2 WWTP Beginning Date: 7/7/20 Time: 1210  
 Address: 3640 Spencerville Road, Lima, OH 45805 Ending Date: 7/13/20 Time: 1417  
 Effluent Serial No.: 001 Age of *Ceriodaphnia dubia*: 424h  
 NPDES Permit No.: 2PK00002\*JD Dilution Water Used: Upstream

Rep.	NO. YOUNG PRODUCED / CONDITION OF ADULT*								TOTAL PER REP	
	DAY of TEST								No. Young	No. Broods
	0	1	2	3	4	5	6	7		
1	0/G	0/G	0/G	3/G	0/G	9/G	14/G	/	26	3
2	/	/	/	3/G	0/G	10/G	16/G	/	29	3
3	/	/	/	4/G	0/G	6/G	10/G	/	26	3
4	/	/	/	0/G	5/G	0/G	10/G	/	15	2
5	/	/	/	3/G	6/G	0/D	-/-	-/-	9	2
6	/	/	/	0/G	0/G	6/G	11/G	/	17	2
7	/	/	/	4/G	0/G	9/G	14/G	/	27	3
8	/	/	/	0/G	6/G	9/G	13/G	/	28	3
9	/	/	/	0/G	6/G	5/G	15/G	/	26	3
10	0/G	0/G	0/G	3/G	6/G	0/G	11/G	/	20	3
<b>Total Adult Cond.</b>	10G	10G	10G	10G	10G	9G 1D	9G 1D		<b>SUM</b> 223	27
									<b>MEAN</b> 22.3	2.7
									<b>S.D.</b> 6.7	0.5

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
 LA = Lab Accident (not used in analyses of data).



## CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST

Solution Tested: <u>80% Effluent</u>	Person(s) Conducting Test: <u>BG, JDP, EMS, TAG</u>
Industry/Toxicant: <u>Allen County, Shawnee No. 2 WWTP</u>	Beginning Date: <u>7/7/20</u> Time: <u>1210</u>
Address: <u>3640 Spencerville Road, Lima, OH 45805</u>	Ending Date: <u>7/13/20</u> Time: <u>1411</u>
Effluent Serial No.: <u>001</u>	Age of <i>Ceriodaphnia dubia</i> : <u>22H</u>
NPDES Permit No.: <u>2PK00002*JD</u>	Dilution Water Used: <u>Upstream</u>

Rep.	NO. YOUNG PRODUCED / CONDITION OF ADULT*								TOTAL PER REP		
	DAY of TEST								No. Young	No. Broods	
	0	1	2	3	4	5	6	7			
1	0/G	0/D	-/-	-/-	-/-	-/-	-/-	-/-	0	0	
2	/	0/G	0/G	0/G	0/G	5/G	15/G	/	20	2	
3	/	/	/	0	0	5	13	/	18	2	
4	/	/	/	0	4	8	<del>12</del> 15	/	27	3	
5	/	/	/	0	0	4	12	/	16	2	
6	/	/	/	3	0	5	11	/	19	3	
7	/	/	/	0	6	0	13	/	19	2	
8	/	/	/	0	4	5	14	/	23	3	
9	/	/	/	0	5	9	15	/	29	3	
10	0/G	0/G	0/G	3/G	4/G	0/G	15/G	/	22	3	
<b>Total Adult Cond.</b>	10G	9G 1D	9G 1D	9G 1D	9G 1D	9G 1D	9G 1D		<b>SUM</b>	193	27
									<b>MEAN</b>	19.3	2.3
									<b>S.D.</b>	7.9	0.9

JDP  
7/14

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
LA = Lab Accident (not used in analyses of data).

## CERIODAPHНИЯ DUBIA CHRONIC TOXICITY TEST

Solution Tested: 100% Effluent Person(s) Conducting Test: BG, JDP, EMS, TAG  
 Industry/Toxicant: Allen County, Shawnee No. 2 WWTP Beginning Date: 7/7/20 Time: 1200  
 Address: 3640 Spencerville Road, Lima, OH 45805 Ending Date: 7/13/20 Time: 1417  
 Effluent Serial No.: 001 Age of *Ceriodaphnia dubia*: 24H  
 NPDES Permit No.: 2PK00002\*JD Dilution Water Used: Upstream

Rep.	NO. YOUNG PRODUCED / CONDITION OF ADULT*								TOTAL PER REP			
	DAY of TEST								No. Young	No. Broods		
	0	1	2	3	4	5	6	7				
1	0/G	0/D	-/-	-/-	-/-	-/-	-/-	-/-	D	0	0	
2	/	/G	0/G	0/G	0/G	7/G	12/G	/		19	2	
3	/	/	/	1/G	0/G	5/G	11/G	/		17	3	
4	/	/	/G	0/G	5/G	8/G	13/G	/		26	3	
5	/	/	D	-/-	-/-	-/-	-/-	-/-	D	0	0	
6	/	/	/G	0/G	0/G	5/G	11/G	/		16	2	
7	/	/	/G	3/G	0/G	4/G	11/G	/		18	3	
8	/	/	D	-/-	-/-	-/-	-/-	-/-	D	0	0	
9	/	/	/G	0/G	5/G	5/G	16/G	/		26	3	
10	0/G	0/G	0/D	-/-	-/-	-/-	-/-	-/-	D	0	0	
<b>Total Adult Cond.</b>	10G	9G 1D	6G 4D	6G 4D	6G 4D	6G 4D	6G 4D	6G 4D		<b>SUM</b>	122	16
										<b>MEAN</b>	12.2	1.6
										<b>S.D.</b>	11.0	1.4

\* Condition of Adult: G = Good Condition; D = Dead; A = Atypical Behavior or Appearance.  
 LA = Lab Accident (not used in analyses of data).

**Ceriodaphnia Survival and Reproduction Test-48 Hr Survival**

Start Date: 7/7/2020 Test ID: Shaw0720c Sample ID: L20-16001-01  
 End Date: 7/13/2020 Lab ID: ALL-ALLOWAY Sample Type: DMR-Discharge Monitoring Report  
 Sample Date: Protocol: EPAFW02-EPA/821/R-02-01 Test Species: CD-Ceriodaphnia dubia  
 Comments:

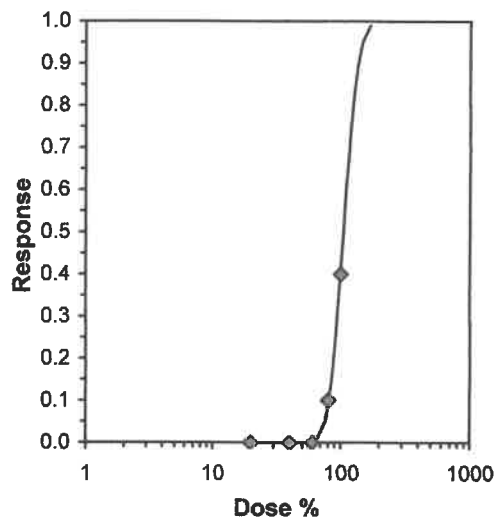
Conc-%	1	2	3	4	5	6	7	8	9	10
Upstr Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
20	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
40	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
60	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
80	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000	0.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
Upstr Control	1.0000	1.0000	0	9	9	9			0	9
20	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
40	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
60	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
80	0.9000	0.9000	1	9	10	10	0.5263	0.0500	1	10
100	0.6000	0.6000	4	6	10	10	0.0542	0.0500	4	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs Upstr Control				

Parameter	Value	SE	95% Fiducial Limits		Maximum Likelihood-Probit						
					Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	11.4108	5.84709	-0.0495	22.8711	0	0.04273	7.81473	0.99768	2.02062	0.08764	3
Intercept	-18.057	11.4754	-40.549	4.43477							
TSCR											

Point	Probits	%	95% Fiducial Limits
EC01	2.674	65.5766	
EC05	3.355	75.2441	
EC10	3.718	80.9675	
EC15	3.964	85.073	
EC20	4.158	88.4839	
EC25	4.326	91.5189	
EC40	4.747	99.6364	
EC50	5.000	104.863	
EC60	5.253	110.363	
EC75	5.674	120.152	
EC80	5.842	124.273	
EC85	6.036	129.256	
EC90	6.282	135.81	
EC95	6.645	146.14	
EC99	7.326	167.684	



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

Start Date: 7/7/2020 Test ID: Shaw0720c Sample ID: L20-16001-01  
 End Date: 7/13/2020 Lab ID: ALL-ALLOWAY Sample Type: DMR-Discharge Monitoring Report  
 Sample Date: Protocol: EPAFW02-EPA/821/R-02-01 Test Species: CD-Ceriodaphnia dubia  
 Comments:

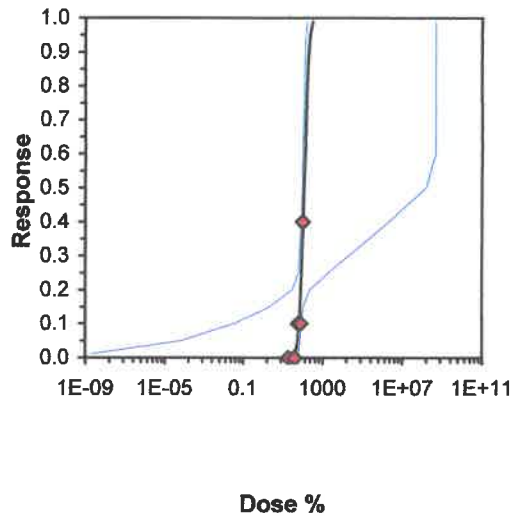
Conc-%	1	2	3	4	5	6	7	8	9	10
Upstr Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
20	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
40	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
60	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000
80	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000	0.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
Upstr Control	1.0000	1.0000	0	9	9	9			0	9
20	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
40	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
60	0.9000	0.9000	1	9	10	10	0.5263	0.0500	1	10
80	0.9000	0.9000	1	9	10	10	0.5263	0.0500	1	10
100	0.6000	0.6000	4	6	10	10	0.0542	0.0500	4	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs Upstr Control				

Parameter	Value	SE	95% Fiducial Limits		Maximum Likelihood-Probit						
			Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter		
Slope	5.48437	2.72968	0.1342	10.8345	0	0.96456	7.81473	0.80983	2.06727	0.18234	4
Intercept	-6.3377	5.23176	-16.592	3.9166							

Point	Probits	%	95% Fiducial Limits	
EC01	2.674	43.9631	2.1E-09	62.3131
EC05	3.355	58.5261	7.7E-05	74.5306
EC10	3.718	68.17	0.03693	85.4922
EC15	3.964	75.5592	2.13202	104.61
EC20	4.158	81.999	29.4311	223.446
EC25	4.326	87.9595	61.2549	1957.21
EC40	4.747	104.972	83.9128	2147581
EC50	5.000	116.753	91.2927	1.6E+08
EC60	5.253	129.856	97.9471	4.9E+08
EC75	5.674	154.971	108.77	4.9E+08
EC80	5.842	166.236	113.15	4.9E+08
EC85	6.036	180.404	118.374	4.9E+08
EC90	6.282	199.959	125.169	4.9E+08
EC95	6.645	232.907	135.781	4.9E+08
EC99	7.326	310.059	157.766	4.9E+08



**Ceriodaphnia Survival and Reproduction Test-Reproduction**

Start Date: 7/7/2020 Test ID: Shaw0720c Sample ID: L20-16001-01  
 End Date: 7/13/2020 Lab ID: ALL-ALLOWAY Sample Type: DMR-Discharge Monitoring Report  
 Sample Date: Protocol: EPAFW02-EPA/821/R-02-01 Test Species: CD-Ceriodaphnia dubia  
 Comments:

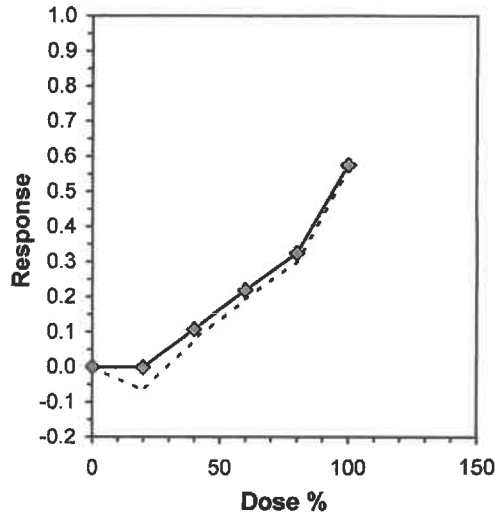
Conc-%	1	2	3	4	5	6	7	8	9	10
Upstr Control	20.000	31.000	30.000	25.000	22.000	26.000	34.000	32.000	28.000	
20	24.000	28.000	32.000	41.000	25.000	23.000	33.000	24.000	31.000	33.000
40	29.000	28.000	26.000	29.000	21.000	20.000	24.000	21.000	30.000	26.000
60	26.000	29.000	26.000	15.000	9.000	17.000	27.000	28.000	26.000	20.000
80	0.000	20.000	18.000	27.000	16.000	19.000	19.000	23.000	29.000	22.000
100	0.000	19.000	17.000	26.000	0.000	16.000	18.000	0.000	26.000	0.000

Conc-%	Mean	N-Mean	Transform: Untransformed				Rank Sum	1-Tailed Critical	MSD	Isotonic	
			Mean	Min	Max	CV%				N	Mean
Upstr Control	27.556	1.0000	27.556	20.000	34.000	17.032	9		28.478	1.0000	
20	29.400	1.0669	29.400	23.000	41.000	19.321	10	7.432	28.478	1.0000	
40	25.400	0.9218	25.400	20.000	30.000	14.637	10		25.400	0.8919	
60	22.300	0.8093	22.300	9.000	29.000	30.048	10		22.300	0.7831	
*80	19.300	0.7004	19.300	0.000	29.000	40.875	10		19.300	0.6777	
*100	12.200	0.4427	12.200	0.000	26.000	90.354	10	7.432	12.200	0.4284	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	0.90109	0.895	-0.4975	0.38572
Bartlett's Test indicates equal variances (p = 0.03)	12.5029	15.0863		
<b>Hypothesis Test (1-tail, 0.05)</b>	<b>NOEC</b>	<b>LOEC</b>	<b>ChV</b>	<b>TU</b>
Wilcoxon Rank Sum Test	60	80	69.282	1.66667
Treatments vs Upstr Control				

**Linear Interpolation (200 Resamples)**

Point	%	SD	95% CL	Skew
IC05	29.253	7.774	12.083 44.279	0.2617
IC10	38.505	8.396	25.658 60.530	0.7470
IC15	47.703	9.085	33.053 66.778	0.4920
IC20	56.889	9.997	38.534 80.526	0.4109
IC25	66.278	10.432	48.271 83.481	0.2128
IC40	86.235			
IC50	94.257			



**CERIODAPHNIA BROOD STOCK INDIVIDUAL CULTURE INFORMATION FORM  
FOR C. DUBIA BROODS USED IN CHRONIC TESTS**

Discharger/Toxicant: Allen County, Shawnee No. 2 WWTP  
 Address: 3640 Spencerville Road, Lima, OH 45805  
 Type of Test: Chronic Date of Test: 7/7/20 - 7/13/20  
 Effluent Serial No.: 001 Permit No.: 2PK00002\*JD

Investigator: Dr Culture No.: ECT  
 Culture initiation date: \_\_\_\_\_ Culture ending date: \_\_\_\_\_  
 Origin of parental organisms: ECT  
 Age at start of culture: \_\_\_\_\_  
 Culture water renewal frequency: minimum 3 times per week Culture water: Mod Hard Regen  
 Culture temperature: 25°C Fed Daily: 0.1 mL YCT & 0.1 mL Selenastrum capricornutum

Number of brood organisms at start of culture: \_\_\_\_\_  
 Percent survival of parental organisms after 7 days: \_\_\_\_\_  
 Percent of non-reproducing adults after 7 days: \_\_\_\_\_  
 Average young production after 7 days of brood adults for test: \_\_\_\_\_

<u>BROOD ADULT NO.</u>	<u>BROOD SIZE</u>	<u>HATCHING TIME WINDOW</u>	<u>TOTAL; YOUNG PROD. (7 DAYS)</u>	<u>USED IN REP. NO.</u>
1)	1	424H		1
2)	2			2
3)	3			3
4)	4			4
5)	5			5
6)	6			6
7)	7			7
8)	8			8
9)	9			9
10)	10	424H		10

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Appendix C**  
**Parameter Data**

# PHYSICAL-CHEMICAL DATA OF SAMPLES WHEN RECEIVED BY LAB For Chronic Toxicity Testing

Industry/Toxicant: Allen County, Shawnee No. 2 WWTP  
 Address: 3640 Spencerville Road, Lima, OH 45805  
 Effluent Serial No.: 001 Permit No.: 2PK00002\*JD  
 Type of Test: Chronic Date of Test: 7/7/20 - 7/14/20

### 1st Sample Collection

Date Samples Collected: 7/6/20 Date Samples Read: 7/7/20 Analyst: CMW

	<u>100% Effluent</u>	<u>Upstream</u>	-	-
Temperature (°C)	10.1	16.0		
Dissolved Oxygen (mg/L)	6.7	7.5		
pH (s.u.)	7.31	7.47		
Conductivity (µmhos)	768	1861		
Chlorine, total (mg/L)	70.02	70.02		
Visual Description	light green/ yellow stain	light green/ yellow stain		

### 2nd Sample Collection

Date Samples Collected: 7/8/20 Date Samples Read: 7/8/20 Analyst: SDP

	<u>100% Effluent</u>	<u>Upstream</u>	-	-
Temperature (°C)	20.2	22.6		
Dissolved Oxygen (mg/L)	5.2	5.8		
pH (s.u.)	6.95	6.88		
Conductivity (µmhos)	771	1389		
Chlorine, total (mg/L)	<0.02	<0.02		
Visual Description	Yellow Stain	Yellow Stain		

### 3rd Sample Collection

Date Samples Collected: 7/10/20 Date Samples Read: 7/10/20 Analyst: SDP

	<u>100% Effluent</u>		<u>Upstream</u>		-	-
Temperature (°C)	10.1	18.9	15.0	23.0		
Dissolved Oxygen (mg/L)	6.7	5.1	7.5	5.4		
pH (s.u.)	7.31	6.81	7.47	7.09		
Conductivity (µmhos)	768	710	1861	1043		
Chlorine, total (mg/L)	70.02	<0.02	70.02	<0.02		
Visual Description	light ye CMW	Yellow Stain	CMW	Yellow Stain		



**PHYSICAL-CHEMICAL DATA  
PIMEPHALES PROMELAS 7-DAY CHRONIC TOXICITY TEST**

Solution Tested: Lab Control  
 Industry/Toxicant: Allen County, Shawnee No. 2 WWTP  
 Address: 3640 Spencerville Road, Lima, OH 45805  
 Effluent Serial No.: 001 NPDES Permit No.: 2PK00002\*JD

Person(s) conducting Test: BG, JDP, EMS, TAG  
 Beginning Date: 7/7/20 Time: 1140  
 Ending Date: 7/14/20 Time: 0930  
 Test Organism: Pimephales promelas Age: < 24 Hours  
 Dilution Water Used: Upstream

Day	0		1		2		3		4		5		6		7
	Solution	New	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	Old
Temperature (°C)	24.0	25.7	25.4	24.0	23.9	24.5	25.2	24.2	25.3	24.2	24.6	23.6	24.5	24.1	24.3
Dissolved Oxygen (mg/L)	7.5	6.6	7.3	5.6	7.0	5.7	7.1	6.1	7.0	6.2	7.0	6.2	7.3	5.8	5.5
pH (s.u.)	7.41	7.23	7.21	7.17	7.62	7.37	7.30	7.88	7.33	7.55	7.41	7.57	7.61	7.57	7.35
Conductivity (µmho/cm)	307	338	310	322	311	327	312	470	315	340	322	349	322	349	338
Hardness (mg/L CaCO <sub>3</sub> )	103	-	103	-	-	-	103	-	-	-	-	-	-	-	-
Alkalinity (mg/L CaCO <sub>3</sub> )	86	-	86	-	-	-	86	-	-	-	-	-	-	-	-

SDP  
7/10













**PHYSICAL-CHEMICAL DATA  
CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST**

Solution Tested: Lab Control  
 Industry/Toxicant: Allen County, Shawnee No. 2 WWTP  
 Address: 3640 Spencerville Road, Lima, OH 45805  
 Effluent Serial No.: 001  
 NPDES Permit No.: 2PK00002\*JD

Person(s) conducting Test: BG, JDP, EMS, TAG  
 Beginning Date: 7/7/20  
 Ending Date: 7/13/20  
 Test Organism: Ceriodaphnia dubia  
 Dilution Water Used: Upstream

Time: 12:10  
 Time: 14:17  
 Age: 24H

Day	0		1		2		3		4		5		6		7	
	Solution	New	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old
Temperature (°C)	25.0	24.9	24.0	24.9	24.7	23.9	25.0	23.9	24.7	24.6	24.7	24.1	24.6	24.1	24.5	24.9
Dissolved Oxygen (mg/L)	8.3	7.4	7.5	7.3	7.4	7.3	7.5	7.3	7.2	7.1	6.9	7.4	7.1	7.4	6.8	
pH (s.u.)	7.31	7.28	7.49	7.54	7.27	7.54	7.17	7.18	7.06	7.18	7.21	7.82	7.18	7.82	7.65	
Conductivity (µmho/cm)	426	428	440	446	408	446	404	421	400	421	403	412	421	412	424	
Hardness (mg/L CaCO <sub>3</sub> )	171	-	-	-	154	-	-	-	171	-	-	-	-	-	-	-
Alkalinity (mg/L CaCO <sub>3</sub> )	137	-	-	-	137	-	-	-	137	-	-	-	-	-	-	-





**PHYSICAL-CHEMICAL DATA  
CERIODAPHNIA DUBIA CHRONIC TOXICITY TEST**

Solution Tested: 20% Effluent  
 Industry/Toxicant: Allen County, Shawnee No. 2 WWTP  
 Address: 3640 Spencerville Road, Lima, OH 45805  
 Effluent Serial No.: 001  
 NPDES Permit No.: 2PK00002\*JD

Person(s) conducting Test: BG, JDP, EMS, TAG  
 Beginning Date: 7/7/20  
 Ending Date: 7/13/20  
 Test Organism: Ceriodaphnia dubia  
 Dilution Water Used: Upstream

Time: 12:00  
 Time: 14:17  
 Age: 4-24H

Day	0		1		2		3		4		5		6		7		
	Solution	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	Old	
Temperature (°C)	25.4	25.2	24.0 24.9	25.2	23.9 24.7	25.1	23.9 25.1	25.2	24.6 24.7	24.1 24.5	25.2	24.1 24.9					
Dissolved Oxygen (mg/L)	7.5	8.6	7.8	7.2	7.4	8.1	7.4	7.2	7.5	7.6	7.5	7.6			7.0		
pH (s.u.)	7.41	7.25	7.50	7.41	7.49	7.41	7.33	7.43	7.40	7.89	7.44	7.89			7.05		
Conductivity (µmho/cm)	1103	1157	1177	1262	1211	1266	1317	979	1219	1018	978	1018			1026		
Hardness (mg/L CaCO <sub>3</sub> )	-	-	-	-	-	-	-	-	-	-	-	-			-		
Alkalinity (mg/L CaCO <sub>3</sub> )	-	-	-	-	-	-	-	-	-	-	-	-			-		







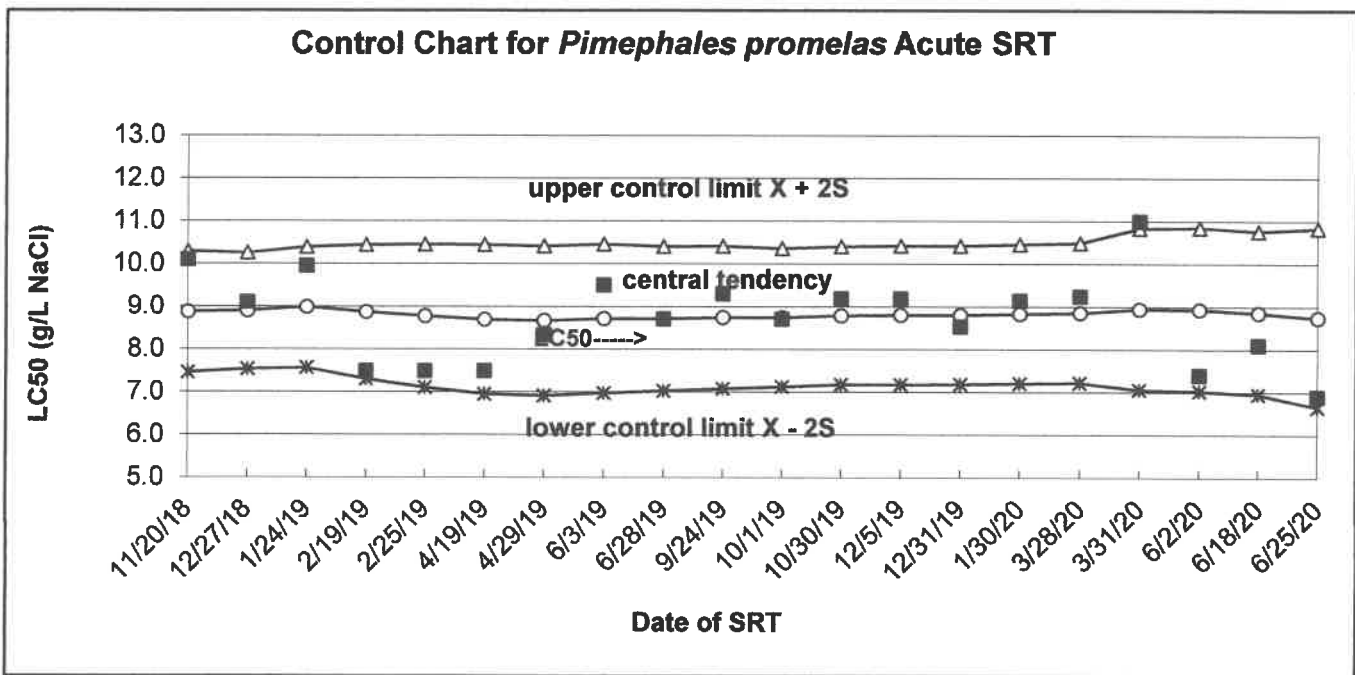


## **Appendix D**

### **SRT Data**

## 48-H LC50 for *Pimephales promelas* Acute NaCl SRT

Date of Test	Cumulative								LC50 Method <sup>1</sup>
	LC50	LC50 Mean	SD	X+2SD	X-2SD	CV*	X+3SD	X-3SD	
11/20/18	10.1	8.9	0.7	10.3	7.5	0.08	11.0	6.8	TSK
12/27/18	9.1	8.9	0.7	10.3	7.5	0.08	10.9	6.9	TSK
1/24/19	9.9	9.0	0.7	10.4	7.6	0.08	11.1	6.8	Probit
2/19/19	7.5	8.9	0.8	10.4	7.3	0.09	11.2	6.5	TSK
2/25/19	7.5	8.8	0.8	10.5	7.1	0.10	11.3	6.3	Probit
4/19/19	7.5	8.7	0.9	10.4	6.9	0.10	11.3	6.1	TSK
4/29/19	8.3	8.7	0.9	10.4	6.9	0.10	11.3	6.0	Probit
6/3/19	9.5	8.7	0.9	10.5	7.0	0.10	11.3	6.1	TSK
6/28/19	8.7	8.7	0.8	10.4	7.0	0.10	11.2	6.2	TSK
9/24/19	9.3	8.7	0.8	10.4	7.1	0.10	11.2	6.2	TSK
10/1/19	8.7	8.7	0.8	10.4	7.1	0.09	11.2	6.3	Probit
10/30/19	9.2	8.8	0.8	10.4	7.2	0.09	11.2	6.4	TSK
12/5/19	9.2	8.8	0.8	10.4	7.2	0.09	11.2	6.4	TSK
12/31/19	8.5	8.8	0.8	10.4	7.2	0.09	11.2	6.4	Probit
1/30/20	9.1	8.8	0.8	10.5	7.2	0.09	11.3	6.4	Probit
3/28/20	9.2	8.9	0.8	10.5	7.2	0.09	11.3	6.4	Probit
3/31/20	11.0	8.9	0.9	10.8	7.1	0.11	11.8	6.1	Probit
6/2/20	7.4	8.9	1.0	10.8	7.0	0.11	11.8	6.1	Probit
6/18/20	8.1	8.9	1.0	10.8	6.9	0.11	11.7	6.0	Probit
6/25/20	6.9	8.7	1.0	10.8	6.7	0.12	11.9	5.6	Probit



\*- compare calculated CV to 75th percentile of CVs reported nationally in Table 3-3 in EPA/833/R-00/003 .

75th percentile of CVs for LC50 = 0.19

Calculated CV should not exceed 75th percentile of CVs.

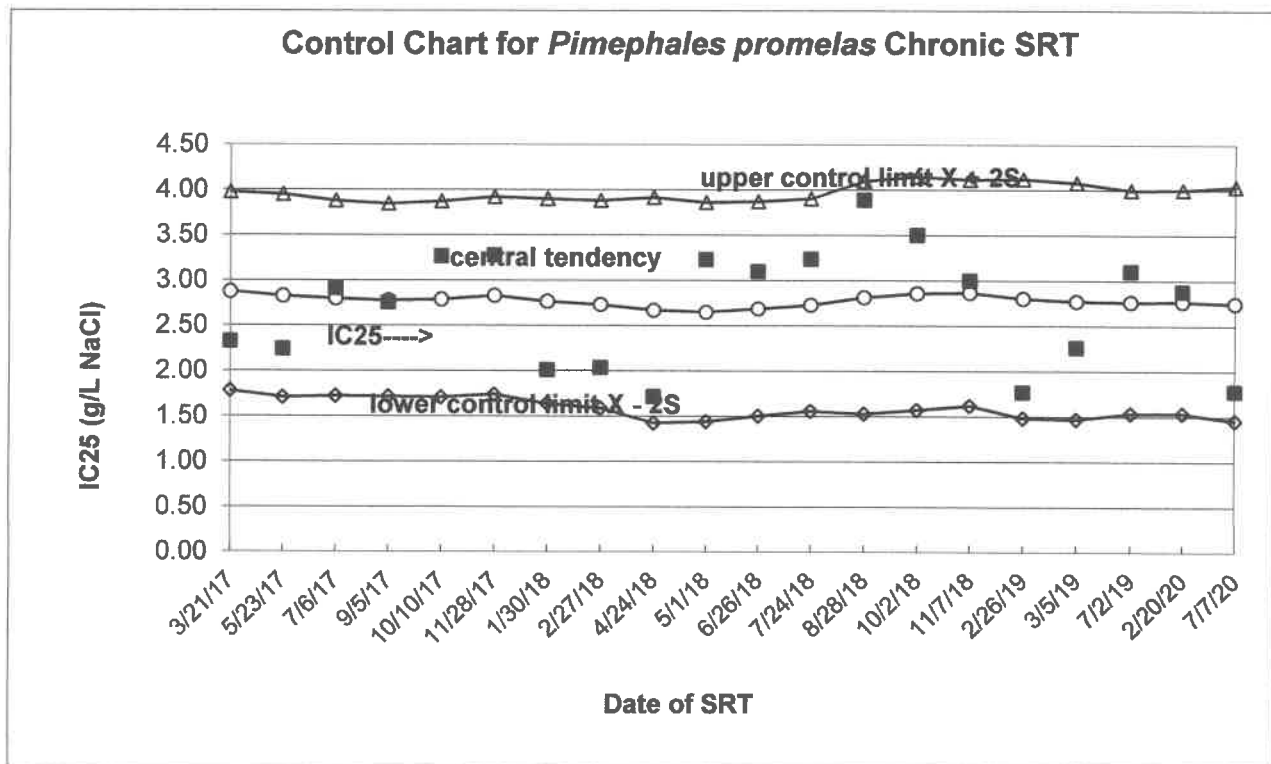
$\bar{X} \pm 3SD$  = Well outside expected range.

1 - P = Probit method, G = Graphical method, SK = Spearman-Kärber method, TSK = Trimmed Spearman-Kärber method.



## IC25 for *Pimephales promelas* Chronic NaCl SRT

Date of Test	IC25	Cumulative IC25 Mean	SD	X+2SD	X-2SD	cv*	X+3SD	X-3SD
3/21/17	2.32	2.88	0.55	3.98	1.78	0.19	4.53	1.23
5/23/17	2.24	2.83	0.56	3.95	1.71	0.20	4.51	1.15
7/6/17	2.91	2.80	0.54	3.88	1.72	0.19	4.42	1.18
9/5/17	2.76	2.78	0.53	3.85	1.71	0.19	4.38	1.18
10/10/17	3.27	2.79	0.54	3.87	1.71	0.19	4.41	1.17
11/28/17	3.27	2.83	0.55	3.92	1.74	0.19	4.47	1.19
1/30/18	2.01	2.77	0.57	3.90	1.64	0.20	4.46	1.07
2/27/18	2.04	2.73	0.57	3.88	1.59	0.21	4.45	1.01
4/24/18	1.72	2.67	0.62	3.91	1.42	0.23	4.53	0.80
5/1/18	3.23	2.65	0.60	3.86	1.44	0.23	4.47	0.84
6/26/18	3.10	2.69	0.59	3.87	1.51	0.22	4.46	0.91
7/24/18	3.24	2.73	0.59	3.90	1.56	0.21	4.49	0.97
8/28/18	3.89	2.81	0.64	4.10	1.53	0.23	4.74	0.88
10/2/18	3.50	2.86	0.64	4.15	1.57	0.23	4.79	0.93
11/7/18	3.00	2.87	0.62	4.11	1.62	0.22	4.74	1.00
2/26/19	1.77	2.80	0.66	4.12	1.48	0.24	4.78	0.82
3/5/19	2.26	2.77	0.65	4.08	1.47	0.24	4.73	0.81
7/2/19	3.10	2.77	0.62	4.00	1.53	0.22	4.61	0.92
2/20/20	2.88	2.77	0.62	4.00	1.54	0.22	4.62	0.92
7/7/20	1.78	2.75	0.65	4.04	1.45	0.24	4.68	0.81



\*- compare calculated CV to 75th percentile of CVs reported nationally in Table 3-2 in EPA/833/R-00/003 .

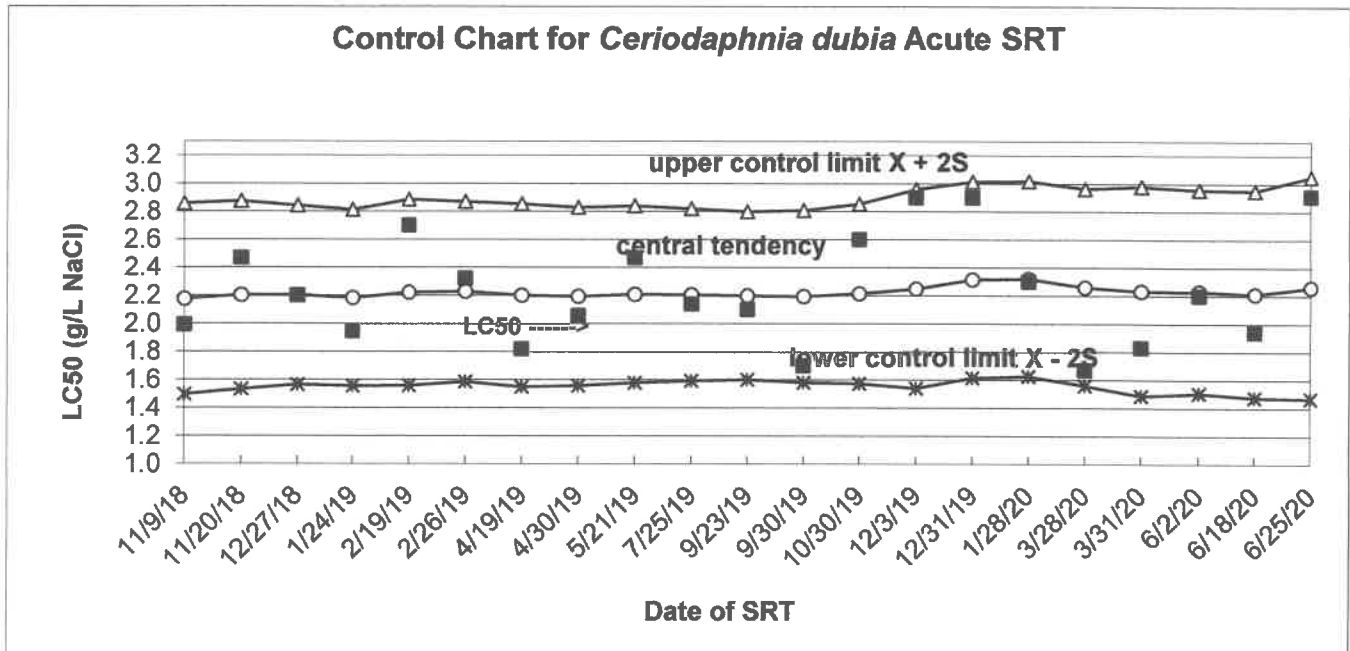
75th percentile of CVs for IC25 = 0.38

Calculated CV should not exceed 75th percentile of CVs.

$\bar{X} \pm 3SD$  = Well outside expected range.

## 48-H LC50 for *Ceriodaphnia dubia* Acute NaCl SRT

Date of Test	Cumulative								LC50
	LC50	LC50 Mean	SD	X+2SD	X-2SD	CV*	X+3SD	X-3SD	Method <sup>1</sup>
11/9/18	2.0	2.2	0.3	2.9	1.5	0.16	3.2	1.2	Probit
11/20/18	2.5	2.2	0.3	2.9	1.5	0.15	3.2	1.2	SK
12/27/18	2.2	2.2	0.3	2.8	1.6	0.15	3.2	1.2	Probit
1/24/19	1.9	2.2	0.3	2.8	1.6	0.14	3.1	1.2	Probit
2/19/19	2.7	2.2	0.3	2.9	1.6	0.15	3.2	1.2	Probit
2/26/19	2.3	2.2	0.3	2.9	1.6	0.14	3.2	1.3	Probit
4/19/19	1.8	2.2	0.3	2.9	1.5	0.15	3.2	1.2	Probit
4/30/19	2.1	2.2	0.3	2.8	1.6	0.15	3.1	1.2	Probit
5/21/19	2.5	2.2	0.3	2.8	1.6	0.14	3.2	1.3	TSK
7/25/19	2.1	2.2	0.3	2.8	1.6	0.14	3.1	1.3	Probit
9/23/19	2.1	2.2	0.3	2.8	1.6	0.14	3.1	1.3	Probit
9/30/19	1.7	2.2	0.3	2.8	1.6	0.14	3.1	1.3	Probit
10/30/19	2.6	2.2	0.3	2.9	1.6	0.14	3.2	1.3	Probit
12/3/19	2.9	2.2	0.4	3.0	1.5	0.16	3.3	1.2	Probit
12/31/19	2.9	2.3	0.3	3.0	1.6	0.15	3.4	1.3	Probit
1/28/20	2.3	2.3	0.3	3.0	1.6	0.15	3.4	1.3	Probit
3/28/20	1.7	2.3	0.4	3.0	1.6	0.16	3.3	1.2	TSK
3/31/20	1.8	2.2	0.4	3.0	1.5	0.17	3.4	1.1	Probit
6/2/20	2.2	2.2	0.4	3.0	1.5	0.16	3.3	1.1	Probit
6/18/20	1.9	2.2	0.4	2.9	1.5	0.17	3.3	1.1	Probit
6/25/20	2.9	2.3	0.4	3.1	1.5	0.18	3.4	1.1	Probit



\*- compare calculated CV to 75th percentile of CVs reported nationally in Table 3-3 in EPA/833/R-00/003 .

75th percentile of CVs for LC50 = 0.29

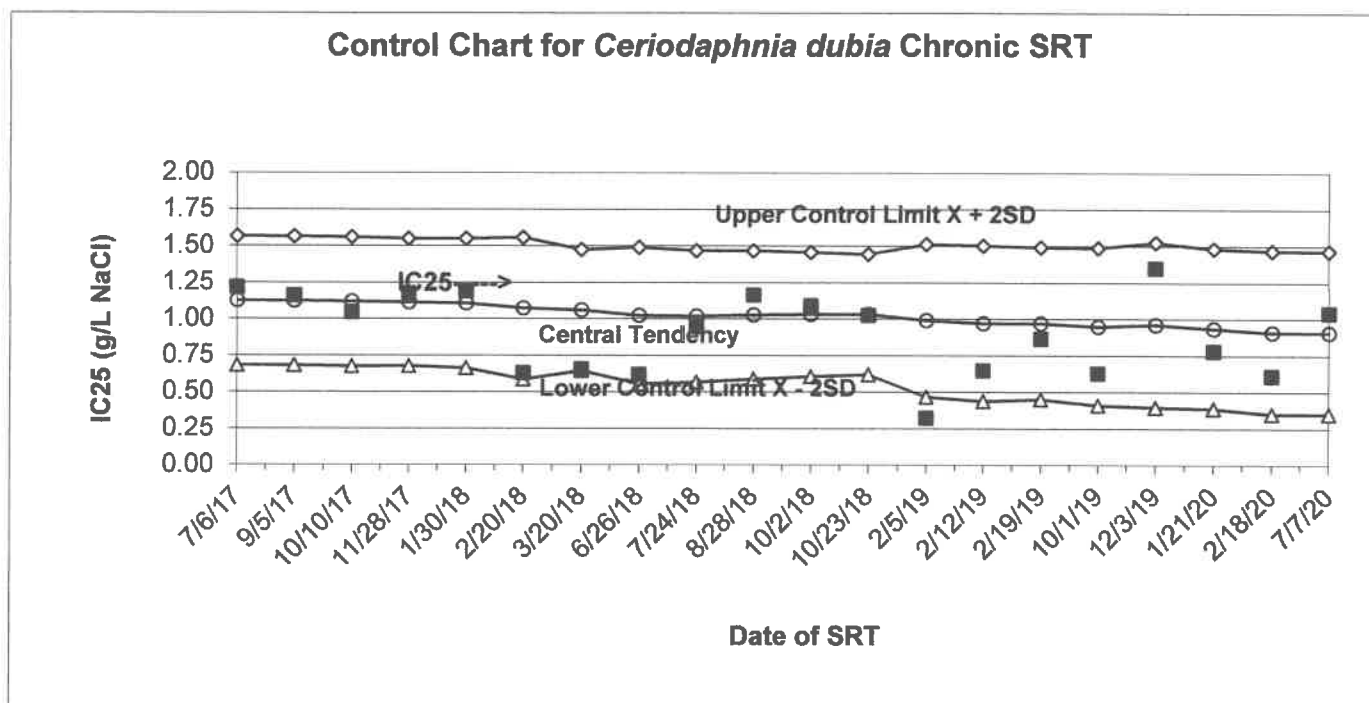
Calculated CV should not exceed 75th percentile of CVs.

$\bar{X} \pm 3SD$  = Well outside expected range.

1 - P = Probit method, G = Graphical method, SK = Spearman-Kärber method, TSK = Trimmed Spearman-Kärber method.

## IC25 for *Ceriodaphnia dubia* Chronic NaCl SRT

Date of Test	IC25	Cumulative IC25 Mean	SD	X+2SD	X-2SD	cv*	X+3SD	X-3SD
7/6/17	1.22	1.12	0.22	1.57	0.68	0.20	1.79	0.46
9/5/17	1.16	1.12	0.22	1.56	0.68	0.20	1.78	0.46
10/10/17	1.04	1.12	0.22	1.56	0.68	0.20	1.78	0.45
11/28/17	1.18	1.11	0.22	1.55	0.68	0.20	1.77	0.46
1/30/18	1.19	1.10	0.22	1.55	0.66	0.20	1.77	0.44
2/20/18	0.63	1.07	0.24	1.56	0.58	0.23	1.80	0.34
3/20/18	0.66	1.06	0.21	1.47	0.64	0.20	1.68	0.44
6/26/18	0.62	1.02	0.23	1.49	0.56	0.23	1.72	0.32
7/24/18	0.95	1.02	0.23	1.47	0.57	0.22	1.69	0.34
8/28/18	1.16	1.03	0.22	1.47	0.59	0.21	1.69	0.37
10/2/18	1.09	1.03	0.21	1.46	0.61	0.21	1.67	0.39
10/23/18	1.02	1.03	0.21	1.44	0.62	0.20	1.65	0.41
2/5/19	0.32	0.99	0.26	1.51	0.47	0.26	1.77	0.20
2/12/19	0.65	0.97	0.27	1.50	0.44	0.27	1.77	0.17
2/19/19	0.87	0.97	0.26	1.49	0.45	0.27	1.75	0.19
10/1/19	0.63	0.95	0.27	1.49	0.41	0.28	1.76	0.14
12/3/19	1.35	0.96	0.28	1.53	0.39	0.29	1.81	0.11
1/21/20	0.78	0.93	0.27	1.48	0.39	0.29	1.76	0.11
2/18/20	0.61	0.91	0.28	1.47	0.35	0.31	1.75	0.07
7/7/20	1.04	0.91	0.28	1.46	0.35	0.31	1.74	0.07



\*- compare calculated CV to 75th percentile of CVs reported nationally in Table 3-2 in EPA/833/R-00/003 .  
 75th percentile of CVs for IC25 = 0.45  
 Calculated CV should not exceed 75th percentile of CVs.  
 $\bar{X} \pm 3SD$  = Well outside expected range.