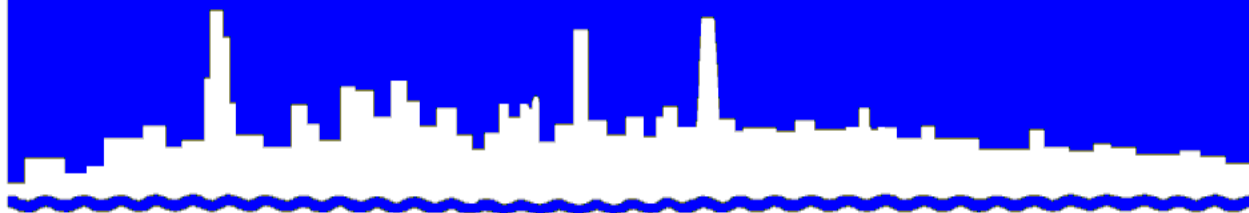


*Protecting Our Water Environment*



*Metropolitan Water Reclamation District of Greater Chicago*

***MONITORING AND RESEARCH  
DEPARTMENT***

*REPORT NO. 21-38*

***RESULTS OF ACUTE TOXICITY TESTING WITH *Ceriodaphnia dubia*  
AND *Pimephales promelas* ON AN OCTOBER 2021 EFFLUENT  
SAMPLE FROM THE TERRENCE J. O'BRIEN WATER RECLAMATION  
PLANT OF THE METROPOLITAN WATER RECLAMATION DISTRICT  
OF GREATER CHICAGO***

November 2021

**Metropolitan Water Reclamation District of Greater Chicago**  
100 East Erie Street Chicago, Illinois 60611-2803 (312) 751-5600

**RESULTS OF ACUTE TOXICITY TESTING WITH *Ceriodaphnia dubia* AND *Pimephales promelas* ON AN OCTOBER 2021 EFFLUENT SAMPLE FROM THE TERRENCE J. O'BRIEN WATER RECLAMATION PLANT OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO**

**By**

**EA Engineering, Science, and Technology, Inc., PBC  
231 Schilling Circle  
Hunt Valley, Maryland 21031**

**Monitoring and Research Department  
Edward W. Podczerwinski, Director**

**November 2021**

*Protecting Our Water Environment*

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CECIL LUE-HING RESEARCH AND DEVELOPMENT COMPLEX  
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**Edward W. Podczewinski, P.E.**  
Director of Monitoring and Research

November 16, 2021

Illinois Environmental Protection Agency  
Compliance Assurance Section CAS # 19  
1021 North Grand Avenue  
P.O. Box 19276  
Springfield, IL 62794-9276

Subject: Biomonitoring Report for 2021 – Acute Toxicity Test Results for the  
O'Brien Water Reclamation Plant, National Pollutant Discharge  
Elimination System Permit Number IL0028088

The subject Biomonitoring Report including Acute Whole Effluent Toxicity test results for *Pimephales promelas* and *Ceriodaphnia dubia* is submitted in compliance with National Pollutant Discharge Elimination System Permit Number IL0028088, Special Condition 9. The report covers the monitoring done for samples collected in the ninth month before the expiration of the permit.

The subject report prepared by EA Engineering, Science, and Technology, Inc., PBC includes copies of all bench sheets, chain-of-custody forms, sample receipt, preparation forms, summary of final results and test information, and quality assurance record.

If you have any questions concerning this report, please contact Mr. Thomas Minarik, Principal Environmental Scientist, at (708) 588-4223.

Very truly yours,



Albert Cox  
Environmental Monitoring  
and Research Manager  
Monitoring and Research Department

AC:TM:NK:mb

Enclosures

cc: E. Podczewinski/J. Murray

A. Poonsapaya/H. Zhang

T. Minarik/N. Kollias

Via electronic mail



RESULTS OF ACUTE TOXICITY TESTING  
WITH *Ceriodaphnia dubia* AND *Pimephales promelas*  
ON AN OCTOBER 2021 EFFLUENT SAMPLE FROM  
THE TERRENCE J. O'BRIEN WATER RECLAMATION PLANT OF THE  
METROPOLITAN WATER RECLAMATION DISTRICT (MWRD)

*Prepared for:*

Metropolitan Water Reclamation District of Greater Chicago  
6001 W. Pershing Road  
Cicero, Illinois 60804

*Prepared by:*

EA Engineering, Science, and Technology, Inc., PBC  
231 Schilling Circle  
Hunt Valley, Maryland 21031  
For questions, please contact Michael Chanov  
ph: 410-584-7000

*Results relate only to the items tested or to the samples as received by the laboratory.*

*This report shall not be reproduced, except in full, without written approval of  
EA Engineering, Science, and Technology, Inc., PBC*

*This report contains 8 pages plus 2 attachments*

A handwritten signature in black ink, appearing to read 'Michael K. Chanov II', is positioned above the name and title of the Laboratory Director.

Michael K. Chanov II  
Laboratory Director

5 November 2021

Date

EA Project Number 70019.TOX



EA Report Number 8671

## INTRODUCTION

At the request of Metropolitan Water Reclamation District (MWRD), EA Engineering, Science, and Technology performed acute toxicity testing on a composite sample of Outfall 001 effluent from MWRD's O'Brien Water Reclamation Plant in Skokie, Illinois. The effluent composite sample was collected on 11-12 October 2021. The test organisms, *Ceriodaphnia dubia* (water flea) and *Pimephales promelas* (fathead minnow), were exposed to 100, 50, 25, 12.5 and 6.25 percent effluent, and a laboratory water control. The objective of this study was to assess the acute lethality of the effluent sample to the test species, expressed as a 48-hour (*C. dubia*), or 96-hour (*P. promelas*) median lethal concentration (LC50). This toxicity testing was conducted under the Section 10 biomonitoring requirements of Metropolitan Water Reclamation District's discharge permit number IL0028088.

This toxicity testing was conducted following EA's standard operating procedures (EA 2018) which are in accordance with US EPA guidance (2002). The results of the acute toxicity tests were analyzed using the ToxCalc statistical software package (Version 5.0, Tidepool Scientific Software) and followed US EPA guidance (2002). Summaries of sample and test information are presented on pages 5-6 for *C. dubia* and on pages 7-8 for *P. promelas*. Copies of raw data sheets and statistics are included in Attachment I. The Report Quality Assurance Record is included as Attachment II.

## SUMMARY OF RESULTS

The results of the acute toxicity tests indicated that the October 2021 Outfall 001 effluent sample was not acutely toxic to *Ceriodaphnia dubia* or *Pimephales promelas*. The results of these toxicity tests comply with current NELAC standards.

The results of the *C. dubia* acute toxicity test are presented on page 6. After 48 hours, there was 100 percent survival in all of the effluent concentrations and 100 percent survival in the dilution water control. The 48-hour *C. dubia* LC50 for this test was >100 percent effluent (<1.0 TU<sub>a</sub>). In the *P. promelas* acute toxicity test (page 8), at the end of 96 hours there was a minimum of 95 percent survival in all of the effluent concentrations. The laboratory control had 100 percent survival. The resulting 96-hour LC50 for *P. promelas* was >100 percent effluent (<1.0 TU<sub>a</sub>).

In conformance with EA's quality assurance/quality control program, monthly reference toxicant tests using sodium chloride (NaCl) and potassium chloride (KCl) were performed on the in-house cultured test species. The results of the *C. dubia* reference toxicant test was acceptable, with a 48-hour LC50 of 1,980 mg/L NaCl, and acceptable control chart limits of 1,619-2,271 mg/L NaCl. The results of the *P. promelas* reference toxicant test was acceptable, with a 48-hour LC50 of 852 mg/L KCl, and acceptable control chart limits of 554-1,258 mg/L KCl.

## REFERENCES

- EA. 2018. EA Ecotoxicology Laboratory Quality Assurance and Standard Operating Procedures Manual. EA Manual ATS-102. Internal document prepared by EA's Ecotoxicology Laboratory, EA Engineering, Science, and Technology, Inc., PBC, Hunt Valley, Maryland.
- US EPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. EPA-821-R-02-012. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

## SUMMARY OF SAMPLE/TEST INFORMATION

Test: ***Ceriodaphnia dubia* 48-hour static acute toxicity test**

Test Procedure: **EA Protocol CD-AC-05**

Acute assay with water flea (*Ceriodaphnia dubia*)

Client Name: **Metropolitan Water Reclamation District (MWRD)**

Permit Number: **IL0028088**

Receiving Water: **North Shore Channel**

Sample Description: **Outfall 001**

EA Accession Number: **AT1-717**

Collection Time and Date: 0600, 11 October 2021 to 0600, 12 October 2021

Receipt Time and Date: 0932, 13 October 2021

Dilution Water Description: **Moderately hard synthetic freshwater**

EA Test Number: **TN-21-623**

Test Initiation Time and Date: 1314, 13 October 2021

Test Completion Time and Date: 1314, 15 October 2021

Number of Replicates: **4**

Number of Organisms Per Replicate: **5**

Test Chamber: **30 ml cup**

Volume per Test Chamber: **15 ml**

Feeding: **None**

### Organism Lot Information

Lot Number: N/A

Source: EA's Culture Facility (Hunt Valley, Maryland)

Age: <24 hours old

### Reference Toxicant Test Information

Reference Toxicant: Sodium chloride (NaCl)

Reference Toxicant Information: Lab Chem Lot#F214-24 (Received 9/7/16)

EA Test Number: RT-21-186

Test Date and Time: 1430, 7 October 2021 to 1354, 9 October 2021

Dilution Water: Moderately hard synthetic freshwater

48-hour LC50: 1,980 mg/L NaCl

Laboratory control chart acceptability range for 48-hour LC50: 1,619-2,271 mg/L NaCl



SUMMARY OF SAMPLE/TEST INFORMATION (continued)

Test Species: ***Ceriodaphnia dubia* (water flea)**  
 Sample Description: Outfall 001– MWRD  
 Sample Date: 11-12 October 2021  
 EA Test Number: TN-21-623

<u>Test Concentration (percent effluent)</u>	<u>48-Hour Survival (percent)</u>
Lab Control	100
6.25	100
12.5	100
25	100
50	100
100	100

48-Hour LC50 (percent effluent): **>100 (TU<sub>a</sub> <1.0)**

<u>Water Quality Parameters on Test Solutions</u>	<u>Range</u>
Temperature (°C):	24.3 – 25.9
pH:	7.5 – 7.9
Dissolved Oxygen (mg/L):	8.0 – 8.9
Conductivity (µS/cm):	327 – 666

<u>Water Quality Parameters Measured on Sample Upon Receipt</u>	<u>Outfall 001 (AT1-717)</u>
Temperature (°C):	0.8
pH:	7.9
Total Residual Chlorine (mg/L):	<0.01
Alkalinity (mg/L as CaCO <sub>3</sub> ):	106
Hardness (mg/L as CaCO <sub>3</sub> ):	148
Conductivity (µS/cm):	652

## SUMMARY OF SAMPLE/TEST INFORMATION

Test: ***Pimephales promelas* 96-hour static renewal acute toxicity test**

Test Procedure: **EA Protocol FH-AC-05**

Acute assay with fathead minnows (*Pimephales promelas*)

Client Name: **Metropolitan Water Reclamation District (MWRD)**

Permit Number: **IL0028088**

Receiving Water: **North Shore Channel**

Sample Description: **Outfall 001**

EA Accession Number: **AT1-717**

Collection Time and Date: 0600, 11 October 2021 to 0600, 12 October 2021

Receipt Time and Date: 0932, 13 October 2021

Dilution Water Description: **Moderately hard synthetic freshwater**

EA Test Number: **TN-21-624**

Test Initiation Time and Date: 1415, 13 October 2021

Test Completion Time and Date: 1340, 17 October 2021

Number of Replicates: **2**

Number of Organisms Per Replicate: **10**

Test Chamber: **1-L beaker**

Volume per Test Chamber: **250 ml**

Feeding: **0.2 mL *Artemia* nauplii at 48 hours**

### Organism Lot Information

Lot Number: FH1-10/9-10

Source: EA's Culture Facility (Hunt Valley, Maryland)

Age: 3-4 days old (hatched within a 24-hour period)

### Reference Toxicant Test Information

Reference Toxicant: Potassium chloride (KCl)

Reference Toxicant Information: GFS Lot #19430079 (Received 10/20/20)

EA Test Number: RT-21-190

Test Date and Time: 1039, 14 October 2021 to 1008, 16 October 2021

Dilution Water: Moderately hard synthetic freshwater

48-hour LC50: 852 mg/L KCl

Laboratory control chart acceptability range for 48-hour LC50: 554-1,258 mg/L KCl

SUMMARY OF SAMPLE/TEST INFORMATION (continued)

Test Species: ***Pimephales promelas* (fathead minnow)**  
 Sample Description: Outfall 001– MWRD  
 Sample Date: 11-12 October 2021  
 EA Test Number: TN-21-624

<u>Test Concentration (percent effluent)</u>	<u>48-Hour Survival (percent)</u>	<u>96-Hour Survival (percent)</u>
Lab Control	100	100
6.25	100	100
12.5	100	100
25	100	100
50	95	95
100	100	100

96-Hour LC50 (percent effluent): **>100 (TU<sub>a</sub> <1.0)**

<u>Water Quality Parameters on Test Solutions</u>	<u>Range</u>
Temperature (°C):	25.1 – 26.0
pH:	7.6 – 8.0
Dissolved Oxygen (mg/L):	6.5 – 8.4
Conductivity (µS/cm):	305 – 647

## **ATTACHMENT I**

Data Sheets and Statistical Analysis  
(18 pages)



EA Ecotoxicology Laboratory  
 231 Schilling Circle  
 Hunt Valley, Maryland 21031  
 Telephone: 410-584-7000  
 Fax: 410-584-1057



Sample Shipped By: (circle)  
 Fed. Ex. UPS Other: \_\_\_\_\_  
 Tracking #: 1Z 274 474 849 681  
0611

Client: MWRD GC Project No.: 4652-126-1  
 NPDES Number: IL0028088 Client Purchase Order Number: 3111991  
 City/State Collected: SKOKIE, IL

PLEASE READ SAMPLING INSTRUCTIONS ON BACK OF FORM

Accession Number (office use only)	Grab	Composite	Collection		Sample Description (including Site, Station Number, and Outfall Number)	Number/Volume of Container
			Start Date/Time	End Date/Time		
ATI-717		<input checked="" type="checkbox"/>	10/12/21 0600	10/12/21 0610	Skokie O'Brien WRP Final Effluent	1 gallon

Sampled By: <u>Paula Brinkman Lowe</u>	Date/Time <u>10/12/21 1010</u>	Received By:	Date/Time
Sampler's Printed Name: <u>Paula Brinkman</u>	Title: <u>SERT</u>	Relinquished By:	Date/Time
Relinquished By: <u>Paula Brinkman</u>	Date/Time <u>10/12/21 1015</u>	Received By Laboratory: <u>Paula Brinkman</u>	Date/Time <u>10/13/21 0930</u>

Was Sample Chilled During Collection?  Yes /  No      Comments:

Sample Collection Parameters  
 Visual Description: Clear, Green  
 Temperature (°C): 4.5 °C  
 pH: 7.31  
 TRC (mg/L): 0  
 Other:



SAMPLE CHECK-IN  
FOR TESTING

Client: MWRD

EA Accession Number: AT1-717

Parameter	Acceptable Range	Measurement*	Meter	Date	Time	Initials
Temperature (°C)	≤4	0.8	T-23	10/12/21	0935	WAO
Is ice present?	--	yes	N/A			
pH	6.0-9.0	7.9	681			
TRC (mg/L)	≤0.01	≤0.01	AT-01			
Visual Description	--	very light tan	N/A			

\*If outside acceptable range, contact project manager.

**OTHER PARAMETERS IF REQUIRED (SEE STUDY PLAN):**

Parameter	Acceptable Range	(✓)	Meter	Date	Time	Initials
Ammonia (preserve aliquot)	--		N/A			

Parameter	Acceptable Range	Measurement*	Meter	Date	Time	Initials
Dissolved Oxygen (mg/L)	--					
Salinity (ppt)	--					



# TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-023

## TEST ORGANISM INFORMATION

Common Name: <u>Water flea</u>	Adults Isolated (Time, Date): <u>10/13/01 1530</u>
Scientific Name: <u>C. dubia</u>	Neonates Pulled & Fed (Time, Date): <u>10/13/01 0957</u>
Lot Number: <u>N/A</u>	Acclimation: <u>&lt;24hrs</u> Age: <u>&lt;24 hrs</u>
Source: <u>EA</u>	Culture Water (T/S): <u>25.9</u> °C <u>0</u> ppt

## TEST INITIATION

<u>Date</u>	<u>Time</u>	<u>Initials</u>	<u>Activity</u>
<u>10/13/01</u>	<u>1108</u>	<u>CAF</u>	Dilutions Made
↓	<u>1200</u>	↓	Test Vessels Filled
	<u>1314</u>		Organisms Transferred
	<u>1439</u>		Head Counts
		<u>AF</u>	

## TEST SET-UP

Sample Number: AT1-717

Dilution Number: CD1-689

<u>Test Concentration</u>	<u>Volume Test Material</u>	<u>Final Volume</u>
Control	0 ml	200 ml
6.25%	12.5 ml	↓
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	



# ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019\_TOX      TEST ORGANISM: C. dubia      Beginning Date: 16/13/21      Time: 1314  
 Client: MWRD      Common Name: Water flea      Ending Date: 16/15/21      Time: 1314  
 QC Test Number: TN-21-623      Scientific Name: C. dubia      TEST TYPE: Static      Flowthrough  
 Test Material: Effluent      TARGET VALUES: Renewal / Non-renewal  
 Accession Number: AT1-717      Temp: 25±1 °C      DO: >4.0 mg/L      Test Container: 30 ml cup  
 Dilution Water: Mod Hard      pH: 6.0 - 9.0      Salinity: 0 ppt      Test Volume: 15 ml  
 Accession Number: LD1-089      Photoperiod: 16 L, 8 d      Light Intensity: 50 - 100 fc      Test Duration: 48 hrs

Concentration	Rep	Number of Live Organisms				Temperature (°C)	pH				Dissolved Oxygen (mg/L)				Conductivity (µS/cm)			
		0	24	48	72		96	0	24	48	72	96	0	24	48	72	96	
Control	A	5	5	5	5	25.2	7.9	7.5	7.4	8.4	8.9	8.4	327	345	343			
	B	5	5	5	5	25.6		7.8			8.0			303				
	C	5	5	5	5													
	D	5	5	5	5													
6.25%	A	5	5	5	5	25.4	7.9	7.5	7.4	8.4	8.7	8.2	343	356	352			
	B	5	5	5	5	25.7		7.8			8.1			344				
	C	5	5	5	5													
	D	5	5	5	5													
12.5%	A	5	5	5	5	25.5	7.9	7.5	7.6	8.3	8.4	8.0	361	375	371			
	B	5	5	5	5	25.8		7.8			8.2			382				
	C	5	5	5	5													
	D	5	5	5	5													
Meter Number						681	681	681	681	681	681	681	681	681	681	681	681	
Time		1439	1333	1314		1140	1020	1122	1117	1140	1020	1122	1117	1140	1020	1122	1117	
Initials		MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	

(6) MT 16/14/21





# ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019\_TOX TEST ORGANISM: Water flea Beginning Date: 10/13/21 Time: 1314  
 Client: MWRD Common Name: Water flea Ending Date: 10/15/21 Time: 1314

QC Test Number: TN-21-623 Scientific Name: C. dubia TEST TYPE: (Static) Flowthrough  
 Test Material: Effluent TARGET VALUES: Renewal / Non-renewal

Accession Number: AT1717 Temp: 25±1 °C DO: >4.0 mg/L Test Container: 30 ml cup  
 Dilution Water: Mod Hard pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 15 ml  
 Accession Number: LD1-189 Photoperiod: 16 L, 8 d Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Concentration	Rep	Number of Live Organisms				Temperature (°C)				pH				Dissolved Oxygen (mg/L)				Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
25%	A	5	5	5	5	5	25.6	25.3	24.6		7.8	7.5	7.8		8.3	8.0		8.4	4.3	4.9		
	B	5	5	5	5					7.8					8.0						4.7	
	C	5	5	5	5																	
	D	5	5	5	5																	
50%	A	5	5	5	5		25.6	24.9	24.6		7.8	7.5	7.8		8.4	8.3		8.4	4.7	4.9		
	B	5	5	5	5										8.1						4.9	
	C	5	5	5	5																	
	D	5	5	5	5																	
100%	A	5	5	5	5		25.8	25.9	26.0		7.7	7.5	7.7		8.4	8.2		8.4	6.5	6.6		
	B	5	5	5	5										8.2						6.6	
	C	5	5	5	5																	
	D	5	5	5	5																	
Meter Number						681	681	681	681	681	681	681	681	681	681	681	681	681	681	681	681	
Time		1459	1853	1914		1140	1020	1172	1117	1140	1020	1172	1117	1140	1020	1172	1117	1140	1020	1172	1117	
Initials		MY	UMD	SL		MT	SL	MT	SL	MT	SL	MT	SL	MT	SL	MT	SL	MT	SL	MT	SL	

(b)MT 10/14/21



## TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN- 21-623

Date/Time/Initials

Comments/Activity

---



# RANDOMIZATION CHART

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN- 21-623

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5



TOXICOLOGY LABORATORY BENCH SHEET -  
TESTING LOCATION

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-633

Day	Testing Location	Date	Time	Initials
0	26	10/13/21	1440	ST
1	26	10/14/21	1020	ST
2	26	10/15/21	1118	ST
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				



## TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21623

### Correction Explanations

---

- (a) Technician Error-Mathematical
- (b) Technician Error-Manual Data Recording
- (c) Technician Error-Head Count Observation
- (d) Technician Error-Overwrite
- (e) Technician Error-Missing Data
- (f) Technician Error-Lost Organism
- (g) Technician Error-Transcription Error
- (h) Technician Error-Other:
- (i) Meter Malfunction



# TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-624

## TEST ORGANISM INFORMATION

Common Name: Fathead minnow Adults Isolated (Time, Date): \_\_\_\_\_  
 Scientific Name: P. promelas Neonates Pulled & Fed (Time, Date): \_\_\_\_\_  
 Lot Number: F41-10/9-10 Acclimation: <24 hrs Age: 3-4 days  
 Source: EA Culture Water (T/S): 26.5 °C 0 ppt

## TEST SET-UP

### TEST INITIATION

Date	Time	Initials	Activity
10/13/11	1108	LAO	Dilutions Made
			Test Vessels Filled
	1415		Organisms Transferred
	1434	ALZ	Head Counts

### CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	500 ml
6.25%	31.25 ml	↓
12.5%	62.5 ml	
25%	125 ml	
50%	250 ml	
100%	500 ml	

Comments:

## INTERMEDIATE DILUTION PREPARATION AND FEEDING

### DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	10/13/11	1108	LAO	AT-717 CD-689
1				
2	10/15/11	1255	TP	AT-717 CD-697
3				
4				
5				
6				

### FEEDING

Food: <i>Artemia</i>			
Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			
1			
2		082330	3 drops
3			
4			
5			
6			





# ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019\_TOX TEST ORGANISM: Fathead minnow Beginning Date: 10/13/21 Time: 1415  
 Client: MWRD Common Name: P. promelas Ending Date: 10/17/21 Time: 1340  
 QC Test Number: TN-21-624 Scientific Name: P. promelas TEST TYPE: Static Flowthrough   
 Test Material: Effluent TARGET VALUES: Renewal / Non-renewal   
 Accession Number: A77-717 Temp: 25±1 °C DO: >4.0 mg/L Test Container: 1 L Beaker  
 Dilution Water: Mod Hard pH: 6.0-9.0 Salinity: 0 ppt Test Volume: 250 ml  
 Accession Number: LD1-1089 Photoperiod: 16L, 8d Light Intensity: 50-100 fc Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms	Temperature (°C)			pH			Dissolved Oxygen (mg/L)			Conductivity (µS/cm)						
			24	48	72	96	24	48	72	96	24	48	72	96				
Control	A		25.3	25.6	25.3	26.3	8.0	8.0	8.0	7.7	7.8	8.0	829	334	325	319		
	B																	
6.25%	A		25.5	26.0	26.0	26.0	8.0	7.8	7.8	7.6	7.8	7.6	346	352	341	337		
	B				26.0													
12.5%	A		25.6	26.0	26.3	26.0	8.0	7.8	7.8	7.7	7.7	7.3	363	368	361	357		
	B				25.9													
25%	A		25.8	26.0	26.3	26.0	7.9	7.8	7.7	7.7	7.4	7.4	401	407	401	398		
	B																	
50%	A		25.8	26.0	26.0	26.0	7.9	7.7	7.7	7.6	7.1	7.1	472	483	485	481		
	B																	
100%	A		25.8	26.0	26.0	26.0	7.8	7.7	7.6	7.6	7.0	7.0	652	626	613	636		
	B																	
Meter Number			681	681	680	680	681	681	680	680	680	680	681	681	680	680		
Time			0917	1124	1476	1413	0917	1124	1476	1413	0917	1124	1476	0917	1124	1476	1413	
Initials			NT	5C	5L	5R	NT	5C	5L	5R	NT	5C	5L	5R	NT	5C	5L	5R

DMW  
10/16/21

DMW  
10/14/21  
12/19/21





## TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21624

Date/Time/Initials

Comments/Activity



# RANDOMIZATION CHART

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21624

5	4	1	3	6	2
1	5	3	2	4	6



# TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-31-624

Day	Testing Location	Date	Time	Initials
0	ZC	10/13/21	1157	MT
1	ZC	10/14/21	1324	MT
2	ZC	10/15/21	1337	TP
3	ZC	10/16/21	1426	SC
4	ZC	10/17/21	1142	JR
5				
6				
7				
8				
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26				
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30				



## TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21624

### Correction Explanations

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- (a) Technician Error-Mathematical
- (b) Technician Error-Manual Data Recording
- (c) Technician Error-Head Count Observation
- (d) Technician Error-Overwrite
- (e) Technician Error-Missing Data
- (f) Technician Error-Lost Organism
- (g) Technician Error-Transcription Error
- (h) Technician Error-Other:
- (i) Meter Malfunction



## **ATTACHMENT II**

Report Quality Assurance Record  
(2 pages)



# REPORT QUALITY ASSURANCE RECORD

Client: MWRD

Project Number: 70019.TOX

Author: Rachael Brooks

EA Report Number: 8671

## REPORT CHECKLIST

<u>QA/OC ITEM</u>	<u>REVIEWER</u>	<u>DATE</u>
1. Samples collected, transported, and received according to study plan requirements.	<u>Jack Brown</u>	<u>10/18/21</u>
2. Samples prepared and processed according to study plan requirements.	<u>Jack Brown</u>	<u>10/18/21</u>
3. Data collected using calibrated instruments and equipment.	<u>Jack Brown</u>	<u>10/18/21</u>
4. Calculations checked:		
- Hand calculations checked	<u>Jack Brown</u>	<u>10/18/21</u>
- Documented and verified statistical procedure used.	<u>Jack Brown</u>	<u>10/18/21</u>
5. Data input/statistical analyses complete and correct.	<u>Jason M Reddy</u>	<u>11/2/2021</u>
6. Reported results and facts checked against original sources.	<u>Jason M Reddy</u>	<u>11/2/2021</u>
7. Data presented in figures and tables correct and in agreement with text.	<u>Jason M Reddy</u>	<u>11/2/2021</u>
8. Results reviewed for compliance with study plan requirements.	<u>Jack Brown</u>	<u>10/18/21</u>

	<u>AUTHOR</u>	<u>DATE</u>
9. Commentary reviewed and resolved.	<u>Jack Brown</u>	<u>11/5/21</u>
10. All study plan and quality assurance/control requirements have been met and the report is approved:		
	<u>[Signature]</u>	<u>11/5/21</u>
	PROJECT MANAGER	DATE
	<u>[Signature]</u>	<u>11/2/2021</u>
	QUALITY CONTROL OFFICER	DATE
	<u>[Signature]</u>	<u>11/5/21</u>
	SENIOR TECHNICAL OFFICER	DATE