



Ecotoxicology Research Facility



P.O. Box 847
State University, AR 72467
Tel. 870-972-2570
Fax 870-972-2577
<http://ecotox.astate.edu/>

College of Sciences & Mathematics
www.astate.edu

March 3, 2016

Jonathan Kopp
Walnut Ridge Wastewater Treatment Plant
216 Southwest 4th Street
Walnut Ridge, AR 72476

Dear Jon,

Please find enclosed the results of the 7-day chronic tests using water collected from Walnut Ridge's plant facilities during the week of February 22, 2016. No lethal or sublethal effects were measured in *Pimephales promelas* or *Ceriodaphnia dubia* exposed to the critical flow concentration (100%) or other treated dilutions from this outfall.

All test conditions and acceptability criteria as suggested by our laboratory and the US EPA were met during these tests.

Please call if you have any questions regarding this particular test series or any other tests conducted in the past.

Sincerely,

Jennifer L. Bouldin, PhD
Director Ecotoxicology Research Facility
PO Box 847
Arkansas State University
State University, AR 72467

Arkansas State University Ecotoxicology Research Facility

Laboratory Report

Facility Director / Lab Contact: Jennifer Bouldin
Phone: (870) 972-2570

Client: Walnut Ridge Wastewater Treatment Plant
 216 Southwest 4th Street
 Walnut Ridge, AR 72476

Contact: Jon Kopp
 870-866-2312

NPDES Permit #: AR0046566 **AFIN#:** 38-00040
Effluent Sampling Point/Type: 24hr Composite

Samples Collected:

Sample #	Sampling Times	Received	Arrival Temp
1	2/21/16 0900 hrs to 2/22/16 0900 hrs	2/22/16 0950 hrs	4.5 °C
2	2/23/16 0900 hrs to 2/24/16 0900 hrs	2/24/16 1127 hrs	2.0 °C
3	2/25/16 0900 hrs to 2/26/16 0900 hrs	2/26/16 1025 hrs	3.5 °C

Test Methods:

7-Day Chronic Toxicity, Static renewal, Cladoceran, EPA 821/R-02/013, Section 13
 7-Day Chronic Toxicity, Static renewal, Fathead minnow, EPA 821/R-02/013, Section 11

Organisms: *C. dubia* <24hrs, *P. promelas* <24hrs

Culture Source: ASU Ecotox

Dilutions: 0%, 32%, 42%, 56%, 80%, 100%

Critical Dilution: 100%

Statistical Method: Toxcalc 5.0.25

<i>C. dubia</i>			<i>P. promelas</i>		
whole effluent toxicity			whole effluent toxicity		
	lethality	sublethality		lethality	sublethality
DMR Code	22414 10	22414 P0	DMR Code	22414 10	22414 P0
Result	100%	100%	Result	100%	100%
	lethality	sublethality		lethality	sublethality
DMR Code	TGP3B	TLP3B	DMR Code	TGP6C	TLP6C
Result	0	0	Result	0	0
	NOEC lethality	NOEC sublethal		NOEC lethality	NOEC sublethal
DMR Code	TOP3B	TPP3B	DMR Code	TOP6C	TPP6C
Result	100%	100%	Result	100%	100%
	CV%			CV%	
DMR Code	TQP3B		DMR Code	TQP6C	
Result	27.9%		Result	10.8%	
	control survival	control mean reproduction		control survival	control mean weight
	100%	25.0		95%	0.5517
	critical dil. survival	critical mean reproduction		critical dil. survival	critical mean weight
	100%	29.1		80%	0.6223
	MSDp			MSDp	
	NA			0.1804	

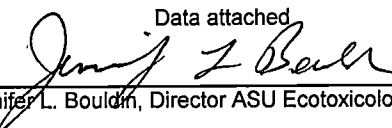
Results Summary:

Effluent did not induce lethal or sublethal toxicity to *P. promelas* or *C. dubia*.

QA/Reference Testing:

Data attached

Reviewed By:


 Jennifer L. Bouldin, Director ASU Ecotoxicology Research Facility

Toxicity Test Performed: 7-day *Ceriodaphnia dubia* Survival and Reproduction
 Effluent Sampling Point: Walnut Ridge WWT Plant
 Date Test Started: 2/22/16 *C. dubia*
 Time Test Started: 1130 *C. dubia*
 Date Test Terminated: 2/29/16 *C. dubia*
 Time Test Terminated: 1230 *C. dubia*
 Laboratory Analyst: Cooper

Toxicity Test Performed: 7-day *Pimephales promelas* Survival and Growth
 Effluent Sampling Point: Walnut Ridge WWT Plant
 Date Test Started: 2/22/16 *P. promelas*
 Time Test Started: 1200 *P. promelas*
 Date Test Terminated: 2/29/16 *P. promelas*
 Time Test Terminated: 1200 *P. promelas*
 Laboratory Analyst: J. McCauley/ Kilmer

I. Test Methods

A. Physical and Chemical Testing - APHA, Standard Methods for the Examination of Water and Wastewater; Vol. 21, 2005.

<u>Test</u>	<u>Method</u>
Alkalinity	2320B
Conductivity	2510B
Dissolved Oxygen (mg/L, DO)	4500-O-G
Hardness (mg/L CaCO ₃)	2340C
pH	4500-H ⁺ B
Temperature (°C)	2550B

B. Toxicity Testing – EPA 821/R-02/013: Short Term Methods for Estimating the Chronic Toxicity of Effluents to Freshwater Organisms

<u>Test</u>	<u>Method</u>
Cladoceran Survival and Reproduction	Section 13
Fathead Minnow Survival and Growth	Section 11

II. Test Organisms

- A. Name: *Ceriodaphnia dubia* (Cladoceran)
- Source: Laboratory Culture
- Age: <24 hours
- Life Stage: Neonate

- B. Name: *Pimephales promelas* (Fathead minnow)
Source: Laboratory Culture
Age: <24 hours
Life Stage: Larval

III. External Factors

A. Incubator

Temperature (°C)

Average: 24.7

Range: 24.5-25.0

Light Cycle: 16 hours light/ 8 hours dark

Light Intensity: 100 footcandles

Control Water: Moderately Hard Synthetic Water (#961/962)

B. *Ceriodaphnia dubia*

Test Chambers: 30 ml Solo cups

Volume per Chamber: 15-20 ml

Number of Organisms per Chamber: 1

Number of Replicates per Concentration: 10

Acclimation: Laboratory control water was added to cultures until >50% of the culture water consisted of control water.

Food: Cladocera were fed *Selenastrum* (#ABS 020616) and yeast/cereal/trout chow mix (#YCT 121515) one hour prior to test setup and once daily thereafter.

C. *Pimephales promelas*

Test Chambers: 250 ml storage dishes

Volume per Chamber: 200 ml

Number of Organisms per Chamber: .8

Number of Replicates per Concentration: 5

Acclimation: Laboratory control water was added to cultures until >50% of the culture water consisted of control water.

Food: Larval fish were fed 0.15ml of laboratory-cultured *Artemia* brine shrimp one hour prior to test setup and then 3X daily thereafter.

IV. Quality Assurance

A. Standard Toxicant: Sodium Chloride

B. Organism: *Ceriodaphnia dubia*

Date and time of Reference Toxicant Test

Start: 2/01/16

Terminated: 2/08/16

Time of Reference Toxicant Test

Start: 1215

Terminated: 0845

Laboratory Analyst: Kilmer

Dilution Water Used: Moderately Hard Synthetic Water #960

Results: Survival and Reproduction within control limits

Survival

LOEC: 2.60 g/L NaCl

EC50: 1.86 g/L NaCl

Reproduction

LOEC: 1.27 g/L NaCl

IC25: 1.30 g/L NaCl

C. Organism: *Pimephales promelas*

Date of Reference Toxicant Test

Start: 2/01/16

Terminated: 2/08/16

Time of Reference Toxicant Test

Start: 1345

Terminated: 1400

Laboratory Analyst: Kilmer

Dilution Water Used: Moderately Hard Synthetic Water #960

Results: Survival and Growth within control limits

Survival

LOEC: 5.63 g/L NaCl

EC50: 4.88 g/L NaCl

Growth

LOEC: 5.63 g/L NaCl

IC25: 4.71 g/L NaCl

V. Physical and Chemical Data - See Attached

VI. Survival and Growth Data - See Attached

VII. Statistical Methods - See Attached

VIII. NPDES Permit Results - See Attached

SUMMARY REPORTING FORM
WET Testing
Ceriodaphnia dubia Survival and Reproduction

Permittee: Walnut Ridge WWT Plant

NPDES No.: AR0046566

		<u>Time</u>	<u>Date</u>		<u>Time</u>	<u>Date</u>
Composite 1:	Collected from	0900	2/21/16	to	0900	2/22/16
Composite 2:	Collected from	0900	2/23/16	to	0900	2/24/16
Composite 3:	Collected from	0900	2/25/16	to	0900	2/26/16

Test Initiated: 1130

Date: 2/22/16

Time Terminated: 1230

Date: 2/29/16

Dilution H₂O: MH 961/962

PERCENT SURVIVAL
Percent Effluent

<u>Time of Reading</u>	<u>Control</u>	<u>32%</u>	<u>42%</u>	<u>56%</u>	<u>75%</u>	<u>100%</u>
24h	100	100	100	100	100	100
48h	100	100	100	100	100	100
7 day	100	100	100	100	100	100

NUMBER OF YOUNG/FEMALE @ 7 DAYS
Percent Effluent

<u>REP</u>	<u>0%</u>	<u>32%</u>	<u>42%</u>	<u>56%</u>	<u>80%</u>	<u>100%</u>
A	14	26	28	27	18	20
B	26	29	32	38	34	34
C	27	27	37	35	34	32
D	29	30	31	38	31	34
E	31	34	32	39	36	33
F	33	34	33	34	33	35
G	30	29	35	26	31	36
H	28	29	8	31	40	32
I	16	15	16	32	17	18
J	16	18	14	15	16	17
Mean	25.0	27.1	26.6	31.5	29.0	29.1
CV%*	27.9	22.8	37.9	23.2	29.9	26.0

*Coefficient of Variation% = Standard Deviation x 100/Mean

***Ceriodaphnia dubia* Survival and Reproduction**

1. FISHER'S EXACT TEST:
Is the mean survival for the critical dilution (100%) at 7 days significantly different ($p=0.05$) than the control survival?
 Yes X No

2. DUNNETT'S PROCEDURE OR STEEL'S MANY-ONE RANK TEST AS APPROPRIATE:
Is the mean number of young produced per female by the critical dilution (100%) significantly different ($p=0.05$) than the control's number of young per female?
 Yes X No

3. If the NOEC for survival is less than the critical dilution, enter [1], otherwise enter [0] for parameter #TGP3B: 0

4. If the NOEC for reproduction is less than the critical dilution, enter [1], otherwise enter [0] for parameter #TLP3B: 0

5. Report the NOEC value for survival, Parameter #TOP3B:
NOEC survival 100 % effluent

6. Report the NOEC value for reproduction, Parameter #TPP3B:
NOEC reproduction 100 % effluent

7. Report the % coefficient of variation (largest of critical and control dilutions), Parameter #TQP3B:
CV % reproduction 27.9 % (control)

Whole Effluent Lethality Values for *Ceriodaphnia dubia*

1. Report the Whole Effluent Lethality values for the 30-Day average minimum, Parameter #22414:
Daily Average Minimum NOEC: 100%

2. Report the Whole Effluent Lethality values for the 7-day minimum, Parameter #22414:
7-Day Minimum NOEC: 100%

WET Testing Summary Form
***Ceriodaphnia dubia* (Cladoceran)**
Chemical Parameters Chart

Permittee: Walnut Ridge Wastewater Plant Sample No. 1 Collected Ending Date: 2/22/16 Time: 0900
 NPDES No.: AR0046566 Sample No. 2 Collected Ending Date: 2/24/16 Time: 0900
 Contact: Bruce Richart Sample No. 3 Collected Ending Date: 2/26/16 Time: 0900
 Analyst: Cooper Test Begin: Date: 2/22/16 Time: 1130 Test End: Date: 2/29/16 Time: 1230

Initial Water Chemistry for Chronic Tests								
Project: Walnut Ridge – <i>C. dubia</i>								
Test day		0	1	2	3	4	5	6
Date		2/22/2016	2/23/2016	2/24/2016	2/25/2016	2/26/2016	2/27/2016	2/28/2016
H ₂ O #		MH 961	MH 961	MH 962	MH 962	MH 962	MH 962	MH 962
Temp (°C)	Control	23.5	23.5	22.8	23.4	22.7	23.1	23.5
	32%	23.8	23.2	22.8	22.7	22.7	23.0	23.2
	42%	24.0	23.2	22.8	22.4	22.9	23.1	23.4
	56%	24.1	23.2	23.0	22.5	23.0	22.9	23.9
	80%	24.4	23.3	23.0	22.4	23.0	22.8	23.9
	100%	24.5	23.5	23.2	23.3	23.1	23.3	23.9
pH (Standard Units)	Control	8.07	8.13	8.11	7.61	7.60	7.69	8.19
	32%	8.15	8.35	8.18	7.78	7.61	7.80	8.20
	42%	8.20	8.38	8.19	7.79	7.59	7.83	8.20
	56%	8.24	8.46	8.19	7.93	7.56	7.81	8.20
	80%	8.24	8.49	8.17	7.85	7.55	7.79	8.19
	100%	8.18	8.45	8.18	7.80	7.55	7.85	8.15
DO (mg/L)	Control	8.6	8.5	8.8	8.4	8.4	8.6	8.4
	32%	8.3	8.2	8.4	8.4	8.4	8.4	8.4
	42%	8.3	8.1	8.4	8.2	8.5	8.4	8.5
	56%	8.3	8.1	8.4	8.1	8.5	8.4	8.5
	80%	8.2	8.1	8.5	8.2	8.7	8.5	8.5
	100%	8.3	8.0	8.6	8.1	8.8	8.5	8.8
Cond (µS/cm)	Control	330	325	319	315	314	318	321
	32%	329	324	320	317	306	311	314
	42%	330	324	321	317	303	308	313
	56%	331	323	324	318	300	300	311
	80%	334	324	330	321	296	311	309
	100%	335	328	332	333	295	301	307
Alk (mg/L)	Control	62		62		62		
	100%	170		180		150		
Hard (mg/L)	Control	100		90		90		
	100%	190		170		140		

WET Testing Summary Form
***Ceriodaphnia dubia* (Cladoceran)**
Chemical Parameters Chart

Permittee: Walnut Ridge Wastewater Plant

Sample No. 1 Collected Ending Date: 2/22/16 Time: 0900

NPDES No.: AR0046566

Sample No. 2 Collected Ending Date: 2/24/16 Time: 0900

Contact: Bruce Richart

Sample No. 3 Collected Ending Date: 2/26/16 Time: 0900

Analyst: Cooper

Test Begin: Date: 2/22/16 Time: 1130 Test End: Date: 2/29/16 Time: 1230

Final Water Chemistry for Chronic Tests								
Project: Walnut Ridge - <i>C. dubia</i>								
Test day		1	2	3	4	5	6	7
Date:		2/23/2016	2/24/2016	2/25/2016	2/26/2016	2/27/2016	2/28/2016	2/29/2016
H ₂ O #		MH 961	MH 962	MH 962	MH 962	MH 962	MH 962	MH 962
Temp (°C)	Control	23.5	22.2	22.5	22.4	23.3	22.9	23.3
	32%	23.4	22.7	22.8	22.9	23.1	23.2	23.1
	42%	22.6	22.8	23.1	23.0	22.8	23.7	23.1
	56%	23.3	22.4	22.8	22.9	22.9	23.7	23.2
	80%	23.0	22.6	22.4	22.7	22.7	23.8	22.9
	100%	23.3	22.9	22.6	22.9	23.1	23.8	23.0
pH (Standard Units)	Control	8.40	8.51	8.09	8.23	8.11	8.56	8.18
	32%	8.60	8.64	8.23	8.29	8.25	8.73	8.30
	42%	8.63	8.73	8.22	8.32	8.25	8.79	8.35
	56%	8.69	8.74	8.28	8.29	8.32	8.83	8.42
	80%	8.71	8.77	8.27	8.28	8.33	8.66	8.43
	100%	8.74	8.77	8.29	8.24	8.37	8.92	8.48
DO (mg/L)	Control	8.9	9.2	9.0	9.3	9.3	8.5	9.2
	32%	8.9	9.0	9.0	9.2	9.1	8.7	9.0
	42%	9.0	9.1	9.1	9.3	9.2	8.8	9.0
	56%	9.0	9.1	9.1	9.3	9.2	8.8	9.0
	80%	9.1	9.1	9.2	9.3	9.2	8.8	9.0
	100%	9.2	9.3	9.2	9.4	9.2	8.8	9.2

SUMMARY REPORTING FORM

WET Testing

Fathead Minnow Larvae (*Pimephales promelas*) Survival and Growth

Permittee: Walnut Ridge WWT Plant

NPDES No.: AR0046566

		<u>Time</u>	<u>Date</u>		<u>Time</u>	<u>Date</u>
Composite 1:	Collected from	0900	2/21/16	to	0900	2/22/16
Composite 2:	Collected from	0900	2/23/16	to	0900	2/24/16
Composite 3:	Collected from	0900	2/25/16	to	0900	2/26/16

Test Initiated: 1200

Date: 2/22/16

Time Terminated: 1200

Date: 2/29/16

Dilution H₂O: MH 961/962

DATA TABLE FOR SURVIVAL

Effluent Conc. %	% Survival in Replicate Chambers					Mean % Survival			CV%
	A	B	C	D	E	24h	48h	7days	
Control	100	87.5	100	87.5	100	100	100	95	7.6
32	100	100	100	87.5	87.5	100	100	95	7.6
42	87.5	87.5	100	62.5	87.5	100	97.5	85	14.6
56	100	87.5	100	62.5	100	100	100	90	16.7
80	62.5	100	100	25	100	100	100	77.5	35.1
100	100	100	75	25	100	100	100	80	33.1

Coefficient of Variation = Standard Deviation x 100/Mean

DATA TABLE FOR GROWTH

Effluent Conc %	Average Dry Weight in Replicate Chambers (mg)					Mean Dry Weight (mg)	CV%
	A	B	C	D	E		
Control	0.5313	0.4771	0.5263	0.6014	0.6225	0.5517	10.8
32	0.5725	0.5038	0.6050	0.6500	0.6000	0.5863	9.2
42	0.6300	0.6586	0.6425	0.7040	0.7043	0.6679	5.2
56	0.5587	0.5657	0.5700	0.7860	0.6425	0.6246	15.4
80	0.6320	0.6025	0.6012	0.8300	0.6600	0.6651	14.3
100	0.6537	0.5875	0.6417	0.6200	0.6087	0.6223	4.2

Coefficient of Variation = Standard Deviation x 100/Mean

Fathead Minnow Larvae (*Pimephales promelas*) Survival and Growth

1. FISHER'S EXACT TEST:

Is the mean survival for the critical dilution (100%) at 7 days significantly different (p=0.05) than the control survival?

____ Yes X No

2. DUNNETT'S PROCEDURE OR STEEL'S MANY-ONE RANK TEST AS APPROPRIATE:

Is the mean growth by *P. promelas* in the critical dilution (100%) significantly different (p=0.05) than the growth in control exposures?

____ Yes X No

3. If the NOEC for survival is less than the critical dilution, enter [1], otherwise enter [0] for parameter #TGP6C: 0

4. If the NOEC for growth is less than the critical dilution, enter [1], otherwise enter [0] for parameter #TLP6C: 0

5. Report the NOEC value for survival, Parameter #TOP6C:
NOEC survival 100 % effluent

6. Report the NOEC value for growth, Parameter #TPP6C:
NOEC growth 100 % effluent

7. Report the % coefficient of variation (largest of low flow and control dilutions), Parameter #TQP6C: CV % growth 10.8 % (control)

Whole Effluent Lethality Values

1. Report the Whole Effluent Lethality values for the 30-Day average minimum, Parameter #22414:

Daily Average Minimum NOEC: 100%

2. Report the Whole Effluent Lethality values for the 7-day minimum, Parameter #22414:

7-Day Minimum NOEC: 100%

WET Testing Summary Form
Fathead Minnow Larvae (*Pimephales promelas*)

Chemical Parameters Chart

Permittee: Walnut Ridge Wastewater Plant Sample No. 1 Collected Ending Date: 2/22/16 Time: 0900
 NPDES No.: AR0046566 Sample No. 2 Collected Ending Date: 2/24/16 Time: 0900
 Contact: Bruce Richart Sample No. 3 Collected Ending Date: 2/26/16 Time: 0900
 Analyst: McCauley/Kilmer Test Begin: Date: 2/22/16 Time: 1200 Test End: Date: 2/29/16 Time: 1200

Initial Water Chemistry for Chronic Tests								
Project: Walnut Ridge – <i>P. promelas</i>								
Test day		0	1	2	3	4	5	6
Date		2/22/2016	2/23/2016	2/24/2016	2/25/2016	2/26/2016	2/27/2016	2/28/2016
H ₂ O #		MH 961	MH 961	MH 962	MH 962	MH 962	MH 962	MH 962
Temp (°C)	Control	23.5	23.5	22.8	23.4	22.7	23.1	23.5
	32%	23.8	23.2	22.8	22.7	22.7	23.0	23.2
	42%	24.0	23.2	22.8	22.4	22.9	23.1	23.4
	56%	24.1	23.2	23.0	22.5	23.0	22.9	23.9
	80%	24.4	23.3	23.0	22.4	23.0	22.8	23.9
	100%	24.5	23.5	23.2	23.3	23.1	23.3	23.9
pH (Standard Units)	Control	8.07	8.13	8.11	7.61	7.60	7.69	8.19
	32%	8.15	8.35	8.18	7.78	7.61	7.80	8.20
	42%	8.20	8.38	8.19	7.79	7.59	7.83	8.20
	56%	8.24	8.46	8.19	7.93	7.56	7.81	8.20
	80%	8.24	8.49	8.17	7.85	7.55	7.79	8.19
	100%	8.18	8.45	8.18	7.80	7.55	7.85	8.15
DO (mg/L)	Control	8.6	8.5	8.8	8.4	8.4	8.6	8.4
	32%	8.3	8.2	8.4	8.4	8.4	8.4	8.4
	42%	8.3	8.1	8.4	8.2	8.5	8.4	8.5
	56%	8.3	8.1	8.4	8.1	8.5	8.4	8.5
	80%	8.2	8.1	8.5	8.2	8.7	8.5	8.5
	100%	8.3	8.0	8.6	8.1	8.8	8.5	8.8
Cond (µS/cm)	Control	330	325	319	315	314	318	321
	32%	329	324	320	317	306	311	314
	42%	330	324	321	317	303	308	313
	56%	331	323	324	318	300	300	311
	80%	334	324	330	321	296	311	309
	100%	335	328	332	333	295	301	307
Alk (mg/L)	Control	62		62		62		
	100%	170		180		150		
Hard (mg/L)	Control	100		90		90		
	100%	190		170		140		

WET Testing Summary Form
Fathead Minnow Larvae (*Pimephales promelas*)

Chemical Parameters Chart

Permittee: Walnut Ridge Wastewater Plant Sample No. 1 Collected Ending Date: 2/22/16 Time: 0900
 NPDES No.: AR0046566 Sample No. 2 Collected Ending Date: 2/24/16 Time: 0900
 Contact: Bruce Richart Sample No. 3 Collected Ending Date: 2/26/16 Time: 0900
 Analyst: McCauley/Kilmer Test Begin: Date: 2/22/16 Time: 1200 Test End: Date: 2/29/16 Time: 1200

Final Water Chemistry for Chronic Tests

Project: Walnut Ridge – *P. promelas*

Test day		1	2	3	4	5	6	7
Date		2/23/2016	2/24/2016	2/25/2016	2/26/2016	2/27/2016	2/28/2016	2/29/2016
H ₂ O #		MH 961	MH 962	MH 962	MH 962	MH 962	MH 962	MH 962
Temp (°C)	Control	23.5	22.8	22.5	22.5	22.0	23.0	23.4
	32%	22.5	22.8	22.8	22.5	22.3	23.0	23.3
	42%	22.5	22.8	22.5	22.5	22.2	23.0	23.3
	56%	22.5	22.8	22.5	22.5	22.0	23.0	23.2
	80%	23.0	22.8	22.0	22.5	22.1	23.0	23.4
	100%	22.8	22.8	23.0	22.5	22.0	23.0	23.2
pH (Standard Units)	Control	7.81	7.34	7.34	7.46	7.13	7.76	7.19
	32%	8.05	7.53	7.54	7.89	7.45	8.16	7.60
	42%	8.16	7.69	7.60	7.77	7.59	8.22	7.77
	56%	8.23	7.78	7.68	7.85	7.68	8.51	8.01
	80%	8.32	7.95	7.79	8.20	7.83	8.46	8.01
	100%	8.39	8.11	7.84	7.99	7.90	8.73	8.27
DO (mg/L)	Control	7.8	6.1	7.9	7.4	6.0	7.0	8.3
	32%	7.5	5.7	7.6	7.5	6.2	7.3	7.3
	42%	7.4	5.6	7.5	7.8	6.6	7.5	7.6
	56%	7.4	5.8	7.5	8.2	6.9	8.0	8.2
	80%	7.4	5.9	7.6	8.3	7.0	8.1	8.4
	100%	7.4	6.2	7.8	8.5	7.2	8.6	8.8

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

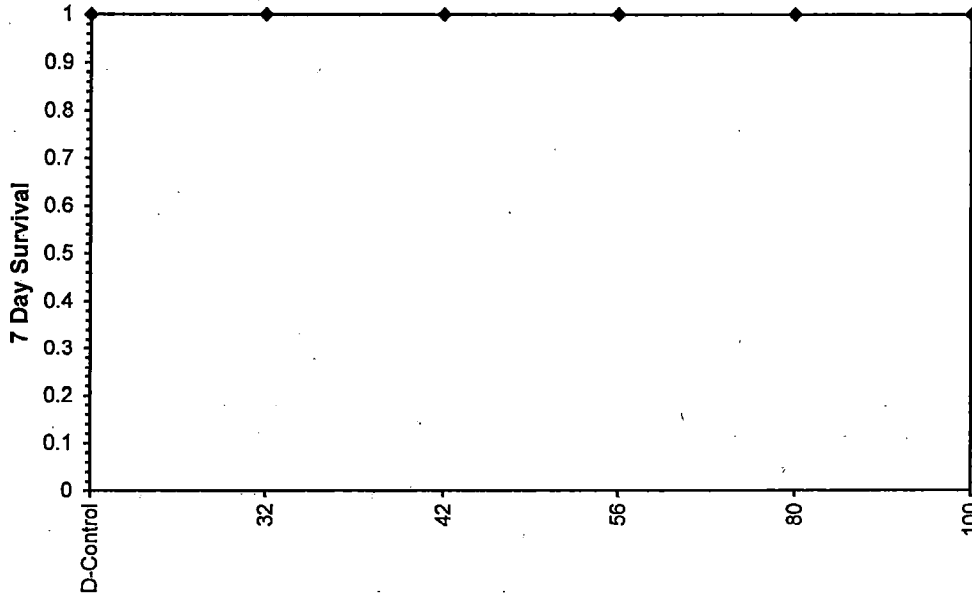
Start Date: 2/22/2016 11:30 Test ID: WR Sample ID: AR0046566-NPDES Permit #
 End Date: 2/29/2016 12:30 Lab ID: ASU-ERF Sample Type: EFF1-POTW
 Sample Date: 02/22/16 Protocol: EPAF 02-EPA Freshwater Test Species: CD-Ceriodaphnia dubia
 Comments: 1 quarter WET

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
42	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
D-Control	1.0000	1.0000	0	10	10	10		
32	1.0000	1.0000	0	10	10	10	1.0000	0.0500
42	1.0000	1.0000	0	10	10	10	1.0000	0.0500
56	1.0000	1.0000	0	10	10	10	1.0000	0.0500
80	1.0000	1.0000	0	10	10	10	1.0000	0.0500
100	1.0000	1.0000	0	10	10	10	1.0000	0.0500

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

Dose-Response Plot



Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date: 2/22/2016 11:30	Test ID: WR	Sample ID: AR0046566-NPDES Permit #
End Date: 2/29/2016 12:30	Lab ID: ASU-ERF	Sample Type: EFF1-POTW
Sample Date: 02/22/16	Protocol: EPAF 02-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: 1 quarter WET		

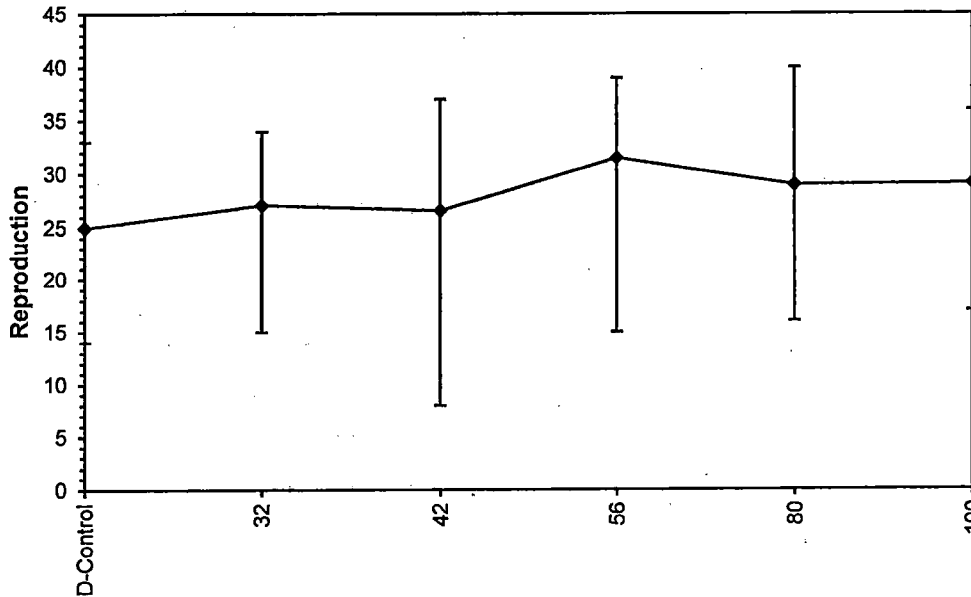
Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	14.000	26.000	27.000	29.000	31.000	33.000	30.000	28.000	16.000	16.000
32	26.000	29.000	27.000	30.000	34.000	34.000	29.000	29.000	15.000	18.000
42	28.000	32.000	37.000	31.000	32.000	33.000	35.000	8.000	16.000	14.000
56	27.000	38.000	35.000	38.000	39.000	34.000	26.000	31.000	32.000	15.000
80	18.000	34.000	34.000	31.000	36.000	33.000	31.000	40.000	17.000	16.000
100	20.000	34.000	32.000	34.000	33.000	35.000	36.000	32.000	18.000	17.000

Conc-%	Mean	N-Mean	Transform: Untransformed				Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%		
D-Control	25.000	1.0000	25.000	14.000	33.000	27.905	10	
32	27.100	1.0840	27.100	15.000	34.000	22.843	10	114.00
42	26.600	1.0640	26.600	8.000	37.000	37.935	10	119.00
56	31.500	1.2600	31.500	15.000	39.000	23.244	10	131.50
80	29.000	1.1600	29.000	16.000	40.000	29.929	10	129.50
100	29.100	1.1640	29.100	17.000	36.000	25.992	10	131.50

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.69347	1.035	-0.84678	-0.52978
Bartlett's Test indicates equal variances (p = 0.76)	2.63808	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

Dose-Response Plot



Larval Fish Growth and Survival Test-7 Day Survival

Start Date: 2/22/2016 12:00	Test ID: WR	Sample ID: AR0046566-NPDES Permit #
End Date: 2/29/2016 12:00	Lab ID: ASU-ERF	Sample Type: EFF1-POTW
Sample Date: 02/22/16	Protocol: EPAF 02-EPA Freshwater	Test Species: PP-Pimephales promelas
Comments: 1 quarter WET		

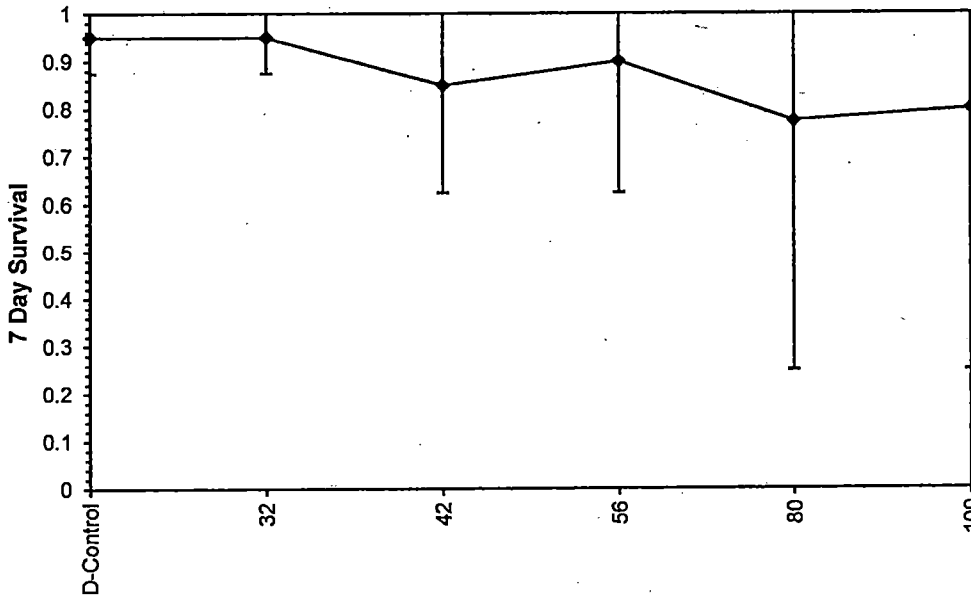
Conc-%	1	2	3	4	5
D-Control	1.0000	0.8750	1.0000	0.8750	1.0000
32	1.0000	1.0000	1.0000	0.8750	0.8750
42	0.8750	0.8750	1.0000	0.6250	0.8750
56	1.0000	0.8750	1.0000	0.6250	1.0000
80	0.6250	1.0000	1.0000	0.2500	1.0000
100	1.0000	1.0000	0.7500	0.2500	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
D-Control	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5		
32	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5	27.50	16.00
42	0.8500	0.8947	1.1866	0.9117	1.3931	14.581	5	21.50	16.00
56	0.9000	0.9474	1.2601	0.9117	1.3931	16.693	5	26.50	16.00
80	0.7750	0.8158	1.1229	0.5236	1.3931	35.138	5	25.50	16.00
100	0.8000	0.8421	1.1500	0.5236	1.3931	33.118	5	25.50	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.88003	0.9	-1.2182	1.45324
Bartlett's Test indicates equal variances (p = 0.04)	11.967	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1

Dose-Response Plot



Larval Fish Growth and Survival Test-7 Day Growth

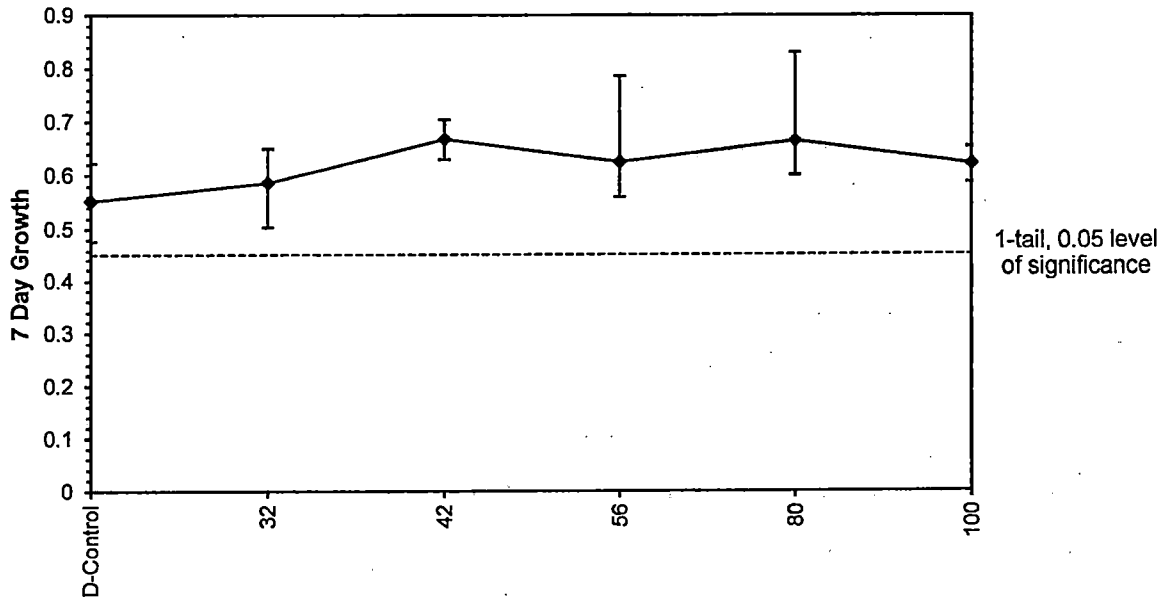
Start Date: 2/22/2016 12:00	Test ID: WR	Sample ID: AR0046566-NPDES Permit #
End Date: 2/29/2016 12:00	Lab ID: ASU-ERF	Sample Type: EFF1-POTW
Sample Date: 02/22/16	Protocol: EPAF 02-EPA Freshwater	Test Species: PP-Pimephales promelas
Comments: 1 Quarter WET		

Conc-%	1	2	3	4	5
D-Control	0.5313	0.4771	0.5263	0.6014	0.6225
32	0.5725	0.5038	0.6050	0.6500	0.6000
42	0.6300	0.6586	0.6425	0.7040	0.7043
56	0.5587	0.5657	0.5700	0.7860	0.6425
80	0.6320	0.6025	0.6012	0.8300	0.6600
100	0.6537	0.5875	0.6417	0.6200	0.6087

Conc-%	Mean	N-Mean	Transform: Untransformed					N	t-Stat	1-Tailed Critical	MSD
			Mean	Min	Max	CV%					
D-Control	0.5517	1.0000	0.5517	0.4771	0.6225	10.765	5				
32	0.5863	1.0626	0.5863	0.5038	0.6500	9.186	5	-0.819	2.360	0.0995	
42	0.6679	1.2105	0.6679	0.6300	0.7043	5.184	5	-2.754	2.360	0.0995	
56	0.6246	1.1321	0.6246	0.5587	0.7860	15.431	5	-1.728	2.360	0.0995	
80	0.6651	1.2056	0.6651	0.6012	0.8300	14.324	5	-2.690	2.360	0.0995	
100	0.6223	1.1280	0.6223	0.5875	0.6537	4.224	5	-1.674	2.360	0.0995	

Auxiliary Tests	Statistic	Critical	Skew	Kurt						
Shapiro-Wilk's Test indicates normal distribution ($p > 0.01$)	0.90065	0.9	1.20034	1.75024						
Bartlett's Test indicates equal variances ($p = 0.12$)	8.68371	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	0.09954	0.18042	0.01016	0.00445	0.07832	5, 24

Dose-Response Plot



CHRONIC TEST DATA SHEET

Pimephales promelas

Project: Walnut Ridge MA Beginning Date: 022216 Time: 1200 Test Species: P. promelas

Dilution H₂O: 9/10 Ending Date: 022916 Time: 1200 Age: 24 hrs

Test Type: (*)Static Renewal () Flowthrough Toxicant/Effluent: Walnut Ridge

Conc.	Rep	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Pan #
Control	1	8/0	8/0	8/0	8/0	8/0	8/0	8/0	1
	2	8/0	8/0	8/0	8/0	8/0	8/0	8/1	2
	3	8/0	8/0	8/0	8/0	8/0	8/0	8/0	3
	4	8/0	8/0	8/0	8/0	8/0	8/1	7/0	4
	5	8/0	8/0	8/0	8/0	8/0	8/0	8/0	5
32%	1	8/0	8/0	8/0	8/0	8/0	8/0	8/0	6
	2	8/0	8/0	8/0	8/0	8/0	8/0	8/0	7
	3	8/0	8/0	8/0	8/0	8/0	8/0	8/0	8
	4	8/0	8/0	8/0	8/0	8/0	8/1	7/0	9
	5	8/0	8/0	8/0	8/1	7/0	7/0	7/0	10
42%	1	8/0	8/0	8/0	8/0	8/1	7/0	7/0	11
	2	8/0	8/1	7/0	7/0	7/0	7/0	7/0	12
	3	8/0	8/0	8/0	8/0	8/0	8/0	8/0	13
	4	8/0	8/0	8/1	7/1	6/1	5/0	5/0	14
	5	8/0	8/0	7/0	7/0	7/0	7/0	7/0	15
56%	1	8/0	8/0	8/0	8/0	8/0	8/0	8/0	16
	2	8/0	8/0	8/0	8/0	8/1	7/0	7/0	17
	3	8/0	8/0	8/0	8/0	8/0	8/0	8/0	18
	4	8/0	8/0	8/0	8/2	6/1	5/0	5/0	19
	5	8/0	8/0	8/0	8/0	8/0	8/0	8/0	20
Date		022316	022416	022516	022616	022716	022816	022916	
Initials		JRM	KK	LAH	LA	JRM	JRM	man	

CHRONIC TEST DATA SHEET

Pimephales promelas

Project: Walnut Ridge mt Beginning Date: 022216 Time: 1200 Test Species: P.promelas

Dilution H₂O: 961/962 Ending Date: 022916 Time: 120 Age: 24h

Test Type: (*)Static Renewal () Flowthrough Toxicant/Effluent: wk

Conc.	Rep	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Pan #
80%	1	8/0	8/0	8/2	6/1	5/0	5/0	5/0	21
	2	8/0	8/0	8/0	8/0	8/0	8/0	8/0	22
	3	8/0	8/0	8/0	8/0	8/0	8/0	8/0	23
	4	8/0	8/0	8/0	8/5	3/1	2/0	2/0	24
	5	8/0	8/0	8/0	8/0	8/0	8/0	8/0	25
100%	1	8/0	8/0	8/0	8/0	8/0	8/0	8/0	26
	2	8/0	8/0	8/0	8/0	8/0	8/0	8/0	27
	3	8/0	8/0	8/0	8/2	6/0	6/0	6/0	28
	4	8/0	8/0	8/2	6/3	3/0	3/1	2/0	29
	5	8/0	8/0	8/0	8/0	8/0	8/0	8/0	30
Date		022316	022416	022516	022616	022716	022816	022916	
Initials		fen	KVK	ARB	AV	JRM	fn	mm	

Initial Water Chemistry for Chronic Tests
Project: Walnut Ridge - *C. dubia* / *P. promelas*

Test Day:		0	1	2	3	4	5	6
Date:		022216	022316	022416	022516	022616	022716	022816
H ₂ O Batch #:		MH 961	MH 961	MH 962	MH 962	MH 962	MH 962	MH 962
Temp. (°C)	Control	23.5	23.5	22.8	23.4	22.7	23.1	23.5
	32%	23.8	23.2	22.8	22.7	22.7	23.0	23.2
	42%	24.0	23.2	22.8	22.4	22.9	23.1	23.4
	56%	24.1	23.2	23.0	22.5	23.0	22.9	23.9
	80%	24.4	23.3	23.0	22.4	23.0	22.8	23.9
	100%	24.5	23.5	23.2	23.3	23.1	23.3	23.9
pH	Control	8.07	8.13	8.03 ^{8.11}	7.61	7.60	7.69	8.19
	32%	8.15	8.35	8.18	7.78	7.61	7.80	8.20
	42%	8.20	8.38	8.19	7.79	7.59	7.83	8.20
	56%	8.24	8.46	8.19	7.93	7.56	7.81	8.20
	80%	8.24	8.49	8.17	7.85	7.55	7.79	8.19
	100%	8.18	8.45	8.18	7.80	7.55	7.85	8.15
DO (mg/L)	Control	8.6	8.5	8.8	8.4	8.4	8.6	8.4
	32%	8.3	8.2	8.4	8.4	8.4	8.4	8.4
	42%	8.3	8.1	8.4	8.2	8.5	8.4	8.5
	56%	8.3	8.1	8.4	8.1	8.5	8.4	8.5
	80%	8.2	8.1	8.5	8.2	8.7	8.5	8.5
	100%	8.3	8.0	8.6	8.1	8.8	8.5	8.8
Cond. (µS/cm)	Control	330	325	319	315	314	318	321
	32%	329	324	320	317	306	311	314
	42%	330	324	321	317	303	308	313
	56%	331	323	324	318	300	300	311
	80%	334	324	330	321	296	311	309
	100%	335	328	337	333	295	301	307
Alk. (mg/L)	Control	62		62		62		
	100%	170		180		150		
Hard. (mg/L)	Control	100		90		90		
	100%	190		170		140		
Initials		KSM/RIC	KSM/RIC	KSM/RIC	KSM/RIC	KSM/RIC	RIC	KSM/RIC

Final Water Chemistry for Chronic Tests
Project: Walnut Ridge - *C. dubia*

Test Day:		1	2	3	4	5	6	7
Date:		022316	022416	022516	022616	022716	022816	022916
H ₂ O Batch #:		MH961	MH961	MH962	MH962	MH962	MH962	MH962
Temp (°C)	Control	23.5	22.2	22.5	22.4	23.3	22.9	23.3
	32%	23.4	22.7	22.8	22.9	23.1	23.2	23.1
	42%	22.6	22.8	23.1	23.0	22.8	23.7	23.1
	56%	23.3	22.4	22.8	22.9	22.9	23.7	23.2
	80%	23.0	22.6	22.4	22.7	22.7	23.8	22.9
	100%	23.3	22.9	22.6	22.9	23.1	23.8	23.0
pH	Control	8.40	8.51	8.09	8.23	8.11	8.56	8.18
	32%	8.60	8.64	8.23	8.29	8.25	8.73	8.30
	42%	8.63	8.73	8.22	8.32	8.25	8.79	8.35
	56%	8.69	8.74	8.28	8.29	8.32	8.83	8.42
	80%	8.71	8.77	8.27	8.28	8.33	8.66	8.43
	100%	8.74	8.77	8.29	8.24	8.37	8.92	8.48
DO (mg/L)	Control	8.9	9.2	9.0	9.3	9.3	8.5	9.2
	32%	8.9	9.0	9.0	9.2	9.1	8.7	9.0
	42%	9.1	9.1	9.1	9.3	9.2	8.8	9.0
	56%	9.1	9.1	9.1	9.3	9.2	8.8	9.0
	80%	9.1	9.1	9.2	9.3	9.2	8.8	9.0
	100%	9.2	9.3	9.2	9.4	9.2	8.8	9.2
Initials		RIC/KM	RIC	RIC/KSM	RIC/KSM	RIC/KSM	RIC/KSM	RIC

Final Water Chemistry for Chronic Tests
 Project: Walnut Ridge - *P. promelas*

Test Day:		1	2	3	4	5	6	7
Date:		022316	022416	022516	022616	022716	022816	022916
H ₂ O Batch #:		MH961	MH962	MH962	MH962	MH962	MH962	MH962
Temp. (°C)	Control	23.5	22.8	22.5	22.5	22.0	23.0	23.4
	32%	22.5	22.8	22.8	22.5	22.3	23.0	23.3
	42%	22.5	22.8	22.5	22.5	22.2	23.0	23.3
	56%	22.5	22.8	22.5	22.5	22.0	23.0	23.2
	80%	23.0	22.8	22.0	22.5	22.1	23.0	23.4
	100%	22.8	22.8	23.0	22.5	22.0	23.0	23.2
pH	Control	7.81	7.34	7.34	7.46	7.13	7.76	7.19
	32%	8.05	7.53	7.54	7.89	7.45	8.16	7.60
	42%	8.16	7.69	7.60	7.77	7.89	8.22	7.77
	56%	8.23	7.78	7.68	7.85	7.68	8.51	8.01
	80%	8.32	7.95	7.79	8.20	7.83	8.46	8.01
	100%	8.39	8.11	7.84	7.99	7.90	8.73	8.27
DO (mg/L)	Control	7.8	6.1	7.9	7.4	6.0	7.0	8.3
	32%	7.5	5.7	7.6	7.5	6.2	7.3	7.3
	42%	7.4	5.6	7.5	7.8	6.6	7.5	7.6
	56%	7.4	5.8	7.5	8.0	6.9	8.0	8.2
	80%	7.4	5.9	7.6	8.3	7.0	8.1	8.4
	100%	7.4	6.2	7.8	8.5	7.2	8.6	8.8
Initials		JM/KSM	KL	UMB	KL/KSM	JM/KSM	KSM/bm	mm



Ecotoxicology Research Facility

SAMPLE CHECK IN

Sample ID Number: WRTH

Fill out this information with each effluent or river water sample coming in for testing. Keep completed sheets with test data and file with the lab QA/QC officer.

Date: 022216 Sampling Date: 02/21 - 02/22/16 Arrival Time: 0950

Field Identification Number: _____ Description: Effluent

Shipped by: Federal Express _____ UPS _____ Hand delivered by: WR personnel

Drop-Off Location: ASU-ERF

Storage While Shipped: In cooler w/ ice

Analysis Requested: Chronic C. dubia + P. promelas

Initial Water Chemistry Analysis:

Sample Received by: K. McAnuly

Temperature (°C): 4.5°C Ice Present upon delivery: YES NO

Date: 022216

Quality Assurance	Initial	Date	Yes	No
Chain of Custody	<u>KSM</u>	<u>022216</u>	<input checked="" type="checkbox"/>	
Refrigerated at 4°C	↓	↓	<input checked="" type="checkbox"/>	
Field Record Received				<input checked="" type="checkbox"/>
Sample Label Affixed Properly			<input checked="" type="checkbox"/>	
Project Leader Informed	↓	↓	<input checked="" type="checkbox"/>	

Comments: _____



Ecotoxicology Research Facility

Ecotoxicology Research Facility

Arkansas State University

2645 Caddo Drive

State University, AR 72467

(870) 972-2570 Fax (870) 972-2577

CHAIN OF CUSTODY RECORD



Client Name Walnut Ridge Wastewater Treatment			Phone: (870) 886-2312			Analyses (List Below)								
Project #			Fax:											
Sampler (sign) 			PO #:			Chronic C. dubia	Chronic P. promelas							
Remarks:			Contact: Jonathan Kopp											
Cont #	Sample ID Number	Location	Sample Date	Sample Time	Sample Type		Matrix							
					Comp	Grab	Aqueous	Soil	Other					
1		EF-001	2-21-16	9 A.M.	X						X	X		
			2-22-16	9 A.M.										
Ice present at delivery: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Temp: <u>4.5</u> °C <u>ISM</u> Initials											
1. Relinquished By (sign) 			Date	Time	1. Received By (sign) 			Date	Time					
2. Relinquished By (sign)			Date	Time	2. Received By (sign)			Date	Time					



Ecotoxicology Research Facility

SAMPLE CHECK IN

Sample ID Number: WR#2

Fill out this information with each effluent or river water sample coming in for testing. Keep completed sheets with test data and file with the lab QA/QC officer.

Date: 022416 Sampling Date: 02/23 - 02/22/16 Arrival Time: 1127

Field Identification Number: _____ Description: Effluent

Shipped by: Federal Express _____ UPS _____ Hand delivered by: WR Personnel

Drop-Off Location: ASU-ERF

Storage While Shipped: dry cooler w/ ice

Analysis Requested: Chromi C. dubia + P. promelas

Initial Water Chemistry Analysis:

Sample Received by: Mark Mole

Temperature (°C): 2.0 °C Ice Present upon delivery: YES NO

Date: 022416

Quality Assurance	Initial	Date	Yes	No
Chain of Custody	<u>MM</u>	<u>0224/16</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Refrigerated at 4°C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Field Record Received	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample Label Affixed Properly	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Project Leader Informed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comments: _____



EcoToxicology Research Facility

Ecotoxicology Research Facility

Arkansas State University
501 Iroquois Street
State University, AR 72467
(870) 972-2570 Fax (870) 972-2577

CHAIN OF CUSTODY RECORD



ARKANSAS STATE UNIVERSITY

Client Name Walnut Ridge Wastewater Treatment			Phone: (870) 886-2312						Analyses (List Below)				
Project #			Fax:										
Sampler (sign) 			PO #:						Chronic C. dubia	Chronic P. promelas			
Remarks:			Contact: Jonathan Kopp										
Cont #	Sample ID Number	Location	Sample Date	Sample Time	Sample Type		Matrix			X	X		
					Comp	Grab	Aqueous	Soil	Other				
			2-23	2-24 9am - 9am	<input checked="" type="checkbox"/>								
Ice present at delivery:			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No										
Temp:			2.0°C			MM Initials							
1. Relinquished By (sign) 			Date 2-24-16		Time 11:27		1. Received By (sign) 			Date 022416		Time 11:27	
2. Relinquished By (sign) 			Date 022416		Time 11:27		2. Received By (sign)			Date		Time	



Ecotoxicology Research Facility

SAMPLE CHECK IN

Sample ID Number: WR # 3

Fill out this information with each effluent or river water sample coming in for testing. Keep completed sheets with test data and file with the lab QA/QC officer.

Date: 02-20-16 Sampling Date: 022516 - 022616 Arrival Time: 1025

Field Identification Number: _____ Description: Effluent

Shipped by: Federal Express _____ UPS _____ Hand delivered by: WR Personnel

Drop-Off Location: ASU-ERF

Storage While Shipped: cooler w/ ice

Analysis Requested: WET Chem C. dubia & P. promelas

Initial Water Chemistry Analysis:

Sample Received by: KIK

Temperature (°C): 3.5 Ice Present upon delivery: YES NO

Date: 022616

Quality Assurance	Initial	Date	Yes	No
Chain of Custody	KIK	022616	✓	
Refrigerated at 4°C	↓	↓	✓	
Field Record Received				✓
Sample Label Affixed Properly	↓	↓	✓	
Project Leader Informed	↓	↓	✓	

Comments: _____



Ecotoxicology Research Facility

Ecotoxicology Research Facility

Arkansas State University

501 Iroquois Street

State University, AR 72467

(870) 972-2570 Fax (870) 972-2577

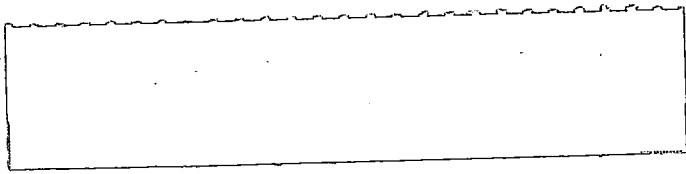
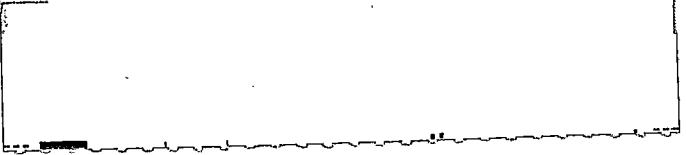
CHAIN OF CUSTODY RECORD



ARKANSAS STATE UNIVERSITY

Client Name Walnut Ridge Wastewater Treatment			Phone: (870) 886-2312					Analyses (List Below)												
Project #			Fax:																	
Sampler (Sign) 			PO #:																	
Remarks:			Contact: Jonathan Kopp					Chronic C. dubia	Chronic P. promelas											
Cont.#			Sample ID Number		Location		Sample Date						Sample Time		Sample Type		Matrix			
											Comp		Grab		Aqueous		Soil		Other	
							2-25 2-26		9am - 9am		✓									
Ice present at delivery:			✓ Yes		___ No															
Temp:			35 °C		✓ Initials															
1. Relinquished By (sign) 			Date 2-26-16		Time 10-25		1. Received By (sign) 		Date 02-26-16		Time 1025									
2. Relinquished By (sign)			Date		Time		2. Received By (sign)		Date		Time									


ADD
Attn: Mary Barnett
5301 North Shore Drive
North Little Rock, AR 72118-5317



RETURN RECEIPT
REQUESTED

City
214 SW fourth
Walnut Ridge AR 72476

U.S. POSTAGE
PAID
72476
WALNUT RIDGE, AR
MAR 10 16
AMOUNT
\$8.55
R2305E123309-02



1000
72118

7025 0640 0004 4148 3144



CERTIFIED MAIL

