

Toxicity Test Performed: 7-day *Pimephales promelas* Survival and Growth
 Effluent Sampling Point: Walnut Ridge WWT Plant
 Date Test Started: 07/09/14 *P. promelas*
 Time Test Started: 1255 *P. promelas*
 Date Test Terminated: 07/16/14 *P. promelas*
 Time Test Terminated: 1245 *P. promelas*
 Laboratory Analyst: Kennon/Vogt

Toxicity Test Performed: 7-day *Ceriodaphnia dubia* Survival and Reproduction
 Effluent Sampling Point: Walnut Ridge WWT Plant
 Date Test Started: 07/09/14 *C. dubia*
 Time Test Started: 1225 *C. dubia*
 Date Test Terminated: 07/17/14 *C. dubia*
 Time Test Terminated: 1610 *C. dubia*
 Laboratory Analyst: Griffin/Bouldin

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>
Fathead Minnow Survival and Growth	Section 11
Cladoceran Survival and Reproduction	Section 13

II. Test Organisms

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

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

III. External Factors

A. Incubator

Temperature (°C)

Average: Average: 25.3

Range: 24.8 – 26.0

Light Cycle: 16-hours light/ 8 hours dark

Light Intensity: 100 footcandles

Control Water: Moderately Hard Synthetic Water (#917/918)

B. *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.

C. *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 061114 & 070114) and yeast/cereal/trout chow mix (#YCT 050214-11 & 062414-1 & 2) one hour prior to test setup and once daily thereafter.

IV. Quality Assurance

A. Standard Toxicant: Sodium Chloride

B. Organism: *Pimephales promelas*

Date of Reference Toxicant Test

Start: 07/07/14

Terminated: 07/14/14

Time of Reference Toxicant Test

Start: 1105

Terminated: 1038

Laboratory Analyst: Kennon/Vogt

Dilution Water Used: Moderately Hard Synthetic Water #916/917

Results: Survival and Growth within control limits

Survival	Growth
LOEC: 4.22 g/L NaCl	LOEC: >5.63 g/L NaCl
EC50: 4.42 g/L NaCl	IC25: 4.17 g/L NaCl

C. Organism: *Ceriodaphnia dubia*

Date and time of Reference Toxicant Test

Start: 07/07/14

Terminated: 07/14/14

Time of Reference Toxicant Test

Start: 1055

Terminated: 1545

Laboratory Analyst: Kennon/Vogt

Dilution Water Used: Moderately Hard Synthetic Water #916/917

Results: Survival and Reproduction within control limits

Survival	Reproduction
LOEC: 2.60 g/L NaCl	LOEC: 1.27 g/L NaCl
EC50: 1.77 g/L NaCl	IC25: 0.98 g/L NaCl

V. Physical and Chemical Data - See Attached

VI. Survival and Growth Data - See Attached

VII. Statistical Methods - See Attached

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	07/08/14	to	0900	07/09/14
Composite 2:	Collected From	0900	07/10/14	to	0900	07/11/14
Composite 3:	Collected From	0900	07/13/14	to	0900	07/14/14

Test Initiated: 1255

Date: 07/09/14

Time Terminated: 1245

Date: 07/16/14

Dilution H₂O: MH 917/918

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Replicate Chambers					Mean % Survival			CV%
	A	B	C	D	E	24h	48h	7days	
Control	62.5	100	100	100	100	100	100	92.5	16.6
32	100	100	100	100	100	100	100	100	0.0
42	100	100	100	100	87.5	100	100	97.5	6.1
56	87.5	100	100	100	100	100	100	97.5	6.1
80	100	100	100	87.5	100	100	100	97.5	6.1
100	100	100	100	100	100	100	100	100	0.0

DATA TABLE FOR GROWTH

Effluent Conc %	Replicate Chambers (mg)					Mean Dry Weight (mg) CV%	
	A	B	C	D	E		
Control	0.2600	0.2262	0.2587	0.2462	0.2788	0.2540	7.6
32	0.2163	0.2350	0.2100	0.2262	0.3087	0.2392	16.7
42	0.2937	0.2063	0.2312	0.2800	0.3029	0.2628	16.0
56	0.3100	0.2950	0.2550	0.2738	0.2075	0.2682	14.9
80	0.2088	0.2275	0.1650	0.1943	0.1437	0.1879	17.9
100	0.1538	0.1862	0.1987	0.1475	0.2013	0.1775	14.2

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?

 X Yes _____ 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: 1

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

6. Report the NOEC value for growth, Parameter #TPP6C:
NOEC growth 56 % effluent

7. Report the % coefficient of variation (largest of critical and control dilutions), Parameter #TQP6C: CV % growth 14.2% (critical)

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%

SUMMARY REPORTING FORM

WET Testing

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

Permittee: Walnut Ridge WWT Plant

Sample No. 1 Collected Ending Date: 07/09/14 Time: 0900

NPDES No.: AR0046566

Sample No. 2 Collected Ending Date: 07/11/14 Time: 0900

Contact: Jon Kopp

Sample No. 3 Collected Ending Date: 07/14/14 Time: 0900

Analyst: Kennon/Vogt

Test Begin: Date: 07/09/14 Time: 1255 Test End: Date: 07/16/14 Time: 1245

Initial Water Chemistry for Chronic Tests

Project: Walnut Ridge – *P. promelas*

Test day		0	1	2	3	4	5	6
Date		7/9/2014	7/10/2014	7/11/2014	7/12/2014	7/13/2014	7/14/2014	7/15/2014
H ₂ O #		MH 917	MH 917	MH 917	MH 917	MH 917	MH 917	MH 918
Temp (°C)	Control	23.1	22.0	23.0	23.2	23.1	23.7	21.0
	32%	23.1	22.0	23.0	23.2	23.1	23.6	21.0
	42%	23.1	22.0	23.0	23.2	23.1	23.6	21.0
	56%	23.1	22.0	23.0	23.2	23.0	23.1	21.0
	80%	23.1	22.0	23.0	23.2	23.0	23.2	21.1
	100%	23.1	22.0	23.0	23.2	23.0	23.2	21.1
pH (Standard Units)	Control	8.20	8.09	8.25	7.96	8.18	7.96	7.76
	32%	8.23	7.98	7.98	8.09	8.07	8.15	7.92
	42%	8.24	7.99	8.04	8.08	8.13	8.06	7.96
	56%	8.22	8.01	8.01	8.08	8.10	8.09	8.00
	80%	8.12	7.85	8.00	8.01	8.06	8.14	7.92
	100%	8.10	7.77	7.95	7.98	8.03	8.21	7.72
DO (mg/L)	Control	8.6	8.4	8.5	8.4	8.5	8.4	8.6
	32%	8.3	8.8	8.5	8.4	8.4	8.6	8.6
	42%	8.5	8.6	8.5	8.4	8.5	8.5	8.6
	56%	8.5	8.7	8.5	8.4	8.5	8.7	8.8
	80%	8.4	8.7	8.6	8.3	8.5	8.6	8.6
	100%	8.4	9.0	8.6	8.1	8.5	8.2	8.9
Cond (µS/cm)	Control	315	316	317	316	316	308	339
	32%	391	391	389	391	392	357	387
	42%	418	415	414	415	414	375	402
	56%	451	451	449	450	448	397	424
	80%	508	510	499	508	507	437	462
	100%	556	558	555	555	555	467	495
Alk (mg/L)	Control	58		58			60	
	100%	124		140			126	
Hard (mg/L)	Control	90		90			90	
	100%	180		210			160	

SUMMARY REPORTING FORM

WET Testing

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

Permittee: Walnut Ridge WWT Plant

Sample No. 1 Collected Ending Date: 07/09/14 Time: 0900

NPDES No.: AR0046566

Sample No. 2 Collected Ending Date: 07/11/14 Time: 0900

Contact: Jon Kopp

Sample No. 3 Collected Ending Date: 07/14/14 Time: 0900

Analyst: Kennon/Vogt

Test Begin: Date: 07/09/14 Time: 1255 Test End: Date: 07/16/14 Time: 1245

Final Water Chemistry for Chronic Tests								
Project: Walnut Ridge – <i>P. promelas</i>								
Test day		1	2	3	4	5	6	7
Date		7/10/2014	7/11/2014	7/12/2014	7/13/2014	7/14/2014	7/15/2014	7/16/2014
H ₂ O #		MH 917	MH 917	MH 917	MH 917	MH 917	MH 917	MH 918
Temp (°C)	Control	23.0	23.0	24.0	23.5	23.7	22.3	23.5
	32%	23.5	23.5	24.5	22.9	23.7	22.5	24.0
	42%	23.5	23.5	24.1	23.0	24.0	22.0	23.5
	56%	24.0	23.5	24.1	23.5	23.8	22.0	23.5
	80%	23.5	23.5	23.5	23.0	24.3	22.0	23.0
	100%	23.5	23.5	23.5	22.8	23.8	21.5	23.5
pH (Standard Units)	Control	8.12	7.93	7.68	7.84	7.60	7.95	7.87
	32%	8.17	7.94	7.78	8.02	7.96	8.18	8.69
	42%	8.18	8.02	7.83	8.03	8.01	8.15	8.69
	56%	8.20	8.05	7.89	8.14	8.15	8.30	8.76
	80%	8.24	8.06	7.94	8.17	8.14	8.32	8.74
	100%	8.25	8.13	8.04	8.21	8.16	8.29	8.61
DO (mg/L)	Control	7.8	7.4	6.9	7.4	8.0	7.7	7.6
	32%	7.8	6.9	6.8	7.5	7.9	8.0	9.3
	42%	7.3	7.1	6.6	7.4	7.9	8.0	9.4
	56%	7.3	6.8	6.7	7.5	8.2	8.1	9.7
	80%	7.3	6.6	6.5	7.2	7.9	7.9	9.6
	100%	7.1	6.8	6.7	7.0	7.9	7.6	9.5

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	07/08/14	to	0900	07/09/14
Composite 2:	Collected From	0900	07/10/14	to	0900	07/11/14
Composite 3:	Collected From	0900	07/13/14	to	0900	07/14/14

Test Initiated: 1225

Date: 07/09/14

Time Terminated: 1610

Date: 07/17/14

Dilution H₂O: MH 917/918

PERCENT SURVIVAL

Percent Effluent

<u>Time of Reading</u>	<u>Control</u>	<u>32%</u>	<u>42%</u>	<u>56%</u>	<u>80%</u>	<u>100%</u>
24h	100	100	100	100	100	100
48h	100	100	100	100	100	100
7 day	90	100	70	100	100	80

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	X/0	19	X/0	10	22	3
B	32	41	X/0	22	4	15
C	32	35	34	16	14	9
D	30	30	28	14	4	8
E	16	25	37	11	22	16
F	21	26	31	20	19	10
G	25	21	X3	7	14	X/0
H	33	15	40	19	12	6
I	19	16	32	24	17	26
J	31	24	28	20	21	X/0
Mean	26.6	25.2	23.3	16.3	14.9	9.3
CV%*	24.3	32.8	68.0	34.6	45.1	86.5

*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 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 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: 1

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

6. Report the NOEC value for reproduction, Parameter #TPP3B:
NOEC reproduction 42 % effluent

7. Report the % coefficient of variation (largest of critical and control dilutions), Parameter #TQP3B:
CV % reproduction 86.5% (critical)

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%

CHRONIC TOXICITY SUMMARY FORM
WET Testing *Ceriodaphnia dubia* (Cladoceran)
CHEMICAL PARAMETERS CHART

Permittee: Walnut Ridge WWT Plant Sample No. 1 Collected Ending Date: 07/09/14 Time: 0900
 NPDES No.: AR0046566 Sample No. 2 Collected Ending Date: 07/11/14 Time: 0900
 Contact: Jon Kopp Sample No. 3 Collected Ending Date: 07/14/14 Time: 0900
 Analyst: Griffin/Bouldin Test Begin: Date: 07/09/14 Time: 1225 Test End: Date: 07/17/14 Time: 1610

Initial Water Chemistry for Chronic Tests									
Project: Walnut Ridge – <i>C. dubia</i>									
Test day		0	1	2	3	4	5	6	7
Date		7/9/2014	7/10/2014	7/11/2014	7/12/2014	7/13/2014	7/14/2014	7/15/2014	7/16/2014
H ₂ O #		MH 917	MH 917	MH 917	MH 917	MH 917	MH 917	MH 918	MH 918
Temp (°C)	Control	23.1	22.0	23.0	23.2	23.1	23.7	21.0	21.5
	32%	23.1	22.0	23.0	23.2	23.1	23.6	21.0	21.5
	42%	23.1	22.0	23.0	23.2	23.1	23.6	21.0	21.6
	56%	23.1	22.0	23.0	23.2	23.0	23.1	21.0	21.6
	80%	23.1	22.0	23.0	23.2	23.0	23.2	21.1	21.5
	100%	23.1	22.0	23.0	23.2	23.0	23.2	21.1	21.6
pH (Standard Units)	Control	8.20	8.09	8.25	7.96	8.18	7.96	7.76	8.05
	32%	8.23	7.98	7.98	8.09	8.07	8.15	7.92	8.19
	42%	8.24	7.99	8.04	8.08	8.13	8.06	7.96	8.18
	56%	8.22	8.01	8.01	8.08	8.10	8.09	8.00	8.17
	80%	8.12	7.85	8.00	8.01	8.06	8.14	7.92	8.16
	100%	8.10	7.77	7.95	7.98	8.03	8.21	7.72	8.17
DO (mg/L)	Control	8.6	8.4	8.5	8.4	8.5	8.4	8.6	8.7
	32%	8.3	8.8	8.5	8.4	8.4	8.6	8.6	8.9
	42%	8.5	8.6	8.5	8.4	8.5	8.5	8.6	8.8
	56%	8.5	8.7	8.5	8.4	8.5	8.7	8.8	8.8
	80%	8.4	8.7	8.6	8.3	8.5	8.6	8.6	8.9
	100%	8.4	9.0	8.6	8.1	8.5	8.2	8.9	8.8
Cond (µS/cm)	Control	315	316	317	316	316	308	339	339
	32%	391	391	389	391	392	357	387	387
	42%	418	415	414	415	414	375	402	404
	56%	451	451	449	450	448	397	424	426
	80%	508	510	499	508	507	437	462	463
	100%	556	558	555	555	555	467	495	495
Alk (mg/L)	Control	58		58			60		
	100%	124		140			126		
Hard (mg/L)	Control	90		90			90		
	100%	180		210			160		

CHRONIC TOXICITY SUMMARY FORMWET Testing *Ceriodaphnia dubia* (Cladoceran)

CHEMICAL PARAMETERS CHART

Permittee: Walnut Ridge WWT Plant Sample No. 1 Collected Ending Date: 07/09/14 Time: 0900
 NPDES No.: AR0046566 Sample No. 2 Collected Ending Date: 07/11/14 Time: 0900
 Contact: Jon Kopp Sample No. 3 Collected Ending Date: 07/14/14 Time: 0900
 Analyst: Griffin/Bouldin Test Begin: Date: 07/09/14 Time: 1225 Test End: Date: 07/17/14 Time: 1610

Final Water Chemistry for Chronic Tests									
Project: Walnut Ridge - <i>C. dubia</i>									
Test day		1	2	3	4	5	6	7	8
Date:		7/10/2014	7/11/2014	7/12/2014	7/13/2014	7/14/2014	7/15/2014	7/16/2014	7/17/2014
H ₂ O #		MH 917	MH 917	MH 917	MH 917	MH 917	MH 917	MH 918	MH 918
Temp (°C)	Control	23.0	23.0	23.2	23.0	23.7	21.2	21.6	23.4
	32%	23.0	23.0	23.2	22.9	23.7	21.2	21.7	23.4
	42%	23.0	23.0	23.2	22.9	23.7	21.2	21.7	23.4
	56%	23.0	23.0	23.2	23.0	23.5	21.3	21.6	23.2
	80%	23.0	23.0	23.2	23.0	23.5	21.3	21.6	23.2
	100%	23.0	23.0	23.2	23.0	23.6	21.1	21.6	23.2
pH (Standard Units)	Control	8.25	8.38	8.24	8.20	8.10	8.15	8.50	8.05
	32%	8.52	8.69	8.53	8.39	8.63	8.25	8.38	8.33
	42%	8.51	8.68	8.57	8.49	8.65	8.36	8.47	8.33
	56%	8.60	8.65	8.59	8.48	8.62	8.33	8.55	8.38
	80%	8.58	8.70	8.63	8.51	8.65	8.42	8.58	8.45
	100%	8.59	8.72	8.65	8.52	8.82	8.43	8.68	8.47
DO (mg/L)	Control	8.5	8.7	8.5	8.5	8.3	8.7	8.2	8.6
	32%	8.7	9.1	8.6	8.6	8.8	8.7	8.4	8.6
	42%	8.7	9.0	8.6	8.7	8.8	8.7	8.5	8.6
	56%	8.7	9.0	8.6	8.7	8.7	8.7	8.6	8.7
	80%	8.7	9.0	8.6	8.8	8.8	8.8	8.6	8.8
	100%	8.6	9.0	8.6	8.7	8.9	8.8	8.7	8.8

Larval Fish Growth and Survival Test-7 Day Survival

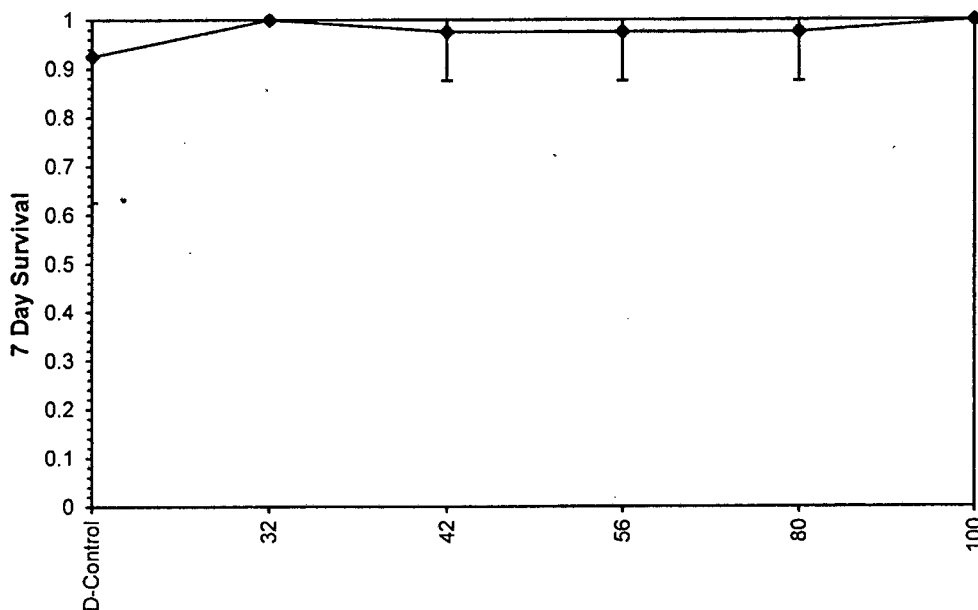
Start Date: 7/9/2014 12:55	Test ID: Jul-14	Sample ID: NPDES Permit #AR0046566
End Date: 7/16/2014 12:45	Lab ID: ASU ERF	Sample Type: EFF1-POTW
Sample Date: 7/8/2014	Protocol: EPAF 02-EPA Freshwater	Test Species: PP-Pimephales promelas
Comments: 3rd Quarter WET Testing		

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

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
D-Control	0.9250	1.0000	1.2968	0.9117	1.3931	16.600	5		
32	1.0000	1.0811	1.3931	1.3931	1.3931	0.000	5	30.00	16.00
42	0.9750	1.0541	1.3564	1.2094	1.3931	6.055	5	28.00	16.00
56	0.9750	1.0541	1.3564	1.2094	1.3931	6.055	5	28.00	16.00
80	0.9750	1.0541	1.3564	1.2094	1.3931	6.055	5	28.00	16.00
100	1.0000	1.0811	1.3931	1.3931	1.3931	0.000	5	30.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.67938	0.9	-2.62204	8.61055
Equality of variance cannot be confirmed				
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

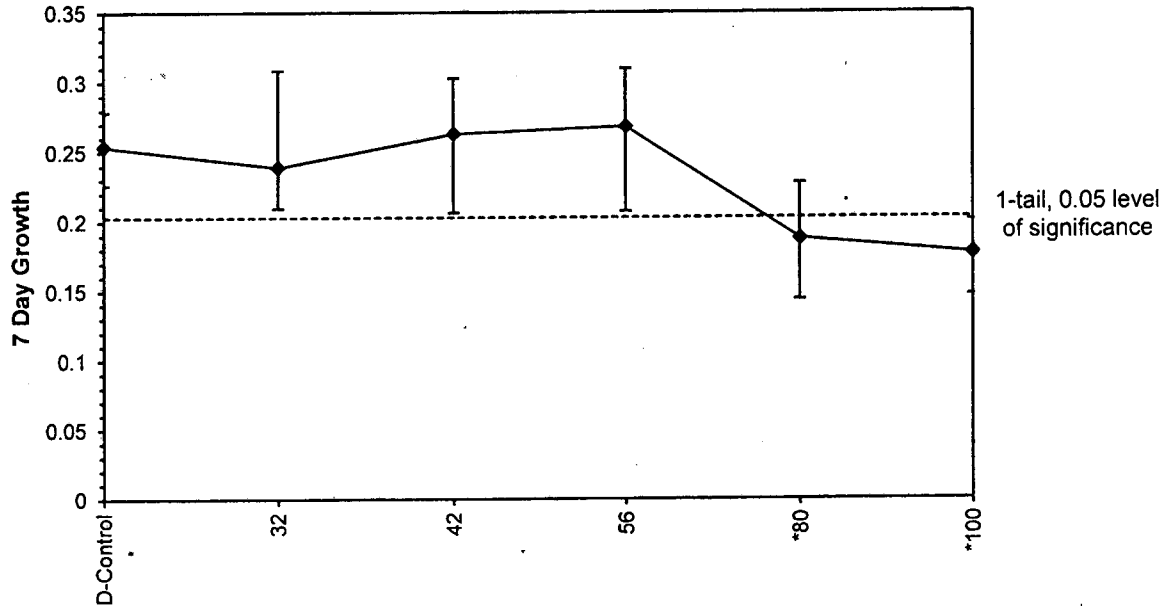
Start Date: 7/9/2014 12:55	Test ID: Jul-14	Sample ID: NPDES Permit #AR0046566
End Date: 7/16/2014 12:45	Lab ID: ASU ERF	Sample Type: EFF1-POTW
Sample Date: 7/8/2014	Protocol: EPAF 02-EPA Freshwater	Test Species: PP-Pimephales promelas
Comments: 3RD Quarter WET Testing		

Conc-%	1	2	3	4	5
D-Control	0.2600	0.2262	0.2587	0.2462	0.2788
32	0.2163	0.2350	0.2100	0.2262	0.3087
42	0.2937	0.2063	0.2312	0.2800	0.3029
56	0.3100	0.2950	0.2550	0.2738	0.2075
80	0.2088	0.2275	0.1650	0.1943	0.1437
100	0.1538	0.1862	0.1987	0.1475	0.2013

Conc-%	Mean	N-Mean	Transform: Untransformed					N	t-Stat	1-Tailed Critical	MSD
			Mean	Min	Max	CV%					
D-Control	0.2540	1.0000	0.2540	0.2262	0.2788	7.627	5				
32	0.2392	0.9419	0.2392	0.2100	0.3087	16.721	5	0.678	2.360	0.0513	
42	0.2628	1.0347	0.2628	0.2063	0.3029	15.975	5	-0.406	2.360	0.0513	
56	0.2682	1.0561	0.2682	0.2075	0.3100	14.859	5	-0.655	2.360	0.0513	
*80	0.1879	0.7396	0.1879	0.1437	0.2275	17.889	5	3.041	2.360	0.0513	
*100	0.1775	0.6988	0.1775	0.1475	0.2013	14.242	5	3.517	2.360	0.0513	

Auxiliary Tests	Statistic	Critical	Skew	Kurt						
Shapiro-Wilk's Test indicates normal distribution ($p > 0.01$)	0.97954	0.9	-0.00126	-0.42657						
Bartlett's Test indicates equal variances ($p = 0.71$)	2.96167	15.0863								
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	56	80	66.9328	1.78571	0.05133	0.20208	0.00772	0.00118	5.8E-04	5, 24

Dose-Response Plot



CHRONIC TEST DATA SHEET

Pimephales promelas

Project: Walnut Ridge Beginning Date: 070914 Time: 1255 Test Species: P. promelas

Dilution H₂O: MH917 Ending Date: 071614 Time: 1245 Age: < 24 hrs.
MH918

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

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	8/3	5/0	MR-1
	2	8/0	8/0	8/0	8/0	8/0	8/0	8/0	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	8/0	8/0	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	8/0	8/0	9
	5	8/0	8/0	8/0	8/0	8/0	8/0	8/0	10
42%	1	8/0	8/0	8/0	8/0	8/0	8/0	8/0	11
	2	8/0	8/0	8/0	8/0	8/0	8/0	8/0	12
	3	8/0	8/0	8/0	8/0	8/0	8/0	8/0	13
	4	8/0	8/0	8/0	8/0	8/0	8/0	8/0	14
	5	8/0	8/0	8/0	8/0	8/0	8/0	8/1	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	8/0	8/0	8/0	17
	3	8/0	8/0	8/0	8/0	8/0	8/0	8/0	18
	4	8/0	8/0	8/0	8/0	8/0	8/0	8/0	19
	5	8/0	8/0	8/0	8/0	8/0	8/0	8/0	20
Date		071014	071114	071214	071314	071414	071514	071614	071614
Initials		CRB	CRB/SV	SV	SV	MK	MK	MK/SV	MK/SV

CHRONIC TEST DATA SHEET

Pimephales promelas

Project: Walnut Ridge Beginning Date: 070914 Time: 1255 Test Species: P.promelas

Dilution H₂O: MH917 Ending Date: 071614 Time: 1245 Age: < 24 hrs.
918

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

Conc.	Rep	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Pan #
80%	1	8/0	8/0	8/0	8/0	8/0	8/0	8/0	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	8/0	8/1	7/0	7/0	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	8/0	8/0	8/0	8/0	28
	4	8/0	8/0	8/0	8/0	8/0	8/0	8/0	29
	5	8/0	8/0	8/0	8/0	8/0	8/0	8/0	30
Date		071014	071114	071214	071314	071414	071514	071614	071614
Initials		CARB	CARB	SV	SV	MR	MR	SV	MR/SV

070914
AF: 1015 7/8
BF: 1010 7/9

070114 T: 3, 10, 14, 15, 16, 17, 19, 22, 23
070214 T: 1, 3, 4, 6, 8, 12, 15, 16, 17, 18, 20, 21, 22
070314 T: 2, 5, 6, 14, 16, 17, 18, 20, 21
070414 T: 2, 5, 6, 8, 10, 15, 16, 17, 22, 24

CR

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

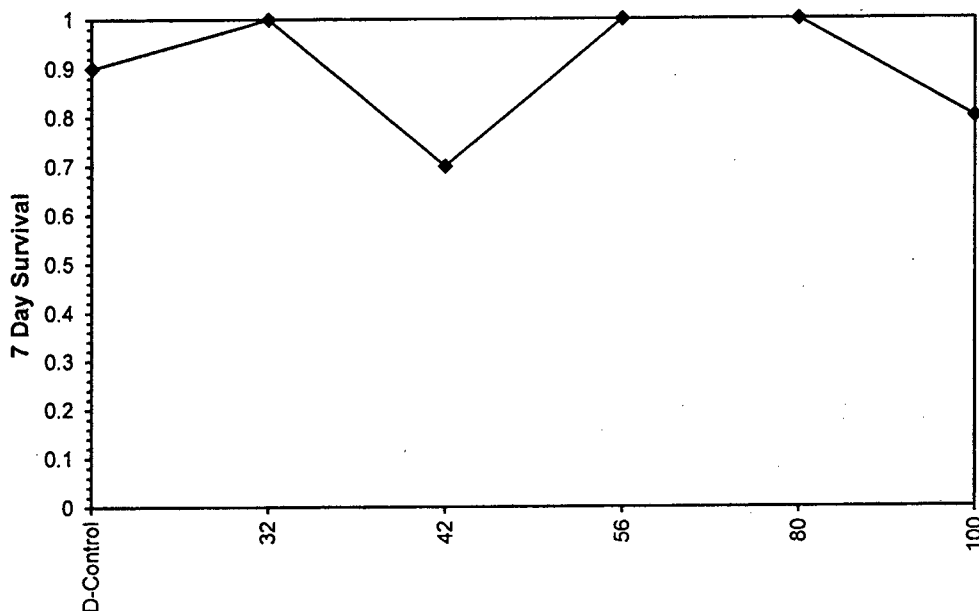
Start Date: 7/9/2014 12:25 Test ID: July Sample ID: NPDES Permit #AR0046566
 End Date: 7/17/2014 16:10 Lab ID: ASU ERF Sample Type: EFF1-POTW
 Sample Date: 7/8/2014 Protocol: EPAF 02-EPA Freshwater Test Species: CD-Ceriodaphnia dubia
 Comments: 3rd Quarter WET Testing

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	0.0000	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	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
80	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
D-Control	0.9000	1.0000	1	9	10	10		
32	1.0000	1.1111	0	10	10	10	0.5000	0.0500
42	0.7000	0.7778	3	7	10	10	0.2910	0.0500
56	1.0000	1.1111	0	10	10	10	0.5000	0.0500
80	1.0000	1.1111	0	10	10	10	0.5000	0.0500
100	0.8000	0.8889	2	8	10	10	0.5000	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: 7/9/2014 12:25	Test ID: July	Sample ID: NPDES Permit #AR0046566
End Date: 7/17/2014 16:10	Lab ID: ASU ERF	Sample Type: EFF1-POTW
Sample Date: 7/8/2014	Protocol: EPAF 02-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: 3rd Quarter WET Testing		

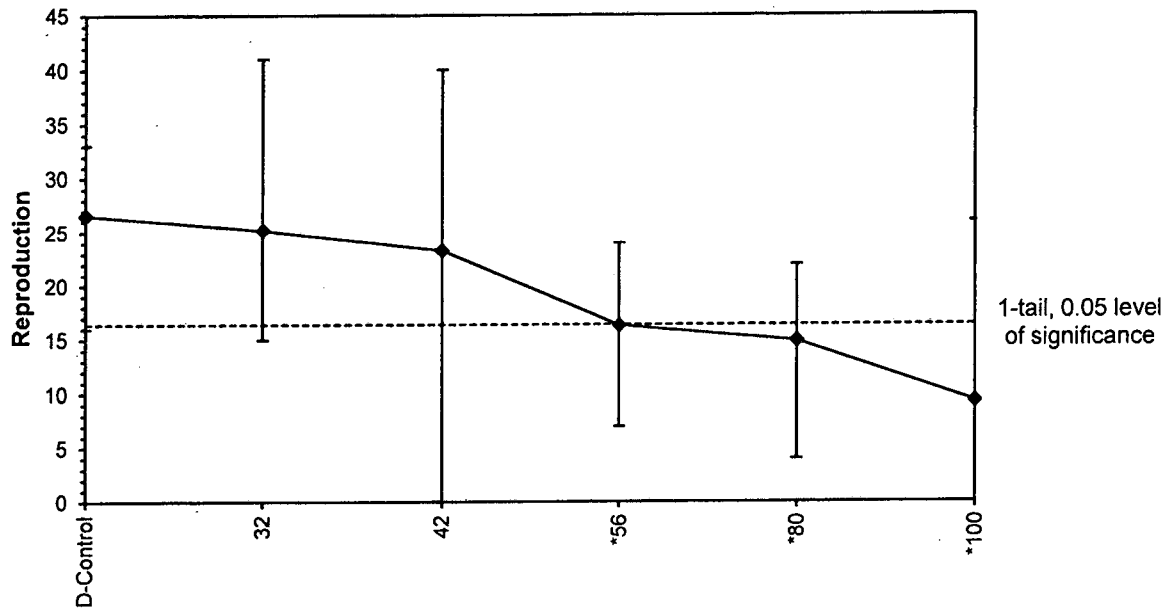
Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	32.000	32.000	30.000	16.000	21.000	25.000	33.000	19.000	31.000	
32	19.000	41.000	35.000	30.000	25.000	26.000	21.000	15.000	16.000	24.000
42	0.000	0.000	34.000	28.000	37.000	31.000	3.000	40.000	32.000	28.000
56	10.000	22.000	16.000	14.000	11.000	20.000	7.000	19.000	24.000	20.000
80	22.000	4.000	14.000	4.000	22.000	19.000	14.000	12.000	17.000	21.000
100	3.000	15.000	9.000	8.000	16.000	10.000	0.000	6.000	26.000	0.000

Conc-%	Mean	N-Mean	Transform: Untransformed					N	t-Stat	1-Tailed Critical	MSD
			Mean	Min	Max	CV%					
D-Control	26.556	1.0000	26.556	16.000	33.000	24.340	9				
32	25.200	0.9490	25.200	15.000	41.000	32.819	10	0.321	2.399	10.137	
42	23.300	0.8774	23.300	0.000	40.000	67.982	10	0.770	2.399	10.137	
*56	16.300	0.6138	16.300	7.000	24.000	34.590	10	2.427	2.399	10.137	
*80	14.900	0.5611	14.900	4.000	22.000	45.127	10	2.758	2.399	10.137	
*100	9.300	0.3502	9.300	0.000	26.000	86.476	10	4.083	2.399	10.137	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.72425	1.035	-0.54913	0.5368
Bartlett's Test indicates equal variances (p = 0.02)	14.0116	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Bonferroni t Test	42	56	48.4974	2.38095	10.1367	0.38172	452.779	84.5853	4.7E-04	5, 53

Dose-Response Plot



CHRONIC TEST DATA SHEET
Ceriodaphnia dubia

Project: Walnut Ridge Beginning Date: 7/9/14 Time: 12:25 Test Species: C. dubia

Dilution H₂O: M# 917 Ending Date: 07/17/14 Time: 16/10 Age: 224h
MH98

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

DAY 8

Conc.	Rep	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Neonates	Neonates
Control	1	0	0	X10	—	—	—	—	—	X/0
	2	↓	↓	↓	0	8	0	10	14	32
	3	↓	↓	↓	2	8	0	10	12	32
	4	↓	↓	↓	2	1	2	13	12	30
	5	↓	↓	↓	0	0	6	10	0	16
	6	↓	↓	↓	0	0	9	12	0	21
	7	↓	↓	↓	0	4	0	9	12	25
	8	↓	↓	↓	0	7	0	12	14	33
	9	↓	↓	↓	0	0	6	13	0	19
	10	↓	↓	↓	0	9	0	14	8	31
32%	1	0	0	0	2	7	4	6	0	19
	2	↓	↓	↓	3	8	0	14	16	41
	3	↓	↓	↓	0	6	0	14	15	35
	4	↓	↓	↓	2	8	0	6	14	30
	5	↓	↓	↓	0	0	0	8	12	20
	6	↓	↓	↓	0	2	0	12	12	26
	7	↓	↓	↓	3	5	0	8	15	21
	8	↓	↓	↓	2	6	0	7	0	15
	9	↓	↓	↓	1	5	0	9	1	14
	10	↓	↓	↓	3	0	10	9	2	24
Date		07/10/14	07/11/14	7/12/14	7/13/14	07/14/14	07/15/14	07/16/14	07/17/14	
Initials		MB	MB	♀	♀	MB	MB	MB	MB	

CHRONIC TEST DATA SHEET
Ceriodaphnia dubia

Project: Walnut Ridge Beginning Date: 7/9/14 Time: 1225 Test Species: C. dubia

Dilution H₂O: Mt 918 Ending Date: 071714 Time: 1610 Age: 24h

Test Type: (*)Static Renewal () Flowthrough Toxicant/Effluent: DAY 0

Conc.	Rep	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Neonates	Remarks
42%	1	0	0	x/0	—	—	—	—	—	X/0
	2	↓	↓	0	0	0	x/0	—	—	X/0
	3	↓	↓	↓	4	8	0	12	10	34
	4	↓	↓	↓	0	3	0	13	12	28
	5	↓	↓	↓	3	9	0	13	12	37
	6	↓	↓	↓	3	7	0	10	11	31
	7	↓	↓	↓	0	0	3	x/0	—	X/3
	8	↓	↓	↓	4	8	0	12	16	40
	9	↓	↓	↓	0	6	0	14	12	32
	10	↓	↓	↓	0	3	0	12	13	28
56%	1	0	0	0	0	0	4	6	0	10
	2	↓	↓	↓	1	3	0	8	10	22
	3	↓	↓	↓	0	2	0	6	8	14
	4	↓	↓	↓	0	4	0	10	0	14
	5	↓	↓	↓	0	1	0	8	2	11
	6	↓	↓	↓	0	0	9	0	11	20
	7	↓	↓	↓	0	3	0	0	4	7
	8	↓	↓	↓	0	0	4	8	7	19
	9	↓	↓	↓	0	5	0	10	9	24
	10	↓	↓	↓	1	4	0	8	8	20
Date		071014	071114	211214	711314	071414	071514	071614	071714	
Initials		MG	MG	♀	♀	MG	MG	MG	MG	

CHRONIC TEST DATA SHEET
Ceriodaphnia dubia

Project: Walnut Ridge Beginning Date: 7/2/14 Time: 1225 Test Species: C. dubia

Dilution H₂O: 1917 Ending Date: 071714 Time: 1610 Age: 24h

Test Type: () Static Renewal () Flowthrough Toxicant/Effluent: _____

Day 8

Conc.	Rep	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Neonates	Neonates
80%	1	0	0	0	0	5	0	9	8	22
	2	↓	↓	↓	1	3	↓	0	0	4
	3	↓	↓	↓	1	0	↓	10	3	14
	4	↓	↓	↓	0	4	↓	0	0	4
	5	↓	↓	↓	0	4	↓	9	9	22
	6	↓	↓	↓	0	0	4	7	8	19
	7	↓	↓	↓	0	1	0	8	5	14
	8	↓	↓	↓	0	0	↓	9	3	12
	9	↓	↓	↓	0	3	↓	9	5	17
	10	↓	↓	↓	0	2	↓	11	8	21
100%	1	0	0	0	0	3	0	0	0	3
	2	↓	↓	↓	0	2	↓	8	5	15
	3	↓	↓	↓	0	1	↓	5	3	9
	4	↓	↓	↓	0	4	↓	0	4	8
	5	↓	↓	↓	2	2	↓	8	4	16
	6	↓	↓	↓	0	0	↓	10	0	10
	7	↓	↓	↓	0	0	X/0	—	—	X/0
	8	↓	↓	↓	0	0	0	3	3	6
	9	↓	↓	↓	0	4	0	12	10	26
	10	↓	↓	↓	0	0	X/0	—	—	X/0
Date		071014	071114	071214	071314	071414	071514	071614	071714	
Initials		MG	MG	♂	♀	MG	MG	MG	MG	

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

Test Day:		0	1	2	3	4	5	6	7
Date:		7/9/14	7/10/14	7/11/14	7/12/14	7/13/14	7/14/14	7/15/14	7/16/14
H ₂ O Batch #:		MH917	MH917	MH917	MH917	MH917	MH917	MH918	MH918
Temp. (°C)	Control	23.1	23.2	23.0	23.2	23.1	23.7	21.0	21.5
	32%	23.1	22.0	23.0	23.2	23.1	23.6	21.0	21.5
	42%	23.1	22.0	23.0	23.2	23.1	23.6	21.0	21.6
	56%	23.1	22.0	23.0	23.2	23.0	23.1	21.0	21.6
	80%	23.1	22.0	23.0	23.2	23.0	23.2	21.1	21.5
	100%	23.1	22.0	23.0	23.2	23.0	23.2	21.1	21.6
pH	Control	8.20	8.09	8.25	7.96	8.18	7.91	7.76	8.05
	32%	8.23	7.98	7.98	8.09	8.07	8.15	7.92	8.19
	42%	8.24	7.99	8.04	8.08	8.13	8.06	7.96	8.18
	56%	8.22	8.01	8.01	8.08	8.10	8.09	8.00	8.17
	80%	8.12	7.85	8.00	8.01	8.06	8.14	7.92	8.16
	100%	8.10	7.77	7.95	7.98	8.03	8.21	7.72	8.17
DO (mg/L)	Control	8.10	8.4	8.5	8.4	8.5	8.4	8.6	8.9
	32%	8.3	8.5	8.5	8.4	8.4	8.6	8.6	8.9
	42%	8.5	8.6	8.5	8.4	8.5	8.5	8.6	8.8
	56%	8.5	8.7	8.5	8.4	8.5	8.7	8.8	8.8
	80%	8.4	8.7	8.6	8.3	8.5	8.6	8.6	8.9
	100%	8.4	9.0	8.6	8.1	8.5	8.8	8.9	8.8
Cond. (µS/cm)	Control	315	316	317	316	316	308	339	339
	32%	391	391	386	391	392	357	387	387
	42%	418	415	414	415	414	375	402	404
	56%	451	451	449	450	448	397	424	426
	80%	508	510	499	508	507	437	462	463
	100%	556	558	555	555	555	467	495	495
Alk. (mg/L)	Control	58		58			60		
	100%	124		140			126		
Hard. (mg/L)	Control	90		90			90		
	100%	180		210		160	160		
Initials		JM	JM	SV/JM	JM	JM	JM/SV	JM	SV/JM

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

Test Day:		1	2	3	4	5	6	7	mk & sv
Date:		071014	071114	071214	071314	071414	071514	071614	071614 sv
H ₂ O Batch #:		MH917	MH917	MH917	MH917	MH917	MH918	MH918	MH918 sv
Temp. (°C)	Control	23.0	23.0	24.0	23.5	23.7	22.3	22.5	
	32%	23.5	23.5	24.5	22.9	23.7	22.5	24.0	
	42%	23.5	23.5	24.1	23.0	24.0	22.0	22.5	
	56%	24.0	23.5	24.1	23.5	23.8	22.0	22.5	
	80%	23.5	23.5	23.5	23.0	24.3	22.0	22.0	
	100%	23.5	23.5	23.5	22.8	23.8	21.5	22.5	
pH	Control	8.12	7.93	7.68	7.84	7.60	7.95	7.87	
	32%	8.17	7.94	7.78	8.02	7.96	8.18	8.69	
	42%	8.18	8.02	7.83	8.03	8.01	8.15	8.69	
	56%	8.20	8.05	7.89	8.14	8.15	8.30	8.76	
	80%	8.24	8.06	7.94	8.17	8.14	8.32	8.74	
	100%	8.25	8.13	8.09	8.21	8.16	8.29	8.61	
DO (mg/L)	Control	7.8	7.4	6.9	7.4	8.0	7.7	7.6	
	32%	7.8	6.9	6.8	7.5	7.9	8.0	9.3	
	42%	7.3	7.1	6.6	7.4	7.9	8.0	9.4	
	56%	7.3	6.8	6.7	7.5	8.2	8.1	9.7	
	80%	7.3	6.6	6.5	7.2	7.9	7.9	9.6	
	100%	7.1	6.8	6.7	7.0	7.9	7.6	9.5	
Initials		WRS/AN	WRS/AN	SV	SV	MK	MK	MK	

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

Test Day:		1	2	3	4	5	6	7	
Date:		071014	071114	071214	071314	071414	071514	071614	071714
H ₂ O Batch #:		MH917	MH917	MH917	MH917	MH917	MH917	MH917	MH917
Temp. (°C)	Control	23.0	23.0	23.2	23.0	23.7	21.2	21.6	23.4
	32%	23.0	23.0	23.2	22.9	23.7	21.2	21.7	23.4
	42%	23.0	23.0	23.2	22.9	23.7	21.2	21.7	23.4
	56%	23.0	23.0	23.2	23.0	23.5	21.3	21.6	23.2
	80%	23.0	23.0	23.2	23.0	23.5	21.3	21.6	23.2
	100%	23.0	23.0	23.2	23.0	23.6	21.1	21.6	23.2
pH	Control	8.25	8.38	8.24	8.20	8.10	8.15	8.50	8.05
	32%	8.58	8.69	8.53	8.39	8.63	8.25	8.38	8.33
	42%	8.51	8.68	8.57	8.49	8.65	8.36	8.47	8.33
	56%	8.60	8.65	8.59	8.48	8.62	8.33	8.55	8.38
	80%	8.58	8.70	8.63	8.57	8.65	8.42	8.58	8.45
	100%	8.59	8.72	8.65	8.52	8.82	8.43	8.68	8.47
DO (mg/L)	Control	8.5	8.7	8.5	8.6	8.30	8.7	8.2	8.6
	32%	8.7	9.1	8.6	8.6	8.8	8.7	8.4	8.6
	42%	8.7	9.0	8.6	8.7	8.8	8.7	8.5	8.6
	56%	8.7	9.0	8.6	8.7	8.7	8.7	8.6	8.7
	80%	8.7	9.0	8.6	8.8	8.8	8.8	8.6	8.8
	100%	8.6	9.0	8.6	8.7	8.9	8.8	8.7	8.8
Initials		MS MK	MS MK	J	J	MS MK	MS MK	MS MK	MS MK



Ecotoxicology Research Facility

SAMPLE CHECK IN

Sample ID Number: WR 1

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: 070914 Sampling Date: 07/09/14 Arrival Time: 1052
 Field Identification Number: _____ Description: effluent

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

Drop-Off Location: ASU-ERF

Storage While Shipped: Cooler with ice

Analysis Requested: chronic Cd, Pb + Arsenic

Initial Water Chemistry Analysis:

Sample Received by: MG

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

Date: 070914

Quality Assurance	Initial	Date	Yes	No
Chain of Custody	<u>MG</u>	<u>070914</u>	<input checked="" type="checkbox"/>	
Refrigerated at 4°C	<u>↓</u>	<u>↓</u>	<input checked="" type="checkbox"/>	
Field Record Received				<input checked="" type="checkbox"/>
Sample Label Affixed Properly	<u>↓</u>	<u>↓</u>	<input checked="" type="checkbox"/>	
Project Leader Informed	<u>↓</u>	<u>↓</u>	<input checked="" type="checkbox"/>	

Comments: _____



Ecotoxicology Research Facility

SAMPLE CHECK IN

Sample ID Number: WR2

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: 07/11/14 Sampling Date: 07/10-11/14 Arrival Time: 0750
 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: chronic Cdubia & P. promelas

Initial Water Chemistry Analysis:

Sample Received by: MG

Temperature (°C): 2.5 Ice Present upon delivery: YES NO

Date: 07/11/14

Quality Assurance	Initial	Date	Yes	No
Chain of Custody	<u>MG</u>	<u>07/11/14</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Refrigerated at 4°C	<u>J</u>	<u>J</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Field Record Received	<u>J</u>	<u>J</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample Label Affixed Properly	<u>J</u>	<u>J</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Project Leader Informed	<u>J</u>	<u>J</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comments: _____



Ecotoxicology Research Facility

SAMPLE CHECK IN

Sample ID Number: WR3

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: 07/14/14 Sampling Date: 07/13-14/14 Arrival Time: 1100

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: chronic Cduba + Ppmonelag

Initial Water Chemistry Analysis:

Sample Received by: MG

Temperature (°C): 1.5

Ice Present upon delivery: YES NO

Date: 07/14/14

Quality Assurance	Initial	Date	Yes	No
Chain of Custody	<u>MG</u>	<u>07/14/14</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) <i>[Signature]</i>			PO #:				Chronic <i>C. dubia</i>	Chronic <i>P. promelas</i>					
Remarks:			Contact: Jonathan Kopp										
Cont.#	Sample ID Number	Location	Sample Date	Sample Time	Sample Type		Matrix						
					Comp	Grab	Aqueous	Soil	Other				
			7-8 7-9	9am-9am	✓								
Ice present at delivery:			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No										
Temp:			20 °C		Initials: <i>JK</i>								
1. Relinquished By (sign) <i>[Signature]</i>			Date	7-9-14	Time	19:45A.	1. Received By (sign) <i>[Signature]</i>			Date	070914	Time	1052
2. Relinquished By (sign)			Date		Time		2. Received By (sign)			Date		Time	



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CHAIN OF CUSTODY RECORD



Client Name Walnut Ridge Wastewater Treatment			Phone: (870) 886-2312			Analyses (List Below)										
Project #			Fax:									Chronic C. dubia	Chronic P. promelas			
Sampler (sign) <i>[Signature]</i>			PO #:													
Remarks:			Contact: Jonathan Kopp													
Cont.#	Sample ID Number	Location	Sample Date	Sample Time	Sample Type		Matrix									
					Comp	Grab	Aqueous	Soil	Other							
			7-10	7-11	9am-9am	✓										
Ice present at delivery:			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													
Temp:			2.5°C <i>[Signature]</i> Initials													
1. Relinquished By (sign) <i>[Signature]</i>			Date	Time	1. Received By (sign) <i>[Signature]</i>			Date	Time							
2. Relinquished By (sign)			Date	Time	2. Received By (sign)			Date	Time							
			7-11-14	10:00 AM				07-11-14	09:50							



Ecotoxicology Research Facility

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2645 Caddo Drive

State University, AR 72467

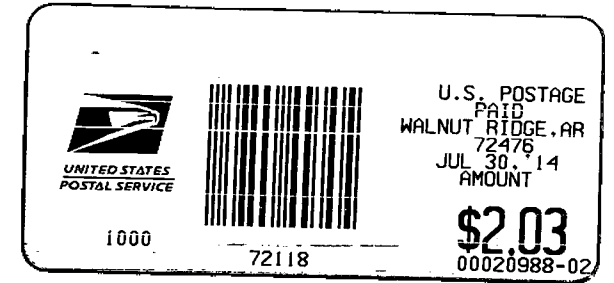
(870) 972-2570 Fax (870) 972-2577

CHAIN OF CUSTODY RECORD



Client Name Walnut Ridge Wastewater Treatment			Phone: (870) 886-2312				Analyses (List Below)				
Project #			Fax:								
Sampler (sign) 			PO #:				Chronic <i>C. dubia</i>	Chronic <i>P. promelas</i>			
Remarks:			Contact: Jonathan Kopp								
Cont.#	Sample ID Number	Location	Sample Date	Sample Time	Sample Type		Matrix				
					Comp	Grab	Aqueous	Soil	Other		
			7-13 - 7-14	9am - 9am	✓						
Ice present at delivery:			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
Temp:			1.5 °C		Initials <i>JK</i>						
1. Relinquished By (sign) 			Date	7-14-14	Time	11:00 a.m.				1. Received By (sign) 	
2. Relinquished By (sign)			Date		Time					Date	07/14/14
			Date		Time					Date	11:00
			Date		Time					Date	

City Water Works
216 SW fourth
Walnut Ridge AR 72476



ADE a
Water Division - Enforcement Branch
5301 Northshore Drive
North Little Rock AR 72118