

TRE Activities Report
For Fourth Quarter of 2012

A Toxicity Reduction Evaluation (TRE) Action Plan was submitted on July 12, 2011 after sub-lethal effects were demonstrated in three consecutive Whole Effluent Toxicity (WET) tests for *Ceriodaphnia dubia*, as required by Part II, Condition 15, Paragraph 5 of NPDES permit number AR0001210. As per the plan the mill has begun conducting monthly WET testing for *Ceriodaphnia dubia* in an attempt to capture episodes of sub-lethal toxicity.

Two of the three samples collected during the fourth quarter did demonstrate sub-lethal effects. A series of treatment manipulations were performed on the remaining sample collected during week of December 4, 2012. The results of these manipulations are outlined in Table 1 below. The Granular Activated Carbon (GAC) fractionation was not conducted for the December 2012 retest. Furthermore, since some toxicity reduction had been noted in previous retesting, the December sample was tested at 100% effluent to increase toxicity potential. Results show that the baseline material had not lost toxicity during sample aging, and the ferric precipitation treatment did not significantly reduce toxicity. The persistent toxicity of this sample is inconsistent with prior sample results which have suggested a degradable organic constituent.

TABLE 1.
Percent Effect to *C. dubia* Reproduction for Untreated and Treated Effluent
Georgia Pacific, Crossett Arkansas - December 2012

Water/Test Date	Average Neonates per Female	Percent Inhibition
River Water 12/4/12	27.8	NA
80% 001 Effluent	18.1	34.9 ¹
River Water 12/27/12	27.5	NA
100% 001 Effluent ²	0.6	97.8 ¹
100% Ferric/Floc treated 001	1.5	94.5 ¹

¹ Impaired compared to river water control.

² 12/27/12 effluent sample used is a composite of the same samples used for the 12/4/12 test.



Georgia-Pacific LLC
Consumer Products

Crossett Paper Operations
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January 18, 2013

Mr. Craig Uyeda
NPDES Enforcement Section
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Reference: Georgia-Pacific LLC: Crossett Paper Operations
NPDES Permit # **AR0001210**

Dear Mr. Uyeda:

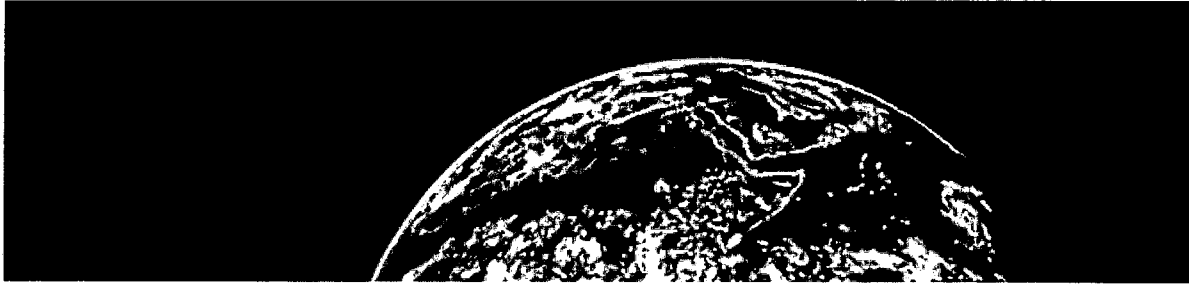
Attached are the Discharge Monitoring Reports (DMRs) for the Georgia-Pacific Crossett Paper Operations' - NPDES Permit # **AR0001210** - for December 2012. As required by Part II, Section 5, paragraph d, of our NPDES Permit, a Toxicity Reduction Evaluation (TRE) Activities Report has also been included to cover TRE activities conducted this quarter.

If you have any questions or need additional information, please feel free to contact me at (870) 567-8144 or by email at james.cutbirth@gapac.com.

Sincerely,

A handwritten signature in cursive script that reads 'James W. Cutbirth'.

James W. Cutbirth
Environmental Services Superintendent



Chronic Toxicity Test Results

Prepared for:
Georgia-Pacific Crossett Mill
Crossett, Arkansas

Prepared by:
ENVIRON International Corporation
Nashville, Tennessee

Date:
November 2012

Project Number:
20-19675E



November 30, 2012

Ms. Rachel Johnson
Georgia-Pacific Crossett Mill
100 Mill Supply Road
Crossett, Arkansas 71635

**Re: Results of Chronic Toxicity Test- November 2012
ENVIRON Project No. 20-19675E**

Dear Ms. Johnson:

ENVIRON conducted chronic (7-day) whole effluent toxicity (WET) tests for Georgia-Pacific in Crossett, AR. The tests were conducted according to requirements in Arkansas NPDES permit AR0001210. Composite samples of Outfall 001 effluent were collected on November 5, 7, and 9, 2012. The samples were received at ENVIRON on November 6, 8, and 10, 2012, within the USEPA-required receipt temperature range of 0-6.0 °C. The grab samples of river water were received on November 6, 8, and 10, 2012 in good condition. Test organisms utilized for the chronic toxicity tests were the fathead minnow (*Pimephales promelas*) and *Ceriodaphnia dubia* (*C. dubia*). Test concentrations consisted of 25, 34, 45, 60, and 80 percent effluent and a river water control. A secondary control of moderately hard water was also initiated. All control organisms met USEPA test acceptability criteria. The results of the chronic toxicity tests are as follows:

TEST RESULTS FOR OUTFALL 001 EFFLUENT		
Permit Limits	Fathead Minnow	<i>C. dubia</i>
NOEC Value 80% (lethality)	80%	80%
NOEC Value 80% (sub-lethality)	80%	60%

The results of the chronic tests with the fathead minnow indicated No Observable Effect Concentration (NOEC) values for survival (lethality) of 80 percent effluent. The fathead minnow test results indicate no significant toxicity at the critical dilution to the survival of fathead minnow. The sub-lethal NOEC value for fathead minnow growth was 80 percent, which demonstrates no sub-lethal toxicity to the fathead minnow. The results of the chronic tests with *C. dubia* indicated No Observable Effect Concentration (NOEC) values for survival (lethality) of 80 percent effluent. The *C. dubia* test results indicate no significant toxicity at the critical dilution to the survival of *C. dubia*. The sub-lethal NOEC value for *C. dubia* reproduction was 60 percent, which demonstrates sub-lethal toxicity to *C. dubia*.

The river water control for the fathead minnow test met USEPA criteria for test acceptability. The Coefficient of Variation (CV) values for survival in the control and critical dilution are 5.7 and 5.7 percent respectively. The CV values for growth in the control and critical dilution are 15.6 and

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NELAP Accredited and Laboratory Certification in the following States:
AR (02-008-0), AZ (0751), CA (2465), FL (E87896), IA (386), KS (E-10391), LA (02061), MN, NC (003), OK (9973), SC (84015),
TX (T104704410-11-2), VA (460171), WI (399050850), WV (351)
Test Results Contained in this Report Meet NELAP Requirements
ENVIRON Test Log No. 156734

10.0 percent respectively, and are below the CV limit of 40 percent for findings of no toxicity. The PMSD value was 21.2 percent, which is within the USEPA PMSD bounds of 12 to 30 percent for fathead minnow growth. The effluent concentration-response curve is flat and not described in EPA 821-B-00-004 *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing*. A flat concentration-response demonstrates a lack of toxicity. This test is considered valid for assessment of permit compliance. The monthly reference toxicant test also met all the test acceptability criteria.

All *C. dubia* test controls met USEPA criteria for test acceptability. The reproduction CV values for the control and critical dilution are 14.2 and 7.3 percent respectively, which meets the Test Acceptability Criteria (TAC) limit of 40 percent for a finding of no toxicity. The PMSD value was 10.6 percent, which is below the USEPA PMSD bounds of 13 to 47 percent for *C. dubia* reproduction indicating high test sensitivity. The effluent concentration-response can be described as a Type 7 response in EPA 821-B-00-004: Significant effects at only the highest test concentration. Although the test precision is high, the percent effect in the highest concentration (17.7 %) is within the range of acceptable precision values for *C. dubia* tests, and is not considered a false positive. This test is considered valid for assessment of permit compliance. The monthly reference toxicant test also met all the test acceptability criteria.

Copies of the laboratory bench sheets with statistical data are presented in Attachment 1. Chain-of-custody documentation and reference toxicant data are presented in Attachment 2.

In order to meet the NELAP requirement for listing the total number of report pages; this report consists of 36 pages including this cover letter, attachment pages and separator pages.

If you have any questions please contact Rick Lockwood at (615) 277-7523. ENVIRON appreciates the opportunity to assist Georgia-Pacific with their testing needs.

Sincerely,

ENVIRON International Corporation



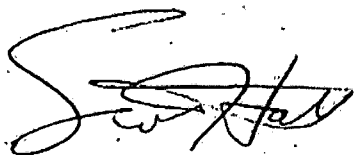
Richard Lockwood
Project Scientist



Robin L. Richards, REM
Principal

DATA REVIEW FORM
ACUTE AND CHRONIC WET TESTS
ENVIRON INTERNATIONAL

The raw data (i.e., laboratory bench sheets) and data in the applicable summary sheets have been checked and found to be complete. Additionally, test conditions and control performance meet test acceptability criteria specified by the US Environmental Protection Agency and the certifying state authority for the tests conducted¹.



Scott Hall, Manager
Ecotoxicology Group

¹ Any data limitations regarding their applicability for determining NPDES permit compliance are discussed in the report cover letter.

**Attachment 1:
Laboratory Bench Sheets with
Statistical Data**

CETIS Analytical Report

Report Date: 21 Nov-12 12:35 (p 1 of 4)
 Test Code: 15734fm | 21-0099-5432

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 10-3920-2767	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.4
Analyzed: 21 Nov-12 12:34	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes
Batch ID: 07-2953-2592	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 06 Nov-12	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 13 Nov-12	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d 0h	Source: Environmental Consult & Test	Age: 24h
Sample ID: 17-8413-3059	Code: 6A57B5C3	Client: GPAC Crossett
Sample Date: 05 Nov-12	Material: Industrial Effluent	Project: WET Monthly Compliance Test (NOV)
Receive Date: 06 Nov-12	Source: Discharge Monitoring Report	
Sample Age: 24h	Station: Outfall 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	NA	C > T	NA	NA	80	>80	NA	1.25	8.33%

Steel Many-One Rank Sum Test

Control	vs C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water	25	30	16	1	8	0.9446	Asymp	Non-Significant Effect
	34	25	16	2	8	0.6353	Asymp	Non-Significant Effect
	45	27.5	16	2	8	0.8333	Asymp	Non-Significant Effect
	60	27.5	16	2	8	0.8333	Asymp	Non-Significant Effect
	80	27.5	16	2	8	0.8333	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.975	0.8 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01349189	0.002698377	5	0.4364	0.8187	Non-Significant Effect
Error	0.1484108	0.006183782	24			
Total	0.1619027		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	113.1	15.09	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.7084	0.9031	<0.0001	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	5	0.975	0.9056	1	1	0.875	1	0.025	5.73%	0.0%
25		5	1	1	1	1	1	1	0	0.0%	-2.56%
34		5	0.95	0.865	1	1	0.875	1	0.03062	7.21%	2.56%
45		5	0.975	0.9056	1	1	0.875	1	0.025	5.73%	0.0%
60		5	0.975	0.9056	1	1	0.875	1	0.025	5.73%	0.0%
80		5	0.975	0.9056	1	1	0.875	1	0.025	5.73%	0.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	5	1.356	1.254	1.458	1.393	1.209	1.393	0.03673	6.06%	0.0%
25		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	-2.71%
34		5	1.32	1.195	1.445	1.393	1.209	1.393	0.04499	7.62%	2.71%
45		5	1.356	1.254	1.458	1.393	1.209	1.393	0.03673	6.06%	0.0%
60		5	1.356	1.254	1.458	1.393	1.209	1.393	0.03673	6.06%	0.0%
80		5	1.356	1.254	1.458	1.393	1.209	1.393	0.03673	6.06%	0.0%

CETIS Analytical Report

Report Date: 21 Nov-12 12:35 (p 3 of 4)
 Test Code: 15734fm | 21-0099-5432

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 09-3486-3424	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.8.4
Analyzed: 21 Nov-12 12:34	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 07-2953-2592	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 06 Nov-12	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 13 Nov-12	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d 0h	Source: Environmental Consult & Test	Age: 24h
Sample ID: 17-8413-3059	Code: 6A57B5C3	Client: GPAC Crossett
Sample Date: 05 Nov-12	Material: Industrial Effluent	Project: WET Monthly Compliance Test (NOV)
Receive Date: 06 Nov-12	Source: Discharge Monitoring Report	
Sample Age: 24h	Station: Outfall 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	80	>80	NA	1.25	21.2%

Dunnett Multiple Comparison Test

Control	vs C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water	25	-2.779	2.362	0.128	8	0.9999	CDF	Non-Significant Effect
	34	-3.258	2.362	0.128	8	1.0000	CDF	Non-Significant Effect
	45	-2.296	2.362	0.128	8	0.9997	CDF	Non-Significant Effect
	60	-2.494	2.362	0.128	8	0.9999	CDF	Non-Significant Effect
	80	-2.775	2.362	0.128	8	0.9999	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.6067	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.2115	0.12 - 0.3	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.09879895	0.01975979	5	2.677	0.0464	Significant Effect
Error	0.1771421	0.00738092	24			
Total	0.275941		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	7.064	15.09	0.2159	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9602	0.9031	0.3128	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	5	0.6067	0.489	0.7245	0.6387	0.4812	0.72	0.04242	15.63%	0.0%
25		5	0.7578	0.7145	0.801	0.7725	0.7162	0.7975	0.01558	4.6%	-24.89%
34		5	0.7838	0.6101	0.9574	0.7713	0.5863	0.9738	0.06256	17.85%	-29.17%
45		5	0.7315	0.6535	0.8095	0.77	0.6387	0.7813	0.02808	8.58%	-20.56%
60		5	0.7423	0.6564	0.8281	0.7763	0.66	0.8012	0.03092	9.31%	-22.33%
80		5	0.7575	0.6631	0.852	0.7875	0.6738	0.835	0.03402	10.04%	-24.85%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.5412	0.6525	0.6387	0.4812	0.72
25		0.7762	0.7162	0.7975	0.7263	0.7725
34		0.7563	0.9738	0.7713	0.5863	0.8313
45		0.77	0.7737	0.6938	0.6387	0.7813
60		0.7988	0.7763	0.8012	0.66	0.675
80		0.8125	0.835	0.6738	0.6788	0.7875

CETIS Analytical Report

Report Date: 21 Nov-12 12:35 (p 4 of 4)
Test Code: 15734fm | 21-0099-5432

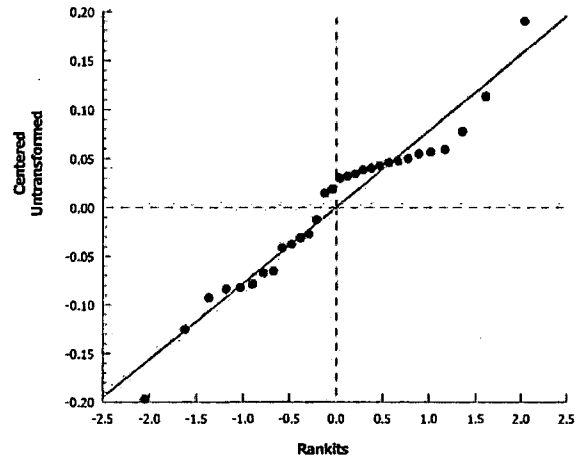
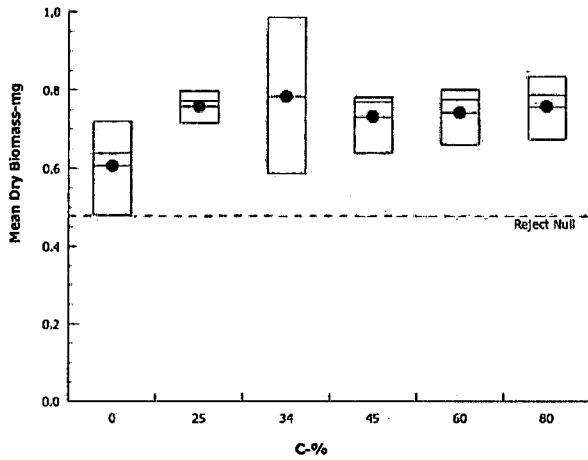
Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 09-3486-3424 Endpoint: Mean Dry Biomass-mg
Analyzed: 21 Nov-12 12:34 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.8.4
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 21 Nov-12 12:35 (p 1 of 1)
 Test Code: 15734fm | 21-0099-5432

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 04-2334-1940	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.8.4
Analyzed: 21 Nov-12 12:34	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 07-2953-2592	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 06 Nov-12	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 13 Nov-12	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d 0h	Source: Environmental Consult & Test	Age: 24h
Sample ID: 17-8413-3059	Code: 6A57B5C3	Client: GPAC Crossett
Sample Date: 05 Nov-12	Material: Industrial Effluent	Project: WET Monthly Compliance Test (NOV)
Receive Date: 06 Nov-12	Source: Discharge Monitoring Report	
Sample Age: 24h	Station: Outfall 001	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1221850	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.6067	0.25 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>80	N/A	N/A	<1.25	NA	NA

Mean Dry Biomass-mg Summary

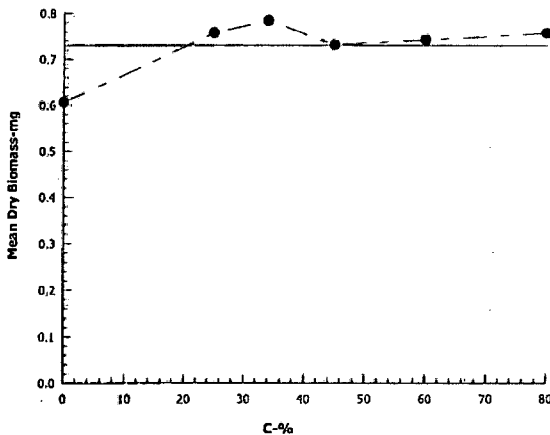
Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	5	0.6067	0.4812	0.72	0.04242	0.09485	15.63%	0.0%
25		5	0.7578	0.7162	0.7975	0.01558	0.03484	4.6%	-24.89%
34		5	0.7838	0.5863	0.9738	0.06256	0.1399	17.85%	-29.17%
45		5	0.7315	0.6387	0.7813	0.02808	0.06279	8.58%	-20.56%
60		5	0.7423	0.66	0.8012	0.03092	0.06913	9.31%	-22.33%
80		5	0.7575	0.6738	0.835	0.03402	0.07607	10.04%	-24.85%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.5412	0.6525	0.6387	0.4812	0.72
25		0.7762	0.7162	0.7975	0.7263	0.7725
34		0.7563	0.9738	0.7713	0.5863	0.8313
45		0.77	0.7737	0.6938	0.6387	0.7813
60		0.7988	0.7763	0.8012	0.66	0.675
80		0.8125	0.835	0.6738	0.6788	0.7875

Graphics



ENVIRON FATHEAD MINNOW SURVIVAL AND GROWTH 7-DAY CHRONIC TOXICITY TEST
EPA-821-R-02-013 Method 1000.0

TEST LOG NO.: 15734
 JOB NUMBER: 20-19675F
 INDUSTRY: Georgia Pacific Crossett
 EFFLUENT: Outfall 001
 DILUTION WATER: River Water
 NPDES: Yes No
 FOOD BATCH: 3949

BEGINNING: HRS: 1209 DATE: 11/6/12 PHOTOPERIOD: 16 hr light/8 hr dark
 ENDING: HRS: 1337 DATE: 11/13/12 FEEDING REGIME:
 TEST DILUTIONS: 25, 34, 45, 60, 80 0.15 mL Artemia @ 2 times/day
 ORGANISM AGE (date): 11/5/12 TEST VESSEL CAPACITY: 450 mL
 ORGANISM SOURCE: ECT# 4148 TEST SOLUTION VOLUME: 250 - 300 mL
 SOURCE TEMP @ TEST START: 24.1 NO. ORGANISMS/TREATMENT: 8
 RANDOMIZED BY: LM NO. REPLICATES: 5

CONC (%)	REP ID	SURVIVAL (#)							
		START	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
RW	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	7	7	7	7	7	7
	E	8	8	8	8	8	8	8	8
	Temp(°C):old/new	24.1	24.4/24.3	24.3/24.6	24.1/24.2	24.4/24.1	24.2/24.1	24.2/24.5	24.1
25	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°C):old/new	24.1	24.5/24.1	24.1/24.4	24.3/24.2	24.1/24.0	24.3/24.5	24.1	
34	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	7	7	7	7
	E	8	8	8	8	8	8	8	8
	Temp(°C):old/new	24.1	24.4/24.2	24.3/24.4	24.2/24.3	24.1/24.0	24.3/24.1	24.0	
45	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°C):old/new	24.3	24.4/24.3	24.4/24.2	24.3/24.4	24.0/24.0	24.3/24.1	24.1	
60	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°C):old/new	24.1	24.2/24.1	24.2/24.2	24.2/24.2	24.0/24.0	24.3/24.3	24.0	
80	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°C):old/new	24.0	24.3/24.3	24.2/24.3	24.1/24.2	24.0/24.0	24.1/24.0	24.1	
Test Renewal	Time	1209	1052	1230	1228	1201	1000	1337	
	Date	11/6/12	11/7	11/8	11/9	11/10	11/12/12	11/13/12	
	Initials	LM	AH	AH	AH	AM	AM	AM	
morning feeding	In/Time	AM 0700	AM 0700	AM 0700	AM 0730	AM 0735	AM 0700		
afternoon feeding	In/Time	AM 1551	AM 1550	AM 1551	AM 1615	AM 1558	AM 1615		

ENVIRON FATHEAD MINNOW SURVIVAL AND GROWTH 7-DAY CHRONIC TOXICITY TEST
EPA-821-R-02-013 Method 1000.0

TEST LOG NO.: 15734
 JOB NUMBER.: 20-19675F
 INDUSTRY: Georgia Pacific Crossett
 EFFLUENT: 001
 DILUTION WATER: River Water
 NPDES: Yes No
 FOOD BATCH: 3949

BEGINNING: HRS: 1209 DATE: 11/6/12
 ENDING: HRS: 1337 DATE: 11/13/12

PHOTOPERIOD: 16 hr light/8 hr dark
 FEEDING REGIME:
 0.15 mL Artemia @ 2 times/day
 TEST VESSEL CAPACITY: 450 mL
 TEST SOLUTION VOLUME: 250 - 300 mL
 NO. ORGANISMS/TREATMENT: 8
 NO. REPLICATES: 5

CONC (%)	REP ID	SURVIVAL (#)							
		START	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
MH	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°C):old/new	24.1	24.1/24.2	24.6/24.3	24.2/24.3	24.0/24.1	24.0/24.1	24.0/24.1	24.0
	A								
	B								
	C								
	D								
	E								
	Temp(°C):old/new								
	A								
	B								
	C								
	D								
	E								
	Temp(°C):old/new								
	A								
	B								
	C								
	D								
	E								
	Temp(°C):old/new								
	A								
	B								
	C								
	D								
	E								
	Temp(°C):old/new								
Test Renewal	Time								
	Date								
	Initials								
morning feeding	Int/Time								
afternoon feeding	Int/Time								

ENVIRON FATHEAD MINNOW SURVIVAL AND GROWTH 7-DAY CHRONIC TOXICITY TEST
EPA-821-R-02-013 Method 1000.0

TEST LOG NO.: 15734 BEGINNING: HRS: 1200 DATE: 11/13/12
 JOB NO.: 20-19675F ENDING: HRS: 1333 DATE: 11/13/12
 INDUSTRY: Georgia Pacific-Crossett
 EFFLUENT: Outfall 001 NO. ORGANISMS/TREATMENT: 8
 NPDES: Yes No NO. REPLICATES: 5

PHOTOPERIOD: 16 hr light
 FEEDING REGIME:
 0.15 mL Artemia @ 2 times/day
 TEST VESSEL CAPACITY: 450 mL
 TEST SOLUTION VOLUME: 250 mL

GROWTH RESULTS								
CONC (%)	REP ID	Boat ID	Tare wt (g)	Combined wt (g)	Tot Fish wt (g)	# of Fish	Fish Wt (mg) Per Final # of Fish	
		90						
RW	A	1	1.08106	1.08539	0.00433	8	0.541	
	B	2	1.071083	1.08205	0.00522	8	0.653	
	C	3	1.090102	1.091573	0.00511	8	0.639	
	D	4	1.082108	1.09153	0.00385	7	0.00550	
	E	5	1.09831	1.09407	0.00570	8	0.0070	
25	A	6	1.05340	1.05961	0.00621	8		
	B	7	1.07857	1.08460	0.00573	8		
	C	8	1.084210	1.09064	0.00638	8		
	D	9	1.09995	1.10575	0.00580	8		
	E	10	1.10134	1.10715	0.00618	8		
34	A	11	1.050103	1.101668	0.00605	8		
	B	12	1.078210	1.086005	0.00779	8		
	C	13	1.06599	1.07216	0.00617	7		
	D	14	1.093910	1.098605	0.00469	7		
	E	15	1.08033	1.08698	0.00665	8		
45	A	16	1.07173	1.08289	0.00610	8		
	B	17	1.10042	1.10661	0.00619	8		
	C	18	1.10500	1.11055	0.00553	8		
	D	19	1.09172	1.09633	0.00571	7		
	E	20	1.094105	1.09789	0.00674	8		
60	A	21	1.07289	1.07878	0.00639	8		
	B	22	1.08009	1.081630	0.00621	8		
	C	23	1.07167	1.07408	0.00641	8		
	D	24	1.05587	1.06115	0.00528	8		
	E	25	1.07909	1.08690	0.00540	7		
80	A	26	1.11093	1.1143	0.00650	8		
	B	27	1.09933	1.07591	0.00668	8		
	C	28	1.090916	1.091035	0.00539	8		
	D	29	1.091162	1.09705	0.00543	8		
	E	30	1.104710	1.101110	0.00630	7		
MH	A	31	1.077100	1.08316	0.00616	8		
	B	32	1.075107	1.08187	0.00620	8		
	C	33	1.09835	1.10502	0.00667	8		
	D	34	1.10063	1.10453	0.00450	8		
	E	35	1.08921	1.091687	0.00686	7		
	Initials / Date:		HM/11/11					

AVG Control Fish wt ^{ac 11/15} 0.599 g ^{ac 11/15} 0.621 (using final #)

Oven ID: 1
 1.11252

Temp 105 Tins In: 11/13/12 1450
 Date/Time
 Temp 102 Tins Out: 11/14/12 1007
 Date/Time

FINAL WEIGHTS
 DATE: 11/15/12
 INITIALS: WR

^{ac 11/15} 1.08449
^{ac 11/15}

TEST LOG NO. 15734

CLIENT/SAMPLE ID: Georgia Pacific Crossett

JOB NO. 20-19675F

TEST ORGANISM: Fm

DATE: 11/6/12

ENVIRON Test Log No. 156734

14 of 36

D.O. (mg/L)														
Concentration	Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
		Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW	8.4	8.6	8.3	8.4	8.2	8.6	8.2	8.5	8.5	8.1	7.8	7.2	8.2	8.0
25	8.2	8.5	8.1	8.3	8.1	8.8	8.2	8.6	8.0	8.1	7.8	7.1	8.0	8.0
34	8.0	8.5	8.2	8.2	7.7	8.7	8.0	8.5	8.5	8.2	7.8	7.1	8.2	8.1
45	7.9	8.5	8.0	8.2	7.8	8.7	8.0	8.6	8.3	8.2	7.6	7.2	8.2	8.2
60	7.6	8.5	7.9	8.2	7.8	8.7	7.9	8.0	8.0	8.2	7.5	7.3	8.0	8.3
80	7.6	8.5	7.9	8.2	7.4	8.7	7.8	8.6	8.2	8.2	7.5	7.2	8.2	8.3
MH	8.5	8.4	8.5	8.5	7.5	8.5	8.6	8.6	8.4	8.1	7.6	7.0	8.1	8.3

pH (s.u.)														
Concentration	Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
		Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW	7.30	7.34	7.70	7.65	7.29	7.65	7.40	7.44	7.76	7.87	7.98	7.91	7.69	7.99
25	7.51	8.15	7.68	7.64	7.72	7.85	7.73	7.62	7.72	7.79	7.89	7.85	7.66	7.87
34	7.60	8.25	7.75	7.85	7.75	7.92	7.93	7.85	7.79	7.90	7.85	7.89	7.78	7.83
45	7.80	8.35	7.83	7.7	7.76	8.03	7.90	8.00	7.91	8.04	7.89	7.92	7.98	7.86
60	7.85	8.45	7.94	8.23	7.7	8.18	7.92	8.09	7.89	8.05	7.89	8.11	7.94	7.98
80	7.88	8.41	7.99	8.32	7.89	8.23	7.94	8.21	7.87	8.21	7.91	8.28	7.94	7.94
MH	7.60	7.69	7.79	7.55	7.60	7.60	7.56	7.79	7.93	7.84	7.99	8.01	7.97	7.86

Conductivity (µmhos/cm)														
Concentration	Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
		Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW	110	114	120	112.1	110	112.4	111	141	104	141	134	130	95	101
25	594	647	658	662	685	626	664	604	659	606	661	630	623	619
34	857	834	836	856	838	864	812	815	800	817	816	804	814	820
45	1150	1087	1126	1099	1122	1046	1058	1049	1100	1066	1105	1110	1073	1072
60	1421	1389	1428	1461	1457	1351	1432	1366	1422	1359	1328	1292	1326	1309
80	1710	1750	1858	1774	1876	1738	1760	1734	1786	1738	1820	1752	1830	1763
MH	213	213	270	216	221	220	220	237	258	232	234	228	231	229

Params Int/Time:	111000	110749	110650	110253	110103	110752	110909	110755	111057	110757	111044	110605	111010	111012
Dilutions Int/Time:	AH0951	AH0845	AH0845	AH0850	AH0850	AH0855	AH0855	AH1047	AH1047	AH1024	AH1024	AH0900	AH0900	AH1012
Control Water Detch#:	151001	151061	151061	151061	151061	151061	151061	151049	151049	151093	151093	151093	151093	151093
Food Batch	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949	3949

TEST LOG NO. 15734

CLIENT: Georgia Pacific Crossett

DATE OF TEST: 11/6/12

JOB NO. 20-19675F

TEST TYPE(S) PERFORMED: Fm & Cd

ENVIRON Test Log No. 156734

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100% EFFLUENT

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH ₃ N mg/L
15662	Outfall 001	11/4-5/12	11/6/12	320	260	0.08	2.37
15677	Outfall 001	11/10-7/12	11/8/12	380	500	0.02	2.46
15694	Outfall 001	11/8-9/12	11/10/12	312	505	0.02	2.70

CONTROL / DILUTION WATER

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH ₃ N mg/L
15661	River Water	11/5/12	11/6/12	27.2	65	0.06	0.10
5053	MH	10/31	11/11/12	80.8	49	<0.02	-
5054	MH	11/3/12	11/7/12	82.4	53	<0.02	-
151078	RW	11/7/12	11/8/12	30	57	0.06	<0.1
5062	MH	11/8/12	11/10/12	80.8	50	<0.02	-
151093	RW	11/9/12	11/10/12	22.4	30	0.03	<0.1

CETIS Analytical Report

Report Date: 21 Nov-12 12:22 (p 1 of 2)
 Test Code: 15734cd | 00-9629-1786

Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 19-8311-2115	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.4
Analyzed: 21 Nov-12 12:20	Analysis: STP 2x2 Contingency Tables	Official Results: Yes
Batch ID: 18-7056-2634	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 06 Nov-12	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 13 Nov-12	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age: <24h
Sample ID: 03-1759-7841	Code: 12EE2891	Client: GPAC Crossett
Sample Date: 05 Nov-12	Material: Industrial Effluent	Project: WET Monthly Compliance Test (NOV)
Receive Date: 06 Nov-12	Source: Discharge Monitoring Report	
Sample Age: 24h	Station: Outfall 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	80	>80	NA	1.25

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	1	1.0000	Exact	Non-Significant Effect
		34	1	1.0000	Exact	Non-Significant Effect
		45	1	1.0000	Exact	Non-Significant Effect
		60	1	1.0000	Exact	Non-Significant Effect
		80	1	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Receiving Water	10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
34		10	0	10	1	0	0.0%
45		10	0	10	1	0	0.0%
60		10	0	10	1	0	0.0%
80		10	0	10	1	0	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
34		1	1	1	1	1	1	1	1	1	1
45		1	1	1	1	1	1	1	1	1	1
60		1	1	1	1	1	1	1	1	1	1
80		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
34		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
45		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
60		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
80		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 21 Nov-12 12:22 (p 2 of 2)
Test Code: 15734cd | 00-9629-1786

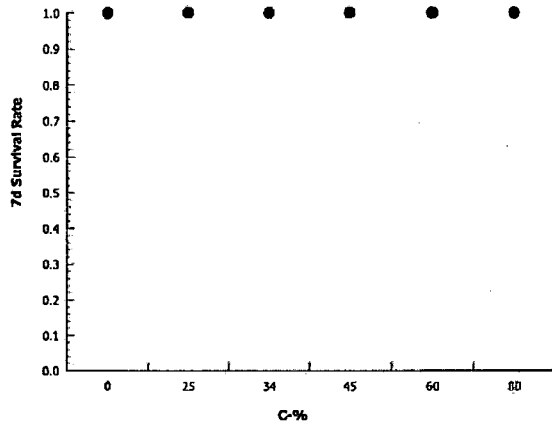
Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 19-8311-2115 Endpoint: 7d Survival Rate
Analyzed: 21 Nov-12 12:20 Analysis: STP 2x2 Contingency Tables

CETIS Version: CETISv1.8.4
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 21 Nov-12 12:22 (p 1 of 2)
 Test Code: 15734cd | 00-9629-1786

Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 07-7963-4687	Endpoint: Reproduction	CETIS Version: CETISv1.8.4
Analyzed: 21 Nov-12 12:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 18-7056-2634	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 06 Nov-12	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 13 Nov-12	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age: <24h
Sample ID: 03-1759-7841	Code: 12EE2891	Client: GPAC Crossett
Sample Date: 05 Nov-12	Material: Industrial Effluent	Project: WET Monthly Compliance Test (NOV)
Receive Date: 06 Nov-12	Source: Discharge Monitoring Report	
Sample Age: 24h	Station: Outfall 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	60	80	69.28	1.667	10.6%

Dunnett Multiple Comparison Test

Control	vs C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water	25	-0.4593	2.289	2.991	18	0.9350	CDF	Non-Significant Effect
	34	1.148	2.289	2.991	18	0.3514	CDF	Non-Significant Effect
	45	0.3827	2.289	2.991	18	0.6960	CDF	Non-Significant Effect
	60	1.378	2.289	2.991	18	0.2599	CDF	Non-Significant Effect
	80*	3.827	2.289	2.991	18	0.0008	CDF	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	28.3	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1057	0.13 - 0.47	Yes	Below Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	198.9333	39.78667	5	4.662	0.0013	Significant Effect
Error	460.8	8.533334	54			
Total	659.7333		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	10.21	15.09	0.0695	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9903	0.9459	0.9149	Normal Distribution

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	10	28.3	25.42	31.18	28.5	23	35	1.274	14.24%	0.0%
25		10	28.9	26.39	31.41	28.5	23	35	1.11	12.15%	-2.12%
34		10	26.8	24.47	29.13	27	22	32	1.031	12.16%	5.3%
45		10	27.8	26.5	29.1	27.5	25	31	0.5735	6.52%	1.77%
60		10	26.5	24.77	28.23	26	23	30	0.7638	9.11%	6.36%
80		10	23.3	22.08	24.52	24	21	25	0.5385	7.31%	17.67%

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	31	29	28	33	35	25	25	24	23	30
25		35	31	28	30	26	29	27	27	23	33
34		24	32	27	27	23	31	22	29	27	26
45		28	26	25	30	27	27	31	27	29	28
60		29	30	24	26	26	26	24	23	29	28
80		25	25	25	24	23	21	24	21	24	21

CETIS Analytical Report

Report Date: 21 Nov-12 12:22 (p 2 of 2)
Test Code: 15734cd | 00-9629-1786

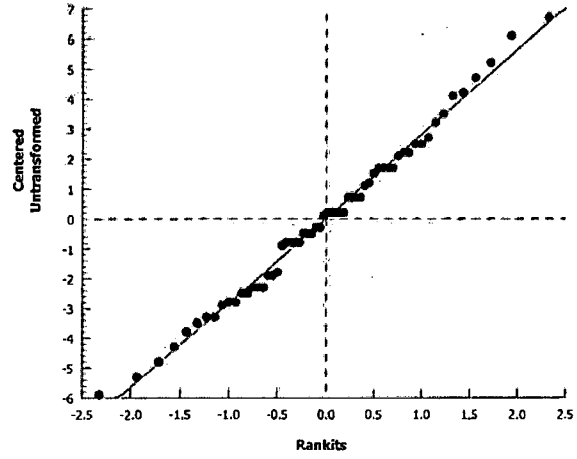
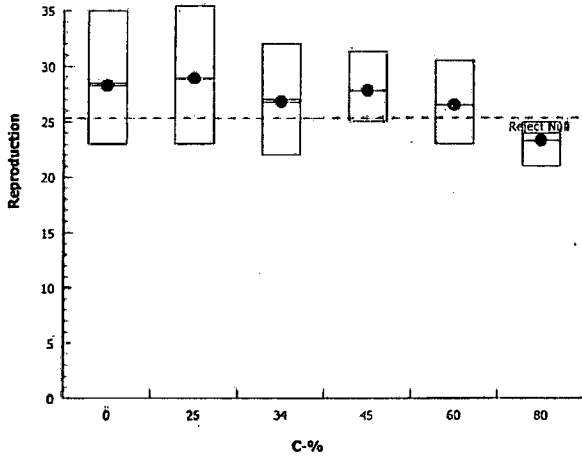
Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 07-7963-4687 Endpoint: Reproduction
Analyzed: 21 Nov-12 12:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.8.4
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 21 Nov-12 12:22 (p 1 of 1)
 Test Code: 15734cd | 00-9629-1786

Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 15-3592-6010 Endpoint: Reproduction CETIS Version: CETISv1.8.4
 Analyzed: 21 Nov-12 12:22 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Batch ID: 18-7056-2634 Test Type: Reproduction-Survival (7d) Analyst:
 Start Date: 06 Nov-12 Protocol: EPA/821/R-02-013 (2002) Diluent: Mod-Hard Synthetic Water
 Ending Date: 13 Nov-12 Species: Ceriodaphnia dubia Brine: Not Applicable
 Duration: 7d 0h Source: In-House Culture Age: <24h

Sample ID: 03-1759-7841 Code: 12EE2891 Client: GPAC Crossett
 Sample Date: 05 Nov-12 Material: Industrial Effluent Project: WET Monthly Compliance Test (NOV)
 Receive Date: 06 Nov-12 Source: Discharge Monitoring Report
 Sample Age: 24h Station: Outfall 001

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	706380	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	28.3	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>80	N/A	N/A	<1.25	NA	NA

Reproduction Summary

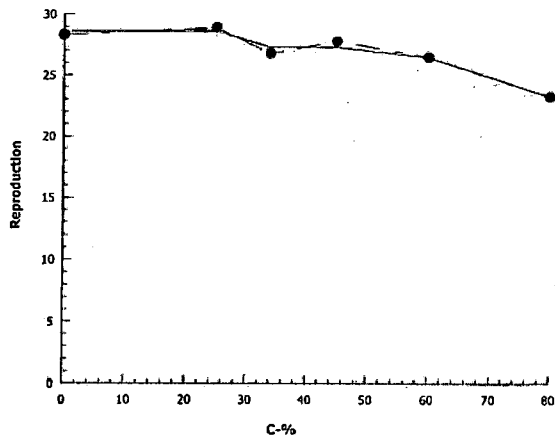
Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	10	28.3	23	35	1.274	4.029	14.24%	0.0%
25		10	28.9	23	35	1.11	3.51	12.15%	-2.12%
34		10	26.8	22	32	1.031	3.259	12.16%	5.3%
45		10	27.8	25	31	0.5735	1.814	6.52%	1.77%
60		10	26.5	23	30	0.7638	2.415	9.11%	6.36%
80		10	23.3	21	25	0.5385	1.703	7.31%	17.67%

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	31	29	28	33	35	25	25	24	23	30
25		35	31	28	30	26	29	27	27	23	33
34		24	32	27	27	23	31	22	29	27	26
45		28	26	25	30	27	27	31	27	29	28
60		29	30	24	26	26	26	24	23	29	28
80		25	25	25	24	23	21	24	21	24	21

Graphics



**ENVIRON CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION 3-BROOD CHRONIC TOXICITY TEST
EPA-821-R-02-013 Method 1002.0**

TEST LOG NO.: 15734
 JOB NUMBER: 20-19675F
 INDUSTRY: Georgia Pacific-Crosssett
 EFFLUENT: Outfall 001
 DILUTION WATER: River Water
 NPDES (Y/N): Yes

PHOTOPERIOD: 16 hr light/8 hr dark
 FEEDING REGIME: 0.1 mL YCT / 0.1 mL P. subcapitata per 15 mL
 TEST VESSEL CAPACITY: 30 mL
 TEST SOLUTION VOLUME: 15 mL
 NO. ORGANISMS/REPLICATE: 1
 NO. REPLICATES: 10

ORGANISM SOURCE INFORMATION:

AGE (date): 11/5-6/12
 TEMP @ TEST START: 24.1
 RANDOMIZED BY: AH
 TEST START:
 HOURS: 1048 DATE: 11/6/12
 TEST END:
 HOURS: 1045 DATE: 11/13/12

SOURCE ID:	AGE (time):
10068 10066	2200-0600
10067	2215-0610
10068	2315-0620

SURVIVAL AND REPRODUCTION DATA																	
Test Start & Feeding/End Initials/Time	Daily Renewal & Feeding Initials/Time	Date	Control River Water		Temp (°C)	REPLICATES										Notes	
			Temp (°C)	Temp (°C)		66					67			68			
						1	2	3	4	5	6	7	8	9	10		
						Adult	2	15	20	5	3	4	3	20	4	1	
AH 1048		11/6	24.3			Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1052	11/7	24.3	24.1		Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1059	11/8	24.3	24.4		Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1121	11/9	24.6	24.4		Day 3	✓	✓	✓	✓	Miss	✓	✓	✓	✓	✓	
	AH 1214	11/10	24.5	24.2		Day 4	6	5	5	6	6	4	4	5	4	7	
	AH 1213	11/11	24.4	24.7		Day 5	11	12	11	9	13	✓	7	8	✓	9	
	AH 1025	11/12	24.8	24.7		Day 6	✓	✓	✓	✓	✓	9	✓	✓	9	✓	
TLA 1046		11/13		24.3		Day 7	14	12	12	18	16	12	14	11	10	14	
						Day 8											
			Total				31	29	28	33	35	25	25	24	23	30	283

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing
 D = Test Organism Dead (-) = Dead neonates M = Male

TEST LOG # 15734

JOB # 20-19675F

CLIENT/SAMPLE ID: Georgia Pacific - Crossett

LAB/STATE: ENVIRON / TN

SURVIVAL AND REPRODUCTION DATA																
Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration			REPLICATES										Notes
			25%			1	2	3	4	5	6	7	8	9	10	
			Temp (°C)		Adult											
AH 1048		11/6	24.5		Day 0	✓	/	/	/	/	/	/	/	/	/	
	AH 1012	11/7	24.1	24.2	Day 1	✓	/	/	/	/	/	/	/	/	/	
	AH 1039	11/8	24.3	24.4	Day 2	✓	/	/	/	/	/	/	/	/	/	
	AH 1121	11/9	24.6	24.1	Day 3	✓	✓	/	/	/	✓	/	/	/	/	
	AH 1214	11/10	24.8	24.1	Day 4	0	0	5	6	5	6	5	4	6	6	
	AH 1218	11/11	24.1	24.5	Day 5	13	10	11	11	9	12	10	8	8	13	
	AH 1025	11/12	24.5	25.0	Day 6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
					Day 7	16	15	12	13	12	11	12	15	9	14	
					Day 8											
			Total			35	31	28	30	26	29	27	27	23	33	289

SURVIVAL AND REPRODUCTION DATA																
Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration			REPLICATES										Notes
			34%			1	2	3	4	5	6	7	8	9	10	
			Temp (°C)													
AH 1048		11/6	24.7		Day 0	✓	/	/	/	/	/	/	/	/	/	
	AH 1012	11/7	24.2	24.3	Day 1	/	/	/	/	/	/	/	/	/	/	
	AH 1039	11/8	24.2	24.4	Day 2	✓	/	/	/	/	/	/	/	/	/	
	AH 1121	11/9	24.4	24.6	Day 3	✓	/	/	/	/	/	/	/	/	/	
	AH 1214	11/10	24.1	24.0	Day 4	5	5	5	3	3	6	4	6	4	5	
	AH 1218	11/11	24.2	24.6	Day 5	9	11	10	9	8	11	7	10	9	9	
	AH 1025	11/12	24.8	25.1	Day 6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
					Day 7	10	16	12	10	12	14	11	13	14	12	
					Day 8											
			Total			24	32	27	22	23	31	22	29	27	26	268

✓ = Test Organism Alive
D = Test Organism Dead

0 = Live neonates
(-0) = Dead neonates

Miss = Lost or Missing
M = Male

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TEST LOG # 15734

JOB # 20-19675F

CLIENT/SAMPLE ID: Georgia Pacific - Crossett

LAB/STATE: ENVIRON / TN

SURVIVAL AND REPRODUCTION DATA																
Test Start & Feeding / End Initials / Time	Daily Renewal & Feeding Initials / Time	Date	Concentration		Temp (°C)	REPLICATES										Notes
			45%			1	2	3	4	5	6	7	8	9	10	
						Adult										
AH 1048		11/6	24.3			Day 0	✓	-	✓	✓	✓	✓	✓	✓	✓	
	AH 1012	11/7	24.2	24.3		Day 1	✓	-	✓	✓	✓	✓	✓	✓	✓	
	AH 1039	11/8	24.4	24.3		Day 2	✓	-	✓	✓	✓	✓	✓	✓	✓	
	AH 1021 AH 1020	11/9	24.4	24.4		Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1214	11/10	24.1	24.2		Day 4	5	7	6	9	8	6	4	4	6	
	AH 1218	11/11	24.6	24.9		Day 5	10	9	9	11	10	✓	11	11	9	
	AH 1025	11/12	25.1	25.2		Day 6	✓	✓	✓	✓	✓	9	✓	✓	✓	
						Day 7	13	10	10	10	9	12	16	12	14	
						Day 8										
			Total				28	26	25	30	27	27	31	27	29	

SURVIVAL AND REPRODUCTION DATA																
Test Start & Feeding / End Initials / Time	Daily Renewal & Feeding Initials / Time	Date	Concentration		Temp (°C)	REPLICATES										Notes
			60%			1	2	3	4	5	6	7	8	9	10	
AH 1048		11/6	24.6			Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1012	11/7	24.1	24.3		Day 1	✓	-	✓	✓	✓	✓	✓	✓	✓	
	AH 1039	11/8	24.2	24.1		Day 2	✓	-	✓	✓	✓	✓	✓	✓	✓	
	AH 1021	11/9	24.6	24.3		Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1214	11/10	24.1	24.0		Day 4	5	6	5	6	6	6	5	6	5	
	AH 1218	11/11	24.1	24.5		Day 5	11	12	9	8	11	8	✓	8	9	
	AH 1025	11/12	25.1	25.4		Day 6	✓	✓	✓	✓	✓	✓	9	✓	✓	
						Day 7	13	12	10	12	9	12	10	9	14	
						Day 8										
			Total				29	30	24	26	26	26	24	23	29	

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing
 D = Test Organism Dead (-0) = Dead neonates M = Male

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TEST LOG # 15734

JOB # 20-19675F

CLIENT/SAMPLE ID: Georgia Pacific - Crossett

LAB/STATE: ENVIRON / TN

SURVIVAL AND REPRODUCTION DATA																		
Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration		80% Temp (°C)	REPLICATES										Notes		
						1	2	3	4	5	6	7	8	9	10			
						Adult												
AW 1048		11/6	24.4			Day 0	✓	-	/	/	-	/	-	/	-	/	-	-
	AH 1012	11/7	24.1	24.2		Day 1	✓	/	/	-	-	/	/	/	/	/	/	-
	AW 1039	11/8	24.2	24.2		Day 2	✓	-	/	/	-	-	/	/	/	/	/	-
	AH 1121	11/9	24.4	24.3		Day 3	✓	✓	-	-	-	/	/	/	/	/	/	-
	HM 1244	11/10	24.3	24.7		Day 4	8	6	6	4	7	4	8	4	5	5		
	AW 1218	11/11	24.1	24.3		Day 5	9	8	9	9	10	✓	8	9	8	9		
	AW 1025	11/12	25.2	25.4		Day 6	✓	✓	✓	✓	✓	8	✓	✓	✓	✓		
						Day 7	8	11	10	11	6	9	8	8	11	7		
						Day 8												
						Total	25	25	25	24	23	21	24	21	24	21	23	

SURVIVAL AND REPRODUCTION DATA																		
Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration		MH Temp (°C)	REPLICATES										Notes		
						1	2	3	4	5	6	7	8	9	10			
AW 1048		11/6	24.2			Day 0	✓	/	/	/	/	-	/	/	/	/	/	✓
	AH 1012	11/7	24.3	24.3		Day 1	✓	/	/	/	/	/	/	/	/	/	/	-
	AH 1039	11/8	24.2	24.3		Day 2	✓	-	/	/	-	-	/	/	/	/	/	-
	AH 1121	11/9	24.2	24.3		Day 3	✓	✓	/	/	/	/	/	/	/	/	/	-
	HM 1244	11/10	24.3	24.1		Day 4	3	4	6	5	6	6	3	5	7	6		
	AW 1218	11/11	24.2	24.1		Day 5	✓	11	11	10	10	11	✓	13	8	14		
	AW 1025	11/12	24.3	24.5		Day 6	5	✓	✓	✓	✓	✓	11	✓	(4)	✓		
						Day 7	13	18	13	16	13	12	16	16	15	17		
						Day 8												
						Total	21	33	30	31	29	29	30	34	34	37	30	8

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing
 D = Test Organism Dead (-0) = Dead neonates M = Male

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TEST LOG NO. 15734

CLIENT/SAMPLE ID: Georgia Pacific Crossett

JOB NO. 20-19875F

TEST ORGANISM: Cd

DATE: 11/16/12

ENVIRON Test Log No. 156734

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		D.O. (mg/L)																	
Concentration		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7				
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New			
RW		8.4	8.1	8.3	8.5	8.2	8.6	8.2	8.3	8.5	6.8	7.3	7.6	8.2		8.0			
25		8.0	8.0	8.1	8.5	8.5	8.6	8.2	8.0	8.6	6.5	7.3	7.6	8.3		8.5			
34		8.0	7.9	8.2	8.5	8.5	8.7	8.0	8.0	8.5	6.4	7.3	7.5	8.3		8.5			
45		7.9	7.9	8.0	8.3	8.3	8.8	8.0	7.9	8.3	6.5	7.6	7.5	8.2		8.7			
60		7.9	7.8	7.9	8.4	8.4	8.8	7.9	7.9	8.3	6.4	7.5	7.4	8.3		8.3			
80		7.9	7.8	7.9	8.4	8.4	8.8	7.9	7.9	8.3	6.4	7.5	7.3	8.3		8.3			
MH		8.5	8.4	8.5	8.6	8.7	8.4	8.6	8.0	8.4	6.5	7.6	7.3	8.1		8.0			

		pH (s.u.)																	
Concentration		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7				
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New			
RW		7.30	7.67	7.65	7.39	7.30	7.75	7.40	7.70	7.76	7.85	7.93	7.65	7.69		7.60			
25		7.51	7.87	7.65	7.65	7.33	7.98	7.73	8.06	7.72	8.24	7.84	8.20	7.66		8.23			
34		7.07	8.12	7.75	8.10	7.33	8.10	7.83	8.38	7.79	8.41	7.83	8.36	7.78		8.34			
45		7.80	8.40	7.83	8.33	7.70	8.31	7.90	8.44	7.81	8.50	7.81	8.47	7.90		8.45			
60		7.85	8.47	7.94	8.54	7.77	8.41	7.92	8.50	7.82	8.62	7.84	8.59	7.94		8.56			
80		7.83	8.61	7.99	8.60	7.81	8.58	7.94	8.65	7.81	8.72	7.91	8.66	7.94		8.67			
MH		7.67	7.60	7.89	7.67	7.60	7.60	7.86	7.74	7.48	7.98	7.94	7.74	7.91		7.98			

		Conductivity (µmhos/cm)																	
Concentration		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7				
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New			
RW		110	130	120	125	110	119	220	110	104	121	134	107	95		107			
25		594	669	688	662	605	630	604	681	659	652	661	619	623		650			
34		851	841	886	851	938	882	812	861	860	860	810	849	814		844			
45		1156	1082	1126	1090	1133	1071	1058	1090	1100	1110	1105	1080	1013		1095			
60		1421	1338	1423	1307	1437	1354	1432	1404	1422	1400	1328	1383	1324		1361			
80		1773	1722	1838	1716	1876	1746	1710	1805	1784	1800	1828	1746	1830		1833			
MH		213	231	220	227	221	229	220	235	253	237	234	214	231		245			

Params Int/Time:	AW1000	AW1006	AW0908	AW1119	AW1000	AW1142	AW0905	AW1131	AW1057	AW1132	AW1044	AW1110	AW0910	AW1133
Dilutions Int/Time:	AW0951	AW0945	AW0945	AW0950	AW0950	AW0855	AW1047	AW1047	AW1047	AW1047	AW1047	AW1047	AW1047	AW1047
Control Water Batch:	15601	15610	15610	15610	15610	15610	15610	15610	15610	15610	15610	15610	15610	15610
Food Batch:	41495,41492	41492,415	41492,415	41492,415	41492,415	41492,415	41492,415	41492,415	41492,415	41492,415	41492,415	41492,415	41492,415	41492,415

**Attachment 2:
Chain-of-Custody Documentation and
Reference Toxicant Data**

ENVIRON Test Log No. 156734

Project Name:		Project Number:		Analysis Requested										CHAIN-OF-CUSTODY ENVIRON 201 Summit View Drive, Suite 300 Brentwood, TN 37027 PHONE: (615) 377-4775 FAX: (615) 377-4976											
Industry: GEORGIA PACIFIC PAPER				Total Volume in liters	Acute Fathead minnow	Acute Bannerfin shiner	Acute Ceriodaphnia dubia	Acute Daphnia pulex	Chronic Fathead minnow	Chronic Ceriodaphnia dubia	Continuous Batch Tests	Discrete Batch Tests	Other			Description									
Phone: 870-567-8170 FAX: 870-567-364-9076		County: ASHLEY City: CROSSETT State: AR.														NPDES Permit No.: AR0001210		NPDES Test: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		No. of Cntrs		Definitive or Screen	Sample B# (lab only)		
Sample Collected by (print): DANNY/RACHEL		Sample Collected by (signature): <i>[Signature]</i>														Start Date/Time	End Date/Time	Sample Location / ID	Comp/Grab Type	Container Type	Chilled During Collection (Y/N)				

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0.3
0.4

* Matrix: SS - Soil GW - Groundwater WW - Wastewater AW - Ambient Water ML - Mixed Liquor SL - Sludge SD - Sediment OT - Other _____

Remarks:

Measured TRC (if applicable): 0.00 mg/L

Relinquished by: (Signature) <i>[Signature]</i>	Date: 11/5/12	Time: 3:00 PM	Received by: (Signature) <i>[Signature]</i>	Samples shipped via: <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Other Courier <input type="checkbox"/> UPS Hand Delivered	Condition: (lab use only) on ice
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received by: (Signature)		Receipt Temp: 0.36, 0.40 Containers/Volume Received: 202 each (40 total)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 11/6/12	Time: 0840 pH upon arrival: 6.732 DO upon arrival: 9.1

62788

Sample Receipt Checklist:

Client: Georgia Pacific Corsett

Date/Time received 11/1/12 0840 by AM

- 1. Cooler sealed and intact upon arrival? Yes No
- 2. Custody seals present? Yes No
- 3. Samples received below 6 degrees Celsius? Yes No
- 4. Was ice present? Yes No
- 5. Is the COC filled out correctly including the sample date/time and signed? Yes No
- 6. Was the sample received within 36 hours of collection? Yes No
- 7. Did the sample(s) arrive in good condition? Yes No
- 8. Was pH and DO measured and in range? Yes No
- 9. Was residual chlorine present? Yes No

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
15661	River	0.3	7.32	8.8	0.06
15662	Ball out	0.4	7.88	9.1	0.08

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Project Name:		Project Number:		Analysis Requested										CHAIN-OF-CUSTODY ENVIRON 201 Summit View Drive, Suite 300 Brentwood, TN 37027 PHONE: (615) 377-4775 FAX: (615) 377-4976			
Industry: GEORGIA PACIFIC PAPER		Phone: 870-567-8170 FAX: 870-364-9074		Total Volume in liters	Acute Fathead minnow	Acute Bannerfin shiner	Acute Ceriodaphnia dubia	Acute Daphnia pulex	Chronic Fathead minnow	Chronic Ceriodaphnia dubia	Continuous Batch Tests	Discrete Batch Tests	Other			Description	
County: ASHLEY City: CROSSHATCH State: AR		NPDES Permit No.: AR0001210														Definitive or Screen	
Sample Collected by (print): DANNY / FARAH		NPDES Test: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		No. of Cntrs													
Sample Collected by (signature): <i>Danny Rice</i>																	
Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs											
RIVER	GRAB	PLASTIC	NA	11-7-12	11:30am	2	20								15678		
OUTFALL 01	COMP	PLASTIC	YES	11-6-12	11-7-12	2	20								156787L		
				6:34AM	6:38AM												
* Matrix: SS - Soil GW - Groundwater WW - Wastewater AW - Ambient Water ML - Mixed Liquor SL - Sludge SD - Sediment OT - Other _____																	
Remarks: Measured TRC (if applicable): 0.00 mg/L																	
Relinquished by: (Signature) <i>Danny R.</i>		Date: 11-7-12	Time: 4:30pm	Received by: (Signature)		Samples shipped via: <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Other Courier			<input type="checkbox"/> UPS <input type="checkbox"/> Hand Delivered		Condition: (lab use only)						
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Receipt Temp: 1.2, 1.5		Containers/Volume Received: 40 40L									
Relinquished by: (Signature)		Date:	Time:	Received for lab by: (Signature) <i>Rauli</i>		Date: 11/8/12		Time: 0843		pH upon arrival: 7.80, 7.65		DO upon arrival:					

Sample Receipt Checklist:

Client: Georgia Pacific Crossett

Date/Time received 4/8/12 0843 by AT

1. Cooler sealed and intact upon arrival? Yes No
2. Custody seals present? Yes No
3. Samples received below 6 degrees Celsius? Yes No
4. Was ice present? Yes No
5. Is the COC filled out correctly including the sample date/time and signed? Yes No
6. Was the sample received within 36 hours of collection? Yes No
7. Did the sample(s) arrive in good condition? Yes No
8. Was pH and DO measured and in range? Yes No
9. Was residual chlorine present? Yes No

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
15677	Outfall out	1.5	7.65	11.1	0.02
15678	River	1.2	7.80	10.6	0.06

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Project Name: _____ Project Number: _____

Industry: GEORGIA PAPER

Phone: 810-567-8170 FAX: 810-364-9076

County: ASHLEY City: CROSSVILLE State: AR.

Sample Collected by (print): DANNY ROSE NPDES Permit No.: AR0001210

Sample Collected by (signature): [Signature] NPDES Test: No Yes

CHAIN-OF-CUSTODY

ENVIRON

201 Summit View Drive, Suite 300
 Brentwood, TN 37027
 PHONE: (615) 377-4775
 FAX: (615) 377-4976

Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	Analysis Requested								Description Definitive or Screen	Sample B# (lab only)
								Acute Fathead minnow	Acute Bannertin shiner	Acute Ceriodaphnia dubia	Acute Daphnia pulex	Chronic Fathead minnow	Chronic Ceriodaphnia dubia	Continuous Batch Tests	Discrete Batch Tests		
<u>RIVER</u>	<u>GRAB</u>	<u>PLASTIC</u>	<u>NA</u>	<u>11-9-12</u>	<u>9:30am</u>	<u>2</u>	<u>20</u>										<u>15693</u>
<u>OUTFALL 001</u>	<u>COMP</u>	<u>PLASTIC</u>	<u>YES</u>	<u>11-8-12</u>	<u>11-9-12</u>	<u>2</u>	<u>20</u>										<u>15694</u>
				<u>6:40AM</u>	<u>6:35AM</u>												

* Matrix: SS - Soil GW - Groundwater WW - Wastewater AW - Ambient Water ML - Mixed Liquor SL - Sludge SD - Sediment OT - Other _____

Remarks: _____

Measured TRC (if applicable): 0.00 mg/L

Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>11-9-12</u>	Time: <u>3:00pm</u>	Received by: (Signature) _____	<input checked="" type="checkbox"/> Samples shipped via: FedEx <input type="checkbox"/> Other Courier <input type="checkbox"/> UPS <input type="checkbox"/> Hand Delivered	Condition: (lab use only)		
Relinquished by: (Signature) _____	Date: _____	Time: _____	Received by: (Signature) _____		Receipt Temp: <u>3.2, 2.4</u>	Containers/Volume Received: <u>20L of each</u>	
Relinquished by: (Signature) _____	Date: _____	Time: _____	Received for lab by: (Signature) <u>Anita Bryant-Winton</u>	Date: <u>11/10/12</u>	Time: <u>0930</u>	pH upon arrival: <u>7.5, 7.7</u>	DO upon arrival: <u>8.8, 9.2</u>

Sample Receipt Checklist:

Client: Georgia Pacific Crossett

Date/Time received 11/10/12 0930 by AW

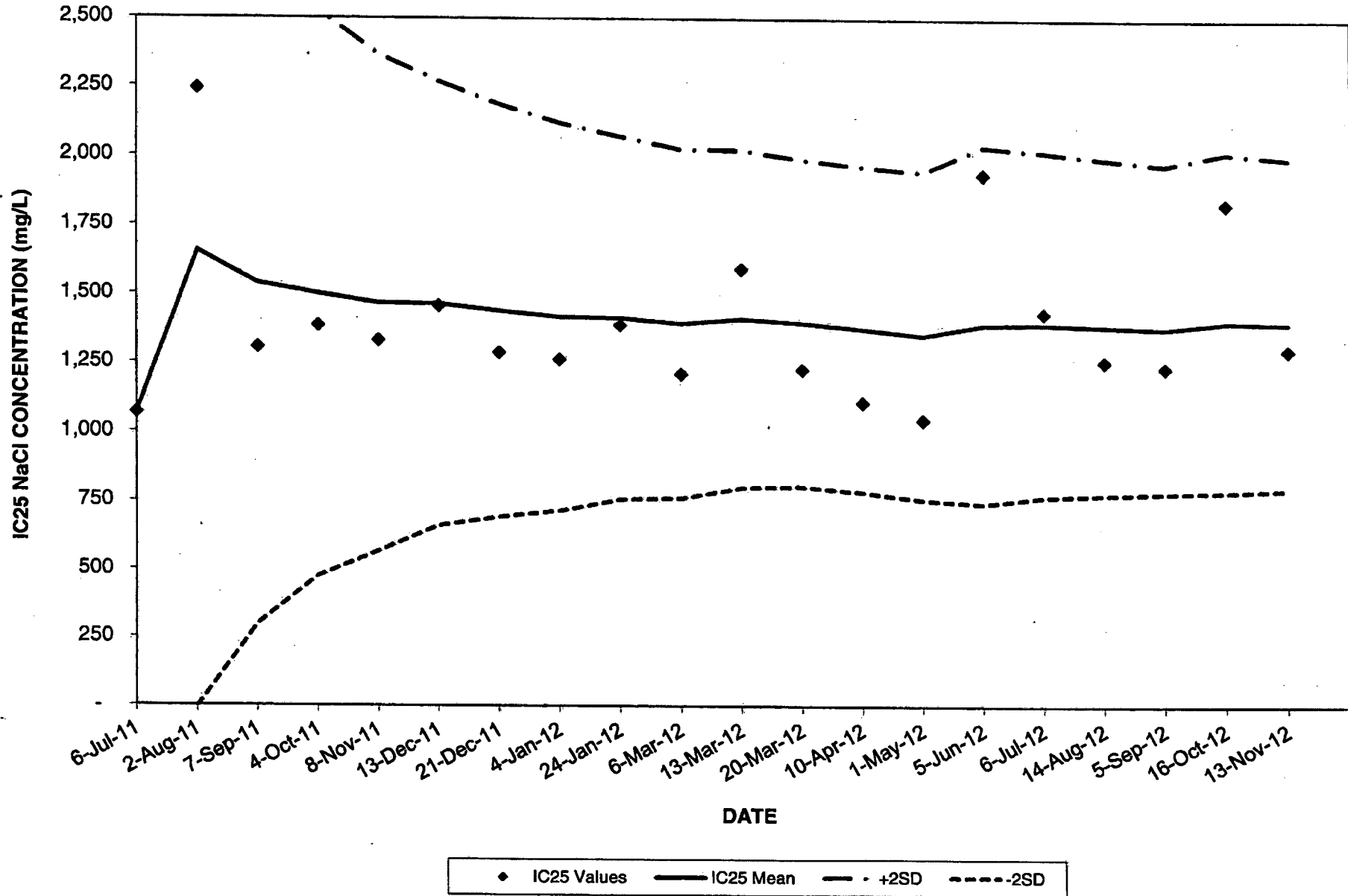
- 1. Cooler sealed and intact upon arrival? Yes No
- 2. Custody seals present? Yes No
- 3. Samples received below 6 degrees Celsius? Yes No
- 4. Was ice present? Yes No
- 5. Is the COC filled out correctly including the sample date/time and signed? Yes No
- 6. Was the sample received within 36 hours of collection? Yes No
- 7. Did the sample(s) arrive in good condition? Yes No
- 8. Was pH and DO measured and in range? Yes No
- 9. Was residual chlorine present? Yes No

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
15693	River	3.2	7.59	8.8	0.05
15694	Outfall 001	2.4	7.72	9.2	<0.02

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CHRONIC REFERENCE TOXICANT TEST (NaCl) 2011 - 2012 FATHEAD MINNOWS



Fathead Minnow CHRONIC REFERENCE TOXICANT TESTING-SODIUM CHLORIDE (NaCl) 2011 - 2012

ENVIRON Test Log No. 156734

34 of 36

Test Number	Log Number	Test Initiation Date	Control Survival (%) (*)	Control Mean Dry Weight (mg/fish) (*)	SURVIVAL		GROWTH		PMSD (%)	IC25 VALUE (mg/L)	IC25 CUMULATIVE MEAN (mg/L)	IC25 ST. DEV. (mg/L)	IC25 2+ STD. DEV.	IC25 2- STD. DEV.	Coefficient of Variation (%)
					NOEC (mg/L)	LOEC (mg/L)	NOEC (mg/L)	LOEC (mg/L)							
1	13725	06-Jul-11	100	0.565	750	1,500	750	1,500	26.5	1,069	1,069				
2	13775	02-Aug-11	96	0.534	1,500	3,000	1,500	3,000	10.5	2,243	1,656	830	3,316	(4)	35
3	13828	07-Sep-11	97.5	0.571	3,000	6,000	750	1,500	17.4	1,306	1,539	621	2,781	298	33
4	13877	04-Oct-11	100	0.579	1,500	3,000	750	1,500	20.4	1,385	1,501	513	2,526	475	30
5	13967	08-Nov-11	100	0.586	1,500	3,000	750	1,500	22.6	1,331	1,467	450	2,368	566	27
6	14036	13-Dec-11	92.5	0.256	3,000	6,000	1,500	3,000	33.6	1,457	1,465	403	2,271	659	25
7	14047	21-Dec-11	100	0.270	750	1,500	750	1,500	30.3	1,286	1,440	374	2,188	692	24
8	14056	04-Jan-12	89	0.305	750	1,500	750	1,500	29.1	1,261	1,417	352	2,121	713	23
9	14095	24-Jan-12	97.5	0.476	1,500	3,000	750	1,500	25.6	1,387	1,414	329	2,073	755	22
10	15207	06-Mar-12	97.5	0.372	750	1,500	1,500	3,000	39.2	1,209	1,393	317	2,028	759	22
11	15225	13-Mar-12	85	0.290	6,000	>6,000	1,500	3,000	30.2	1,593	1,412	307	2,025	798	21
12	15248	20-Mar-12	100	0.383	750	1,500	750	1,500	28.1	1,225	1,396	298	1,991	801	20
13	15299	10-Apr-12	100	0.716	750	1,500	750	1,500	17.0	1,105	1,374	296	1,966	781	21
14	15343	01-May-12	100	0.562	750	1,500	750	1,500	25.0	1,042	1,350	298	1,946	754	21
15	15115	05-Jun-12	100	0.499	750	1,500	1,500	3,000	24.0	1,937	1,389	325	2,038	740	23
16	15463	06-Jul-12	100	0.397	750	1,500	1,500	3,000	26.5	1,431	1,392	314	2,019	764	22
17	15548	14-Aug-12	100	0.406	750	1,500	750	1,500	24.6	1,254	1,384	306	1,995	772	21
18	15603	05-Sep-12	100	0.429	750	1,500	750	1,500	16.7	1,232	1,375	299	1,973	778	21
19	15683	16-Oct-12	97.5	0.447	1,500	3,000	1,500	3,000	19.0	1,832	1,399	309	2,017	782	21
20	15743	13-Nov-12	100	0.514	750	1,500	750	1,500	15.9	1,297	1,394	301	1,997	792	21

Avg	98	0.458	1425	2250	1013	2025	24	1394	1411	381	2191	667
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Notes:

Dilution series - 0.375 g/L - 6.0 g/L

NOEC - No Observable Effect Concentration (survival or growth)

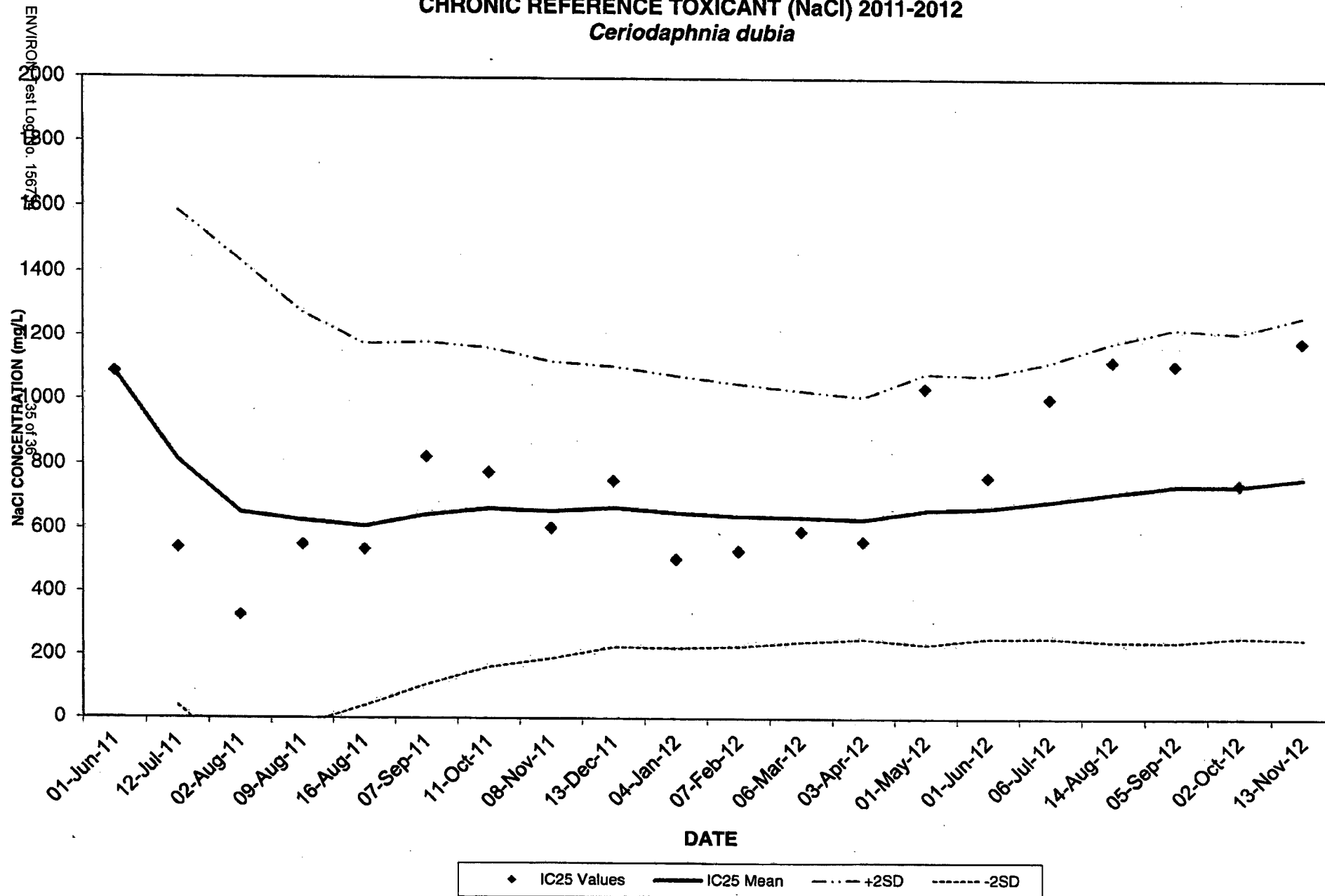
LOEC - Lowest Observable Effect Concentration (survival or growth)

ACCEPTABLE TEST RESULTS - A growth NOEC ranging from 750 mg/L to 3,000 mg/L.

(*) Minimum USEPA CONTROL CRITERIA - 80 percent survival and average dry weight of 0.25 mg (weight based on surviving number of fish).

Test Log 15132 initiated Feb 7, 2012 was invalidated due to standard deviation over 2x

CHRONIC REFERENCE TOXICANT (NaCl) 2011-2012
Ceriodaphnia dubia



Ceriodaphnia dubia CHRONIC REFERENCE TOXICANT TESTING - SODIUM CHLORIDE (NaCl) 2011-2012

ENVIRONMENTAL TEST LOG NO. 156734

36 of 36

Test Number	Log Number	Test Initiation Date	Control Survival (%) (*)	3 Brood Production (%) (*)	Control Average Repro (*)	Survival		Reproduction			IC25 VALUE (mg/L)	IC25 CUMULATIVE MEAN (mg/L)	IC25 ST. DEV. (mg/L)	IC25 2+ STD. DEV.	IC25 2- STD. DEV.	Coefficient of Variation (%)
						NOEC (mg/L)	LOEC (mg/L)	NOEC (mg/L)	LOEC (mg/L)	PMSD						
1	13667	01-Jun-11	100	100	31.7	1,000	2,000	500	1,000	13.1	1087	1,087				0
2	13736	12-Jul-11	100	90	27.5	1,000	2,000	500	1,000	21.3	540	814	387	1,587	40	34
3	13778	02-Aug-11	100	100	29.9	1,000	2,000	250	500	28.4	326	651	392	1,436	(134)	49
4	13793	09-Aug-11	100	100	28.4	500	1,000	250	500	19.9	549	626	324	1,274	(23)	45
5	13804	16-Aug-11	100	100	28.0	1,000	2,000	250	500	14.2	535	607	284	1,175	40	42
6	13829	07-Sep-11	100	100	31.3	1,000	2,000	250	500	8.7	823	643	269	1,181	106	38
7	13887	11-Oct-11	100	100	28.3	2,000	>2,000	500	1,000	16.2	775	662	250	1,163	161	35
8	13963	08-Nov-11	100	90	17.9	2,000	>2,000	500	1,000	26.1	603	655	233	1,120	189	33
9	14306	13-Dec-11	100	100	21.4	1,000	2,000	500	1,000	16.8	750	665	220	1,105	225	31
10	14055	04-Jan-12	90	80	25.4	1,000	2,000	500	1,000	46.4	504	649	214	1,076	222	31
11	15131	07-Feb-12	100	100	27.1	1,000	2,000	500	1,000	29.7	530	638	206	1,050	227	31
12	15206	06-Mar-12	100	100	31.4	1,000	2,000	500	1,000	24.8	592	635	197	1,028	241	30
13	15283	03-Apr-12	100	100	33.4	500	1,000	500	1,000	27.3	560	629	189	1,008	250	29
14	15344	01-May-12	100	90	32.9	2,000	>2,000	500	1,000	22.4	1036	658	212	1,082	234	31
15	15100	01-Jun-12	80	100	28.8	2,000	>2,000	500	1,000	14.6	759	665	206	1,077	253	30
16	15402	06-Jul-12	100	100	27.8	1,000	2,000	500	1,000	9.9	1003	686	216	1,118	253	31
17	15549	14-Aug-12	100	100	32.7	2,000	>2,000	500	1,000	10.3	1121	711	234	1,180	242	32
18	15604	05-Sep-12	100	100	26.3	1,000	2,000	500	1,000	12.5	1109	733	246	1,226	241	33
19	15653	02-Oct-12	100	100	34.8	2,000	>2,000	500	1,000	22.0	737	734	239	1,212	255	32
20	15742	13-Nov-12	100	100	31.6	2,000	>2,000	1,000	2,000	10.4	1183	756	253	1,263	249	33

Avg	99	98	29	1300	1200	475	950	20	756	695	251	1177	172
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Notes:

NOEC - No Observable Effect Concentration (survival or reproduction)

LOEC - Lowest Observable Effect Concentration (survival or reproduction)

ACCEPTABLE TEST RESULTS - A reproduction NOEC ranging from 250 mg/L to 1,000 mg/L.

(*) Minimum USEPA CONTROL CRITERIA - 80 percent survival, 80 percent with 3 broods, and average reproduction of 15 neonates/adult.

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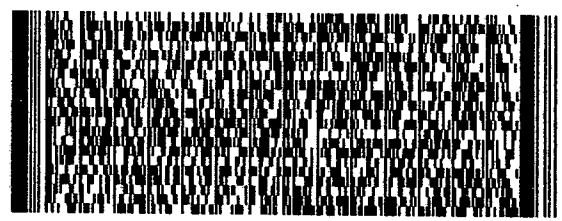
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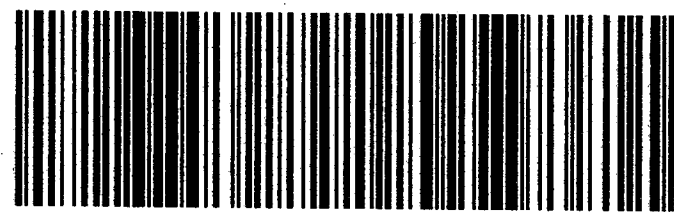
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