



ENVIRONMENTAL TESTING & CONSULTING, INC.

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440

April 12, 2012

Mr. James Carlock,
Osceola Water Department
P.O. Box 443
Osceola, AR 72370

Dear Permittee,

The results of this WET (Whole Effluent Toxicity) test are acceptable according to test review criteria. There were no significant deficiencies found in sample handling, test performance, or reporting. The test results are within the limits established by your NPDES permit and were entered into the permittee's records in the database.

Results: CV/NOEL > 0.17% Permit Limit: 0.13%

Report #: 12-081-0102 OSCEOLA_WATE - AR0021580

All statistical interpretations generated by CETIS - Comprehensive Environmental Toxicity Information System (v.1.025A). CETIS created by Tidepool Scientific Software

Respectfully,

A handwritten signature in cursive script that reads "Connie Cook". The signature is written in black ink and is positioned above a horizontal line.

Connie Cook, Manager, Biological Sciences

Enclosure(s)

cc

CETIS Test Evaluation

Report Date: 12 Apr-12 3:47 PM
 Link: 15-3148-3358/DP081-0102

Facility: OSCEOLA_WATE - AR0021580 (AR0021580) Sample Site: Sample Code: 12-081-0102 Sample Date: 20 Mar-12 06:00 AM Sample Age: 34 Hours (1 °C) Project: WET Quarterly Compliance Test (1Q)	Test Title: Daphnia pulex 48-h Acute Survival Test Organism: Daphnia pulex (Water Flea) Protocol: EPA/821/R-02-012 (2002) Start Date: 21 Mar-12 03:45 PM End Date: 23 Mar-12 02:30 PM Test Duration: 47 Hours
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Permittee: Osceola Water Department Address: P.O. Box 443 346 W. Hale Osceola, AR 72370 Contact: Mr. James Carlock Phone: 870-563-2628, 870-563-7460(fax) Email:	Laboratory: Environmental Testing and Consulting, Inc. Address: 2790 Whitten Road Memphis, TN 38133 Contact: Ms. Connie Cook Phone: 901-213-2454, 901-213-2440(fax) Email: ccook@etcmemphis.com
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Comments

Acute Toxicity Evaluation				
Endpoint	Parameter	Conc-%	IWC	Pass/Fail
48h Proportion Survived	ChV	0.17000000	0.13	Passed

Test Acceptability				
Endpoint	Attribute	Estimate	Criteria	Pass/Fail
48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passed

48h Proportion Survived Summary								
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0	Receiving Wat	5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.05		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.07		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.1		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.13		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.17		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%

CETIS Test Summary

Report Date: 12 Apr-12 3:47 PM
 Link: 15-3148-3358/DP081-0102

Daphnia pulex 48-h Acute Survival Test Environmental Testing and Consulting, Inc.

Test No: 01-7244-7343	Test Type: Survival (48h)	Duration: 47 Hours
Start Date: 21 Mar-12 03:45 PM	Protocol: EPA/821/R-02-012 (2002)	Species: Daphnia pulex
Ending Date: 23 Mar-12 02:30 PM	Dil Water: Receiving Water	Source: In-House Culture
Setup Date: 21 Mar-12 03:45 PM	Brine: Not Applicable	

Sample No: 14-5443-0917	Material: POTW Effluent	Client: Osceola Water Department
Sample Date: 20 Mar-12 06:00 AM	Code: 12-081-0102	Project: WET Quarterly Compliance Test (1Q)
Receive Date: 21 Mar-12 02:00 PM	Source: OSCEOLA_WATE - AR0021580	
Sample Age: 34 Hours (1 °C)	Station:	

Sample Renewals

Renewal	Renewed	Collected	Received	Temp °C	Sample Code
1	22 Mar-12 12:00 AM	21 Mar-12 07:00 A	21 Mar-12 02:00	1	12-081-0102

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method
10-8492-5153	48h Proportion Survived	0.17	>0.17	N/A	7.98%	Steel's Many-One Rank

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision
10-8492-5153	48h Proportion Survived	Control Response	0.975	0.9 - N/A	Passes acceptability criteria

48h Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0	Receiving Wat	5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.05		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.07		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.1		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.13		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.17		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%


48h Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	1.00000	1.00000	1.00000	1.00000	1.00000
0	Receiving Wat	0.87500	1.00000	1.00000	1.00000	1.00000
0.05		1.00000	1.00000	0.87500	1.00000	1.00000
0.07		1.00000	1.00000	1.00000	1.00000	1.00000
0.1		0.87500	1.00000	1.00000	1.00000	1.00000
0.13		1.00000	1.00000	0.87500	1.00000	1.00000
0.17		1.00000	1.00000	0.87500	1.00000	1.00000

CETIS Measurement Detail

Daphnia pulex 48-h Acute Survival Test

Environmental Testing and Consulting, Inc.

Analyst: 

Approval: 

CETIS Measurement Detail

Initial Dissolved Oxygen-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	8.6	8.7
0	Receiving Wat	8.8	8.9
0.05		8.6	9
0.07		8.9	9
0.1		8.9	9
0.13		8.6	8.9
0.17		8.6	9

Initial pH			
Conc-%	Control Type	1	2
0	Lab Water	8	8.2
0	Receiving Wat	8	8.2
0.05		8	8.2
0.07		8	8.2
0.1		8	8.2
0.13		8	8.2
0.17		8	8.2

Initial Temperature-°C			
Conc-%	Control Type	1	2
0	Lab Water	23	23
0	Receiving Wat	24	24
0.05		24	24
0.07		24	24
0.1		24	24
0.13		24	24
0.17		24	24

Final Dissolved Oxygen-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	8.2	8
0	Receiving Wat	8.2	8
0.05		8	8
0.07		8	8
0.1		8	8
0.13		8	8
0.17		8	8

Final pH			
Conc-%	Control Type	1	2
0	Lab Water	7.6	7.5
0	Receiving Wat	7.6	7.6
0.05		7.9	7.5
0.07		7.8	7.5
0.1		7.9	7.5
0.13		7.9	7.6
0.17		7.9	7.6

CETIS Measurement Detail

Final Temperature-°C			
Conc-%	Control Type	1	2
0	Lab Water	23	23
0	Receiving Wat	23	23
0.05		23	23
0.07		23	23
0.1		23	23
0.13		23	23
0.17		23	23

Alkalinity (CaCO3)-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	59	61
0	Receiving Wat		
0.05			
0.07			
0.1			
0.13			
0.17			

Total Residual Chlorine-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	0	0
0	Receiving Wat	0	0
0.05			
0.07			
0.1			
0.13			
0.17		0	0

Conductivity-µmhos			
Conc-%	Control Type	1	2
0	Lab Water	180	178
0	Receiving Wat	453	462
0.05			
0.07			
0.1			
0.13			
0.17		601	591

Hardness (CaCO3)-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	90	92
0	Receiving Wat		
0.05			
0.07			
0.1			
0.13			
0.17			

CETIS Test Evaluation

Report Date: 12 Apr-12 3:48 PM

Link: 02-5508-4244/FH081-0102

Facility: OSCEOLA_WATE - AR0021580 (AR0021580) Sample Site: Sample Code: 12-081-0102 Sample Date: 20 Mar-12 06:00 AM Sample Age: 34 Hours (1 °C) Project: WET Quarterly Compliance Test (1Q)	Test Title: Fathead Minnow 48-h Acute Survival Test Organism: Pimephales promelas (Fathead Minnow) Protocol: EPA/821/R-02-012 (2002) Start Date: 21 Mar-12 04:00 PM End Date: 23 Mar-12 02:45 PM Test Duration: 47 Hours
Permitee: Osceola Water Department Address: P.O. Box 443 346 W. Hale Osceola, AR 72370 Contact: Mr. James Carlock Phone: 870-563-2628, 870-563-7460(fax) Email:	Laboratory: Environmental Testing and Consulting, Inc. Address: 2790 Whitten Road Memphis, TN 38133 Contact: Ms. Connie Cook Phone: 901-213-2454, 901-213-2440(fax) Email: ccook@etcmemphis.com

Comments

Acute Toxicity Evaluation

Endpoint	Parameter	Conc-%	IWC	Pass/Fail
48h Proportion Survived	ChV	0.17000000	0.13	Passed

Test Acceptability

Endpoint	Attribute	Estimate	Criteria	Pass/Fail
48h Proportion Survived	Control Response	0.95	0.9 - N/A	Passed

48h Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0	Receiving Wat	5	0.95000	0.75000	1.00000	0.05000	0.11180	11.77%
0.05		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.07		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.1		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.13		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.17		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%

CETIS Test Summary

Report Date: 12 Apr-12 3:48 PM

Link: 02-5508-4244/FH081-0102

Fathead Minnow 48-h Acute Survival Test				Environmental Testing and Consulting, Inc.				
Test No:	18-7439-1582	Test Type:	Survival (48h)	Duration:	47 Hours			
Start Date:	21 Mar-12 04:00 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Pimephales promelas			
Ending Date:	23 Mar-12 02:45 PM	Dil Water:	Receiving Water	Source:	Aqualox, AR			
Setup Date:	21 Mar-12 04:00 PM	Brine:						
Sample No:	14-5443-0917	Material:	POTW Effluent	Client:	Osceola Water Department			
Sample Date:	20 Mar-12 06:00 AM	Code:	12-081-0102	Project:	WET Quarterly Compliance Test (1Q)			
Receive Date:	21 Mar-12 02:00 PM	Source:	OSCEOLA_WATE - AR0021580					
Sample Age:	34 Hours (1 °C)	Station:						
Sample Renewals								
Renewal	Renewed	Collected	Received	Temp °C	Sample Code			
1	22 Mar-12 12:00 AM	21 Mar-12 07:00 A	21 Mar-12 02:00	1	12-081-0102			
Comparison Summary								
Analysis	Endpoint	NOEL	LOEL	ChV	MSDp	Method		
09-4392-8144	48h Proportion Survived	0.17	>0.17	N/A	8.13%	Steel's Many-One Rank		
Test Acceptability								
Analysis	Endpoint	Attribute	Statistic	Acceptable Range	Decision			
09-4392-8144	48h Proportion Survived	Control Response	0.95	0.9 - N/A	Passes acceptability criteria			
48h Proportion Survived Summary								
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Lab Water	5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0	Receiving Wat	5	0.95000	0.75000	1.00000	0.05000	0.11180	11.77%
0.05		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.07		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.1		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
0.13		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.17		5	0.97500	0.87500	1.00000	0.02500	0.05590	5.73%
48h Proportion Survived Detail								
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Lab Water	1.00000	1.00000	1.00000	1.00000	1.00000		
0	Receiving Wat	0.75000	1.00000	1.00000	1.00000	1.00000		
0.05		1.00000	1.00000	1.00000	1.00000	1.00000		
0.07		1.00000	1.00000	1.00000	1.00000	1.00000		
0.1		1.00000	1.00000	0.87500	1.00000	1.00000		
0.13		1.00000	1.00000	1.00000	1.00000	1.00000		
0.17		0.87500	1.00000	1.00000	1.00000	1.00000		

CETIS Measurement Detail

Fathead Minnow 48-h Acute Survival Test

Environmental Testing and Consulting, Inc.



CETIS Measurement Detail

Initial Dissolved Oxygen-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	8.6	8.7
0	Receiving Wat	8.8	8.9
0.05		8.6	9
0.07		8.9	9
0.1		8.9	9
0.13		8.6	8.9
0.17		8.6	9
Initial pH			
Conc-%	Control Type	1	2
0	Lab Water	8	8.2
0	Receiving Wat	8	8.2
0.05		8	8.2
0.07		8	8.2
0.1		8	8.2
0.13		8	8.2
0.17		8	8.2
Initial Temperature-°C			
Conc-%	Control Type	1	2
0	Lab Water	23	23
0	Receiving Wat	24	24
0.05		24	24
0.07		24	24
0.1		24	24
0.13		24	24
0.17		24	24
Final Dissolved Oxygen-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	7.8	7.5
0	Receiving Wat	7.8	7.6
0.05		7.6	7.8
0.07		7.6	7.8
0.1		7.6	7.9
0.13		7.9	7.9
0.17		7.6	7.8
Final pH			
Conc-%	Control Type	1	2
0	Lab Water	7.6	7.5
0	Receiving Wat	7.5	7.4
0.05		7.5	7.4
0.07		7.6	7.3
0.1		7.6	7.5
0.13		7.6	7.6
0.17		7.6	7.6

CETIS Measurement Detail

Final Temperature-°C			
Conc-%	Control Type	1	2
0	Lab Water	23	23
0	Receiving Wat	23	23
0.05		23	23
0.07		23	23
0.1		23	23
0.13		23	23
0.17		23	23
Alkalinity (CaCO3)-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	59	61
0	Receiving Wat		
0.05			
0.07			
0.1			
0.13			
0.17			
Total Residual Chlorine-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	0	0
0	Receiving Wat	0	0
0.05			
0.07			
0.1			
0.13			
0.17		0	0
Conductivity-µmhos			
Conc-%	Control Type	1	2
0	Lab Water	180	178
0	Receiving Wat	453	462
0.05			
0.07			
0.1			
0.13			
0.17		601	591
Hardness (CaCO3)-mg/L			
Conc-%	Control Type	1	2
0	Lab Water	90	92
0	Receiving Wat		
0.05			
0.07			
0.1			
0.13			
0.17			



ENVIRONMENTAL TESTING & CONSULTING, INC.

www.etcmemphis.com

2790 Whitten Road

Memphis, Tennessee 38133

(901) 213-2400

Fax (901) 213-2440

"A Laboratory Management Partner"

03334

Osceola Water Department

Mr. James Carlock

PO Box 443

Osceola, AR 72370

Project Bioassay
Information :

Report Date : 4/12/2012

Report Number : 12-081-0102

REPORT OF ANALYSIS

Received : 3/21/2012

Lab No : 95426

Matrix: Aqueous

Sample ID : Outfall 3/19-20/12

Sampled: 3/20/2012 6:00

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	253	mg/L	1	1	04/04/12 08:55	EWB	2320B
Total Calcium	56.7	mg/L	0.100	1	03/26/12 19:49	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	198	mg/L	0.100	1	03/26/12 19:49		EPA-200.7
Total Magnesium	13.7	mg/L	0.100	1	03/26/12 19:49	BKN	EPA-200.7

Lab No : 95427

Matrix: Aqueous

Sample ID : Outfall 3/20-21/12

Sampled: 3/21/2012 6:00

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	247	mg/L	1	1	04/04/12 08:55	EWB	2320B
Total Calcium	56.9	mg/L	0.100	1	03/26/12 19:56	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	199	mg/L	0.100	1	03/26/12 19:56		EPA-200.7
Total Magnesium	13.8	mg/L	0.100	1	03/26/12 19:56	BKN	EPA-200.7

Lab No : 95428

Matrix: Aqueous

Sample ID : River Water

Sampled: 3/21/2012 7:00

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Alkalinity (as CaCO3)	106	mg/L	1	1	04/04/12 08:55	EWB	2320B
Total Calcium	42.6	mg/L	0.100	1	03/26/12 20:03	BKN	EPA-200.7
Hardness as CaCO3(SM-2340B)	160	mg/L	0.100	1	03/26/12 20:03		EPA-200.7
Total Magnesium	13.0	mg/L	0.100	1	03/26/12 20:03	BKN	EPA-200.7

Qualifiers/ Definitions

* Outside QC limit
MQL Method Quantitation Limit

DF Dilution Factor

Environmental Testing and Consulting, Inc.
2790 Whitten Road
Memphis, TN 38133

Additional Toxicity Test Information

1. Methods/Instrumentation used in chemical analysis:
 - Dissolved oxygen: 4500-O G YSI MODEL - 58
 - pH: 4500-H + B JENCO METER 6072
 - Temperature: 2500 B JENCO METER 6072
 - Conductivity: 2510 B CORNING METER 441
 - Alkalinity: 2320 B
 - Hardness: 200.7
 - Total Residual Chlorine: 4500-Cl G - REPORTED VALUE OF "0" INDICATES RESULT BELOW DETECTION LIMIT OF 0.02 mg/L
 - EPA Acute/Chronic Manual Edition and Date: EPA-821-R-02-012
OCT 2002 (Fifth edition)
2. Laboratory
 - Temperature: Average - 25 C Range - 23 - 26
 - Light Cycle: 16 hours light/ 8 hours dark
 - Light intensity: 100 foot-candles, average
 - Control Water: Dilute mineral water made with 20 % Perrier in Nanopure
 - Dilution Water: Laboratory control water
 - Pretreatment: none
3. Method 1002.0
 - Test chambers: 30 mL disposable plastic beakers
 - Volume per chamber: 15 mL
 - Number of organisms per chamber: 8
 - Number of replicates: 5
 - Food: Organisms are not fed during test.
4. Method 1000.0
 - Test chambers: 20 oz. Disposable plastic cups
 - Volume per chamber: 200 mL
 - Average number of organisms per chamber: 8
 - Number of replicates per concentration: 5
 - Food: Artemia brine shrimp hatched in laboratory during holding, prior to test.
 - Acclimation of organisms: Organisms are allowed to reach test temperature. Dilution water is added at half-hour intervals until organisms are contained in a culture media that consists of 80% dilution water.
5. Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from EPA methodology that were necessary for these tests as well as any sample manipulations which were performed, such as aeration, dechlorination with sodium thiosulfate, etc. and the justification for such manipulations or deviations. Attach additional pages as needed.
 - None



CHAIN OF CUSTODY RECORD

BIOASSAY TESTING

Environmental Testing & Consulting, Inc.

2790 Whitten Road • Memphis, TN 38133

(901) 213-2400 Fax (901) 213-2440

clientservices@etcmemphis.com

ETC Work Order



Osceola Water Department
Bioassay

12-081-0102

03334

2012-03-21

16:35:17

CELL 870 622 5068

Company Name CITY OF OSCEOLA		Phone #: 870-563-5245 CITY HALL													
Project/Site WASTEWATER TREATMENT PLT		Fax #:		FID #:		PO #:									
Project #		Sample Shipped on ICE (Circle One) <input checked="" type="radio"/> Yes <input type="radio"/> No													
Project Manager/Contact JAMES CARLOCK															
# of cont.	Sample ID/Number	Depth	Date Sample Start	Time Sample Start	Date Sample End	Time Sample End	Sample Type Comp	Sample Type Grab	Test Type Chronic	Test Type Acute					Comments
1	OUTFALL PINT NITRIC ACID		3-19-12	6 AM	3-20-12	6 AM	X								Comp-1
1	OUTFALL PINT NONE		3-19-12	6 AM	3-20-12	6 AM	X								Comp-1
1	OUTFALL QUART NONE		3-19-12	6 AM	3-20-12	6 AM	X								Comp-1
1	OUTFALL PINT NITRIC ACID		3-20-12	6 AM	3-21-12	6 AM	X								Comp-2
1	OUTFALL PINT NONE		3-20-12	6 AM	3-21-12	6 AM	X								Comp-2
1	OUTFALL QUART NONE		3-20-12	6 AM	3-21-12	6 AM	X								Comp-2
4	RIVERWATER GALLON NONE		3-21-12	7 AM	3-21-12	7 AM		X							
1	RIVERWATER PINT NONE		3-21-12	7 AM	3-21-12	7 AM		X							
1	RIVERWATER PINT NITRIC ACID		3-21-12	7 AM	3-21-12	7 AM		X							
Sampled By JAMES CARLOCK		Date 3-21-12	Time	Method of Shipment		Remarks									
RELINQUISHED BY (sign) <i>James Carlock</i>		DATE 3-21-12	TIME 1300	RECEIVED BY (sign) <i>Felanga</i>		DATE 3/21/12	TIME 1300								
RELINQUISHED BY (sign)		DATE	TIME	RECEIVED BY (sign)		DATE	TIME								
RELINQUISHED BY (sign) <i>Felanga</i>		DATE 3/21/12	TIME 1400	RECEIVED BY LAB (print/sign) <i>Felanga</i>		DATE 3/21/12	TIME 1400								

Distribution: Original and Yellow accompany samples to the laboratory.
Original copy returned with results. Yellow copy for ETC, Inc. files.

City of Osceola
@ James Carlock
P O Box 443
303 West Hale
Osceola, AR 72370

CERTIFIED MAIL™



7009 2820 0000 8067 0131

Hasler

07/13/2012

USIPOSTAGE

\$06.80⁰



ZIP 72370
011D11627215

FIRST CLASS

ADEQ
Arkansas Department of Environmental Quality
5301 N. Shore DR.
North Little Rock, Arkansas 72118-5317

