

Effluent Quality Assessment

City of Clearwater Marshall Street Advanced Wastewater Treatment Facility (AWWTF)

Pinellas County

NPDES #FL0021857

Sampled January 10, 12 and 14, 2011

April 2011

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

CONTENTS

Introduction

Methods

Results and Discussion

Literature Cited

Tables

Table 1 Measured and predicted algal growth potential (AGP)

Table 2 Effluent limits, Class III Marine Criteria, chemical and microbiological data

Appendices

Appendix A Chain of Custody

Appendix B Bioassay Bench Sheets

Appendix C SRT Bench Sheets and Statistical Analyses

Appendix D Organism Receipt

Appendix E Chemical Analyses of Effluent

Appendix F Facility Summary, Effluent Limits, and Permit Violations Recorded on Discharge Monitoring Report

Appendix G EPA End Sheet

City of Clearwater Marshall Street AWWTF, 1605 Harbor Drive, Clearwater, Pinellas County, Florida, 33755. NPDES #FL0021857. Effluent grab and composite samples for bioassay, chemical, and biological analyses for this facility were collected on January 10, 2011. Additional samples for bioassay testing were collected on January 12 and 14, 2011.

Introduction

City of Clearwater Marshall Street AWWTF is a Type 1 advanced wastewater treatment facility which uses the Bardenpho BNR Process to treat domestic wastewater. (See Appendix F for detailed facility information provided by Jason Cohen of FDEP Southwest District.)

Methods

Samples were collected from the EFD-01 (after dechlorination and prior to final discharge) and EFB-01 (after filtration and prior to disinfection; grab sample for TSS only) NPDES sampling points for Outfall D-001 by Jason Cohen and Peter Wenner (FDEP Southwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/bars/sas/sop/index.htm.

See Appendix A for the completed chain of custody form.

The bioassay tests and algal growth potential tests (AGP) were performed following internal DEP SOPs TA07_05, TA07_09, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

The bioassay tests for this facility were initiated as chronic tests. Due to a shipping problem, the third set of bioassay samples for the chronic tests were not received until after the samples had exceeded the allowable holding time. The bioassays were terminated on Test Day 4 (96 hours) and results were reported as though the tests were acute bioassays.

An aliquot of the AGP sample was salinity-adjusted with artificial sea salts from an apparent salinity of approximately 0.75 parts per thousand (ppth) to a salinity of approximately 7 ppth to meet the minimum salinity requirements of the marine test species.

Results and Discussion

Toxicity Test Results

Tests were performed January 11 - 15, 2011.

Ceriodaphnia dubia 96-hour bioassay – LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours

Pimephales promelas 96-hour bioassay – LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours

The bioassay samples were not acutely toxic to the test organisms.

*NOTE: In a 96-hour acute definitive test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule 62-302.500 (1) (a) 4, F.A.C.). Mortality between 20-50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3) (a), F.A.C.).

See Appendix B for bioassay bench sheets. See Appendix C for results of the last 20 standard reference toxicant (SRT) tests and the bench sheets and statistical analyses of the SRT tests that correspond to these facility tests. See Appendix D for test organism receipts.

Algal Growth Potential
The effluent Algal Growth Potential (AGP) was 150 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) determined that AGP values above 5.0 mg dry weight/L represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen limited. The predicted AGP based on inorganic nitrogen concentrations was 59.1 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

The effluent marine AGP result was 73.4 mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L represent a “problem” threshold for marine receiving waters, implying nutrient enrichment (personal communication, Marshall Faircloth, et. al. FDEP, with Ron Raschke USEPA Region 4 1987).

See Table 1 for AGP results.

Chemistry Results
Total residual chlorine (TRC) was not detected in the effluent in the field. TRC and total ammonia were not detected in the bioassay sample in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.056 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was ≤ 0.02 mg/L.

Bromodichloromethane, bromoform, chloroform, and dibromochlormethane were detected in the effluent at levels that complied with Class III marine water quality criteria and permit limits.

Arsenic and nickel were detected in the effluent at levels that comply with Class III marine water quality criteria (62-302.530, F.A.C.). Aluminum, copper, iron, lead, and zinc were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Cadmium and copper were detected in the field blank. Fecal coliforms were also detected in the effluent at a level that complied with water quality criteria and permit limits.

See Table 2 for results of analytes detected in the effluent, and corresponding limits. See Appendix E for a complete list of chemical analyses performed. See Appendix B for bioassay lab equipment.

Conclusion
The effluent sample collected from the EFD-01 NPDES sampling point for Outfall D-001 for this facility on January 10, 2011, was not acutely toxic to either test species during the 96-hour test period. The effluent AGP result was greater than the "problem” threshold for fresh and marine receiving waters suggesting that nutrient enrichment may be an issue. Effluent water quality samples collected on January 10, 2011, did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited
Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.

Maloney, T. E., W. E. Miller, and D. T. Specht. 1974. The Marine Algal Assay Procedure: Bottle Test. National Environmental Research Center Office of Research and Development. U. S. EPA, Corvallis, Oregon. 43 p.

Table 1a. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the City of Clearwater Marshall Street Advanced Wastewater Treatment Facility (AWWTF) on January 10, 2011.

City of Clearwater Marshall Street AWWTF NPDES #FL0021857					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
EFD-01	150.0 *	59.1 ± 11.8	87.4 ± 17.5	6.8	9.6

*- Analyte was detected in both sample and method blank. Sample result was > 10X the blank result.

Table 1b. Measured algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus for samples collected from the City of Clearwater Marshall Street Advanced Wastewater Treatment Facility (AWWTF) on January 10, 2011.

City of Clearwater Marshall Street AWWTF NPDES #FL0021857			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
EFD-01	73.4 *	6.8	9.6

* - sample salinity adjusted to 7ppt

Table 2. Effluent limits, Class III Criteria for predominantly marine waters and chemical data for samples collected from the City of Clearwater Marshall Street Advanced Wastewater Treatment Facility (AWWTF) on January 10, 2011.

City of Clearwater Marshall Street AWWTF NPDES # FL0021857	Class III Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
Bromodichloromethane	≤ 22 a	≤ 24 a	12	
Bromoform	≤ 360 a	-	9.2	
Chloroform	≤ 470.8 a	-	5	
Dibromochloromethane	≤ 34 a	≤ 46 a	23	
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1500	-	120	I
Arsenic	≤ 50	-	1.32	
Cadmium	≤ 8.8	-	0.03	UF
Calcium (mg/L)	-	-	67.6	
Chromium-III	-	-	0.3	U
Copper	≤ 3.7	≤ 3.7 s	0.95	IF
Iron	≤ 300	-	50	I
Lead	≤ 8.5	-	0.48	I
Magnesium (mg/L)	-	-	19.2	
Nickel	≤ 8.3	-	1.49	
Selenium	≤ 71	-	0.2	U
Silver	≤ 2.3	-	0.025	U
Zinc	≤ 86	-	16	I
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.23	
Total Phosphorus	-	≤ 2.0 s	0.24	A
Total Ammonia	-	-	0.056	
Un-ionized Ammonia	-	-	≤ 0.02	c
Nitrate and Nitrite	-	-	1.5	
Total Kjeldahl Nitrogen	-	-	0.8	
Organic Nitrogen	-	-	0.744	c
Total Nitrogen	-	≤ 6.0 s	2.3	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 5.0 s	10.2	
pH (SU)	6.5 - 8.5	6.5 - 8.5 s	7.8	
Conductivity (µmhos/cm)	-	-	1473	
Temperature (°C)	-	-	21.5	
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01 s	≤ 0.03	£Q
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55	U
Phaeophytin (µg/L)	-	-	0.4	U
Total Suspended Solids (mg/L)	-	≤ 10.0 s	4	U
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 s	1.1	I
Flow (MGD)	-	10.0 a	3.7	*
Hardness (mg $CaCO_3$)	-	-	247.86	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	≤ 25 s	11	B

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
s - Single sample
A - Value reported is the mean of two or more determinations
F - Analyte was detected in both sample and field blank
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U - Material analyzed for but not detected; value reported is the method detection limit
* - Measured from 11/09 -10/10
£ - Measured in Central labs and entered into Tox sheets
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
¥ - Fecal coliform analysis performed by Advanced Environmental Lab, Tampa

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-01-10-21
FYI for City of Clearwater Marshall Street AWWTF

Requester: Cari Butler
Field Report Prepared By:

Customer: SW-DIST
Project ID: FYI3
PMAS: 1143

Collected By: J COHEN P WENNER
Send Final Report To: Michele Duggan

Sampling Agency: FDEP SWD

Lab ID *	Location	Barcode	Collection (begin)	Collection (end)	Bottle Group(s)**
	EFB-01	38149	☐ Comp ☑ Grab Date 1/10/11 Time 1100 Eastern Central	Date Time Eastern Central	A
	Field ID		Tot Res Chlorine (mg/L): 0.00	Diss Oxygen (mg/L): 10.19 J	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc): FRESH	Temp (C): 21.48	pH: 7.82	Sample Depth ☑ m 0.2 ☐ ft	0.75 / 1473 ☑ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	NPDES Number
	Latitude 27°58'57" ☐ dd ☑ dms	Longitude 82°47'15.87 ☐ dd ☑ dms	Comments: J* FAILED CALIBRATION		

Lab ID *	Location	Barcode	Collection (begin)	Collection (end)	Bottle Group(s)**
	EFB-01	38150	☐ Comp ☑ Grab Date 1/10/11 Time 1050 Eastern Central	Date Time Eastern Central	K AC
	Field ID		Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments:		

Lab ID *	Location	Barcode	Collection (begin)	Collection (end)	Bottle Group(s)**
	COMPOSITE BLANK	38155	☑ Comp ☐ Grab Date 1/10/11 Time 1020 Eastern Central	Date 1/10/11 Time 1020 Eastern Central	R
	Field ID		Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc): LAB DI WATER	Temp (C):	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments:		

Lab ID *	Location	Barcode	Collection (begin)	Collection (end)	Bottle Group(s)**
	GRAB BLANK	38151	☐ Comp ☑ Grab Date 1/10/11 Time 1020 Eastern Central	Date Time Eastern Central	B
	Field ID		Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc): LAB DI WATER	Temp (C):	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments: 2 Bottles Rec'd: 1 Tox by JD 9:44 1.11.11		

Relinquished By	Date/Time	Shipping Method	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
	1/10/11 1400	FED EX					DK	1-11-11 / 9:45

* Shaded Areas for Lab use only
** Please see reverse side for Bottle Group information

last revised October 1, 2003

Page 1 of 3

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-01-10-21
FYI for City of Clearwater Marshall Street AWWTF

Requester: Cari Butler
Collected By: Michele Duggan
Sampling Agency: FDEP

Field Report Prepared By:
Send Final Report To: Michele Duggan

Customer: SW-DIST
Project ID: FYI3
PMAS: 1143

Lab ID *	Location			☒ Comp ☐ Grab	Collection (begin) Date / Time / Eastern Central	Collection (end) Date / Time / Eastern Central	Bottle Group(s)**
★	EFD-01 (EFFLUENT)				01/10/11 1050	01/11/11 1030	A
	Field ID 38159			Tot Res Chlorine (mg/L) —	Diss Oxygen (mg/L) —	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) H2O	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number FAC	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			

Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date / Time / Eastern Central	Collection (end) Date / Time / Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			

Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date / Time / Eastern Central	Collection (end) Date / Time / Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			

Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date / Time / Eastern Central	Collection (end) Date / Time / Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			

Relinquished By	Date/Time	Shipping Method	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Michele Duggan	1300	Fed Ex	AG	1-12-11				

* Shaded Areas for Lab use only

** Please see reverse side for Bottle Group information

0910

last revised October 1, 2003

★ Field ID on container "38154"

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-01-10-21
FYI for City of Clearwater Marshall Street AWWTF

Requester: Cari Butler
Field Report Prepared By:

Customer: SW-DIST
Project ID: FYI3
PMAS: 1143

Collected By: P WENNER
Send Final Report To: Michele Duggan
Sampling Agency: FDEP SWD

Lab ID *	Location			Collection (begin)			Collection (end)			Bottle Group(s)**
	EFD-01			☑ Comp ☐ Grab	Date 1/11/11	Time 0800 Eastern Central	Date 1/12/11	Time 0800 Eastern Central		A
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number			
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)		Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number		
	FRESH									
	Latitude ☐ dd ☐ dms	Longitude	☐ dd ☐ dms	Comments						
				7 DAY TOXICITY SAMPLE FOR CLEARWATER MARSHALL ST. WWTF						

38152

Lab ID *	Location			Collection (begin)			Collection (end)			Bottle Group(s)**
				☐ Comp ☐ Grab	Date	Time Eastern Central	Date	Time Eastern Central		
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number			
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number		
	Latitude ☐ dd ☐ dms	Longitude	☐ dd ☐ dms	Comments						

Lab ID *	Location			Collection (begin)			Collection (end)			Bottle Group(s)**
				☐ Comp ☐ Grab	Date	Time Eastern Central	Date	Time Eastern Central		
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number			
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number		
	Latitude ☐ dd ☐ dms	Longitude	☐ dd ☐ dms	Comments						

Lab ID *	Location			Collection (begin)			Collection (end)			Bottle Group(s)**
				☐ Comp ☐ Grab	Date	Time Eastern Central	Date	Time Eastern Central		
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number			
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number		
	Latitude ☐ dd ☐ dms	Longitude	☐ dd ☐ dms	Comments						

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	1/12/2011 1600	FEDEX					JC	1-13-11 9:25

2 Biossays Rec'd in lab by J.D. 9:47 1.13.11

* Shaded Areas for Lab use only

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix B. Bench Sheets

FDEP Biology Laboratory - Chronic Definitive Bench Sheet
Ceriodaphnia dubia

Facility: City of Clearwater
Address: 1605 Harbor Drive, Clearwater, FL 33755
County: Pinellas
NPDES Permit #: FL 0021857
Contact/District: Pete Wenner / Southwest

LIMS entry: 2-10-11 MF verified: BA 2.11.11

Diluent/ Batch: 20% DMW / 01.10.11 Test Days Used: 0-5
20% DMW /_____ Test Days Used: _____

SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #: ~~1.10.11~~ 1.11.11 KC
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 11.17.10 06.24.10
Chamber size : 30 ml
Sample volume : 20 ml

1323307 BA

Sample Received	LAB Sample #	LIMS JOB #	LIMS SAMPLE #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2011-01-11-~~14~~ 26	~~1323274~~	01.10.11/1015	01.11.11/0979
Test Day 2	2	TLH-2011-01-13-48	1323952	01.12.11/~~1045~~(A)	01.13.11/0947
Test Day 4	3	TLH-			

Water Quality Parameters	Batch # 01.10.11		NA	NA	NA		Measured By:	Verified by:
	20% DMW	20% DMW	Sample 1	Sample 2	Sample 3	Other:		
Field Total Residual Cl_2 (mg/L):	NA	NA	<0.03	not measured			J. Cohen	KC
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03			JD	KC
Alkalinity (mg/L as $CaCO_3$):	87		163	164			KC	JD
Hardness (mg/L as $CaCO_3$):	83		230	236			KC	JD
Total Ammonia (mg/L as N):	<0.017		<0.017	<0.017			BA	KC
Conductivity (~~µmhos~~) mmhos:	185		1525	1507			JD	KC
Salinity (ppth):								

Test Incubated in: Incubator #: 5

Temperature Shipped ≤ 6° C (all samples) (yes) no
Holding Time ≤ 36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 25 min. 24.1 max. 26.5 mean_____
Room B246 min._____ max._____ mean_____
Test min. 24.4 max. 25.6 mean_____

Investigators' signatures
Bruce Ayvazian
Kara Cox
T. Marshall Faircloth
James Daniels
Liv Miller
REVIEWER

Loaded by:

Test Replicates	Loaded from culture vial
1	C3
2	C8
3	A3
4	B24
5	B12
6	B15
7	A11
8	C27
9	B10
10	B13

Results	
Control % CV:	
Dunnetts PMSD:	
Reproduction NOEC:	
Reproduction LOEC:	
Survival NOEC:	
Survival LOEC:	
ICP_{20}:	
ICP_{25}:	

LC50 = >100%

Comments: Test Terminated on DAY 4 due to Fedex shipping problem MF 1-15-11
changed to acute definitive test. reported MF 2-8-11
SEC NCR #3637
(A) Collection Time = 0800 - KC

Test Page 1 of 6 PAGE 000001 revised 07/15/08 MF

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: City of Clearwater

LIMS Sample #: ~~1323274~~ for lab sample #1
~~1325952~~ 1323307 BA

Start Date: 1.11.11 Time: 12:15

End Date: 01.15.11 Time: 10:00

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	BKC 0
	3	4	3	0	0	0	0	0	0	1	0	8	10	0.8
	(A)	X	4	0	0	0	0	0	1	4	2	12 KC	10	–
	~~4~~ 5 MF	0	1	0	4	X	0	0	0	0	3	8	9	0.8
	6													
	7													
	8													
	Total													

Organisms loaded by: BA		
Day	Counted/ verified by:	Concentrations prepared by:
0	KC	BA
1	KC	KC
2	KC	KC
3	KC	KC
4	KC	KC
5		
6		
7		
8		

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
6.25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	1	4	0	0	0	0	0	1	4	2	12	10	1.2
	4	0	0	2	4	1	2	0	2	0	0	11	10	1.1
	5													
	6													
	7													
	8													
	Total													

Concentration	Mean neonates /adult	% survival
Control		
6.25%		
12.50%		
25%		
50%		
100%		

Test acceptability		
Mean control reproduction 15/female	yes	no
3rd brood in 60% of surviving females	yes	no
Control survival ≥ 80%:	yes	no

Comments: (A) Transcription error KC by MF 1-15-11

000002

*Day 0 is test initiation day
X = Dead (original organism)

Test Page 2 of 6

PAGE

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: City of Clearwater

LIMS Sample # : 1323294 for lab sample #1

1323307 BA

Start Date: 1.11.11 Time: 12.15

End Date: 01.15.11 Time: 1000

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
12.50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	3	0	0	0	0	2	1	3	0	9	10	0.9
	4	0	3	0	3	0	2	0	0	0	X	8	9	0.8
	5													
	6													
	7													
	8													
	Total													

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	0	0	0	0	2	0	2	0	7	10	0.7
	4	3	0	0	0	0	0	0	0	X	4	7	9	0.7
	5													
	6													
	7													
	8													
	Total													

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	2	0	0	0	0	3	0	3	2	13	10	1.3
	4	0	0	3	3	0	4	0	X4	X0	0	14	10	1.4
	5													
	6													
	7													
	8													
	Total													

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
100%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	1	0	0	0	0	1	1	0	0	6	10	0.6
	4	0	0	3	0	0	0	4	0	4	5	16	10	1.6
	5													
	6													
	7													
	8													
	Total													

Comments:

*Day 0 is test initiation day
X = Dead (original organism)

000003

Appendix B. (continued)

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: C.ty of Clearwater SOP TA07_05

LIMS Sample #: 1323274 for lab sample 1

1323307 BA

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample	Control	M	7.9	25.8	8.0	185					
	1	6.25%	M	8.1	25.9	8.0	246					
	1	12.5%	M	8.1	25.9	8.0	355					
	1	25%	M	8.1	25.5	8.1	517					
	1	50%	M	8.1	25.9	8.1	865					
	1	100%	M	8.1	25.9	8.1	1525					
	Measured by:			JD	JD	JD	JD					
	Recorded by:			JD	JD	JD	JD					
Day 1	sample:	Control	M	7.8	24.0	7.7	174	M	KC 8.80	24.0	7.9	186
	1	6.25%	M	7.8	24.0	7.1	260	M	8.1	24.0	8.1	248
	1	12.5%	M	7.9	24.0	6.9	357	M	8.2	24.0	8.3	364
	1	25%	M	7.9	24.0	6.9	527	M	8.2	24.0	8.4	529
	1	50%	M	7.9	24.7	7.2	865	M	8.3	24.0	8.3	876
	1	100%	M	8.0	25.3	7.4	1532	M	8.4	24.0	8.5	1560
	Measured by:			BA	BA	BA	BA		KC	KC	KC	KC
	Recorded by:			BA	BA	BA	BA		KC	KC	KC	KC
Day 2	sample:	Control	M	8.1	24.7	8.8	186	M	8.0	24.0	7.6	217
	2	6.25%	M	8.1	25.4	8.9	275	M	8.1	24.0	7.7	275
	2	12.5%	M	8.2	25.3	8.9	365	M	8.2	24.0	7.7	370
	2	25%	M	8.2	24.9	8.9	532	M	8.2	24.0	7.8	550
	2	50%	M	8.2	24.7	8.9	865	M	8.2	24.0	7.9	879
	2	100%	M	8.2	24.5	8.9	1507	M	8.3	24.0	8.1	1585
	Measured by:			JD	JD	JD	JD		JD	JD	JD	JD
	Recorded by:			JD	JD	JD	JD		JD	JD	JD	JD
Day 3	sample:	Control	M	7.9	24.0	6.6	175	M	8.0	24.0	6.5	195
	2	6.25%	M	8.0	24.0	6.7	262	M	8.0	24.0	6.4	284
	2	12.5%	M	8.0	24.0	6.7	347	M	8.0	24.0	6.6	385
	2	25%	M	8.0	24.1	6.2	512	M	8.0	24.0	6.2	557
	2	50%	M	8.0	24.7	7.0	823	M	BA 8.01	24.0	6.8	917
	2	100%	M	8.0	25.5	6.6	1492	M	BA ~~8.0~~ 8.3	24.0	6.3	1568
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA

Comments:

Replicate M= "Metered" vial, a surrogate vial for parameters

Test Page 4 of 6 PAGE 000004 revised 07/15/08 MF

Appendix B. (continued)

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: City of Clearwater SOP TA07_05

LIMS Sample #: 1323274 for lab sample 1

1323307 BA

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	New Sample: pH (su)	New Sample: Temp (°C)	New Sample: DO (mg/L)	New Sample: Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	Old Sample: pH (su)	Old Sample: Temp (°C)	Old Sample: DO (mg/L)	Old Sample: Conductivity (µmhos/cm) (mmhos/cm)
Day 4	sample:	Control	M					M	7.9	24.1	7.7	185
	3	6.25%	M					M	8.0	24.0	7.6	275
	3	12.5%	M					M	8.0	24.0	7.8	356
	3	25%	M					M	8.0	24.0	8.0	526
	3	50%	M					M	8.0	24.0	8.0	837
	3	100%	M					M	8.2	24.0	8.1	1490
	Measured by:								MF	MF	MF	MF
	Recorded by:								BA	BA	BA	BA
Day 5	sample:	Control	M					M				
	3	6.25%	M					M				
	3	12.5%	M					M				
	3	25%	M					M				
	3	50%	M					M				
	3	100%	M					M				
	Measured by:											
	Recorded by:											
Day 6	sample:	Control	M					M				
	3	6.25%	M					M				
	3	12.5%	M					M				
	3	25%	M					M				
	3	50%	M					M				
	3	100%	M					M				
	Measured by:											
	Recorded by:											
Day 7	sample:	Control	M					M				
	3	6.25%	M					M				
	3	12.5%	M					M				
	3	25%	M					M				
	3	50%	M					M				
	3	100%	M					M				
	Measured by:											
	Recorded by:											

not received

Comments:

Replicate M= "Metered" vial, a surrogate vial for parameters

Test Page 5 of 6

PAGE 5

revised 07/15/08 MF

Appendix B. (continued)

Test ID: City of Clearwater Dates: 1-11 to 1-15, 2011

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	"
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 (#5) SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #5
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Entered By: JD 1:18. JD

V 1.1 9/21/10 MF/jd

Pg 6

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: City of Clearwater
Address: 1609 Harbor Drive, Clearwater, FL 33755
County: Pinellas
NPDES Permit #: FL 0021857
Contact/District: Pete Wenner/Southwest

Test Species (circle one)
(P. promelas) SOP#: TA07_09 EPA-821-R-02-013 Method 1000.0
M. beryllina SOP#: TA07_14 EPA-821-R-02-014 Method 1006.0

Start Date: 1.11.11 Time: 1315
End Date: 01.15.11 Time: 1000

Diluent/ Batch: MHW / 1011 Test Days Used: 0-4
MHW / _____ Test Days Used: _____
ASW / _____ Test Days Used: _____
ASW / _____ Test Days Used: _____

Organism Batch # : 1.11.11
Feeding Prior to Test and Daily
Artemia Lot # : 23613
Chamber size : 1000 ml
Test volume : 350 ml

Organism age : ~~24 hrs~~ ~~days~~

Artemia Batch #		Day 3	8-11
Day 0	5-11	Day 4	9-11
Day 1	6-11	Day 5	~~10-11~~ KC
Day 2	7-11	Day 6	~~11-11~~ KC

LIMS:	Date	Initials
Entry:	2-10-11	MF
Verification:	2.11.11	BA

BA 1323307 BA

Sample Received	Lab Sample #	LIMS Job # 26	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH- 2011-01-11~~54~~	~~1323274~~	01.10.11/1015	01.11.11/0949
Test Day 2	2	TLH- 2011-01-13-48	1323952	01.12.11/1015	01.13.11/0947
Test Day 4	3	TLH-			

Water Quality Parameters	Batch # 1.1011 [X] MHW [ ] ASW	[ ] MHW [ ] ASW	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured by:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	<0.03	[illegible]			[illegible]	KC/MF
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03			JD	KC
Alkalinity (mg/L as $CaCO_3$):	78		163	164			KC	MA
Hardness (mg/L as $CaCO_3$):	88		230	236			KC	MF
Total Ammonia (mg/L as N):	<0.017		<0.017	<0.017			BA	KC
Conductivity: µmhos mmhos:	328		1545	1564			JD	KC
Salinity (ppth):	—		—	—			—	—

Temperature Shipped ≤6° C (all samples) (yes) no
Holding Time ≤36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark

Temperature Range °C: (if used) 26.1 JD
Incubator # 2 min ~~25.1~~ max. 27.5 mean____
Water bath # ____ min.____ max.____ mean____
Room B246 min. 24 max. 25.6 mean____

Test Incubated in: [X] Incubator #: 2
[ ] Waterbath #:____

Investigators' signatures
Jason Daniels
Kara Cole
Marshall Faircloth
Bruce Acuña

REVIEWER Peg Mullen

Statistics	
Control %cv:	
Dunnetts PMSD:	
Survival NOEC:	
Survival LOEC:	
Growth NOEC:	
Growth LOEC:	

Comments: Test Terminated on Day 4 because 2nd sample was not received MF 1-15-11
reported as Acute definitive test
LC50 >100% MF 1-18-11
See NCR # 3637

revised 7/15/08 MF

Appendix B. (continued)

Chronic Bioassay Survival Benchsheet

Facility: C.ty of Clearwater

LIMS Sample Number: ~~1323274~~ Sample #1
(for Lab Sample # 1) ~~1323452~~ Sample #2 1323307 (AD test)

Organism: *P. promelas* *M.beryllina* BA (circle one)

Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
P. promelas SOP TA07_09 *M. beryllina* SOP TA07_14

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10			
	B	10	10	10	10	10			
	C	10	10	10	10	10			
	D	10	10	10	9 ID	9			
Sample 6.25 %	A	10	10	10	10	10			
	B	10	10	10	10	10			
	C	10	10	10	10	10			
	D	10	10	10	10	10			
Sample 12.5 %	A	10	10	10	10	10			
	B	10	10	10	10	10			
	C	10	10	10	10	10			
	D	10	10	10	10	10			
Sample 25 %	A	10	10	10	10	10			
	B	10	10	10	10	10			
	C	10	10	10	10	10			
	D	10	10	10	10	10			
Sample 50 %	A	10	10	10	10	10			
	B	10	10	10	9 ID	9			
	C	10	10	10	10	10			
	D	10	10	10	10	10			
Sample 100 %	A	10	10	10	10	10			
	B	10	10	10	10	10			
	C	10	10	10	10	10			
	D	10	10	10	10	10			
Sample %	A	10	~~tpic~~						
	B	10	~~tpic~~						
	C	10	tpic						
	D	10							
Loaded by: JD	Checked by:		JD	JD	JD	JD			
Verified by: BA									

Comments:

Page 16

Appendix B. (continued)

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 1

Sample Source: City of Cleveland Start Date: 1.11.11 End Date: 1315

LIMS Sample #: ~~1323274~~ 1323307 BA (for Lab sample #1) Start Time: 01.15.11 End Time: 1000

conc = concentration rep = replicate circle umhos or mmhos

Test Day ↓			New Sample							Old Sample						
		Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth		Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	sample:	Control	A	8.1	25.9	8.0	328								
	1	6.25	A	8.1	25.9	7.9	404								
	1	12.5	A	8.1	25.9	8.0	463								
	1	25	A	8.1	25.9	8.1	645								
	1	50	A	8.2	25.8	8.1	928								
	1	100%	A	8.1	25.9	8.1	1545								
	1		A												
	Measured by:			JD	JD	JD	JD								
	Recorded by:			JD	JD	JD	JD								
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	7.7	25.8	8.0	329			B	7.9	24.6	8.5	329	
	1	6.25	B	7.8	25.8	8.0	397			B	8.0	24.3	8.2	398	
	1	12.5	B	7.9	25.9	7.6	476			B	8.0	24.3	8.2	463	
	1	25	B	8.0	25.9	8.2	628			B	8.1	24.4	8.0	628	
	1	50	B	8.0	25.9	8.4	916			B	8.2	24.7	8.1	913	
	1	100%	B	8.1	25.9	8.9	1529			B	8.3	24.2	8.3	1492	
	1		B							B					
	Measured by:			JD	JD	JD	JD				KC	JD	KC	KC	
	Recorded by:			JD	JD	JD	JD				KC	JD	KC	KC	
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	7.8	24.0	7.6	326			C	7.4	25.0	7.1	335	
	2	6.25	C	7.9	24.0	7.5	382			C	7.5	25.0	7.2	407	
	2	12.5	C	7.8	24.0	7.8	475			C	7.6	24.7	6.7	489	
	2	25	C	7.9	24.0	8.0	622			C	7.7	24.6	6.9	644	
	2	50	C	8.0	24.0	8.1	931			C	7.9	24.8	7.1	944	
	2	100%	C	8.0	24.0	8.2	1564			C	8.1	24.5	7.2	1573	
	2		C							C					
	Measured by:			JD	JD	JD	JD				KC	KC	KC	KC	
	Recorded by:			JD	JD	JD	JD				KC	KC	KC	KC	
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	7.4	24.5	6.5	334			D	7.6	24.0	7.5	319	
	2	6.25	D	7.4	25.4	6.6	388			D	7.6	24.0	7.5	390	
	2	12.5	D	7.4	24.9	6.4	477			D	7.7	24.0	7.4	466	
	2	25	D	7.4	25.0	5.5	628			D	7.7	24.0	7.5	611	
	2	50	D	7.4	24.6	5.7	940			D	7.8	24.0	7.6	392	
	2	100%	D	7.8	24.6	5.9	1551			D	8.0	24.5	8.9	1504	
	2		D							D					
	Measured by:			JD	JD	JD	JD				JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD				JD	JD	JD	JD	

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional

Page 17

Appendix B. (continued)

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 2

Sample Source: City of Clearwater Start Date: 1.11.11 End Date: 1315

LIMS Sample #: 1323274 / 1323307 (for Lab sample #1) Start Time: 01.15.11 End Time: 1000

conc = concentration rep = replicate

Test Day ↓		Conc.	New Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos/mmhos)	Salinity ppth	Old Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos/mmhos)	Salinity ppth
Day 4	sample:	Control	A						A	7.5	25.5	6.7	350	
	3	6.25	A						A	7.5	25.1	6.8	400	
	3	12.5	A						A	7.6	24.7	6.9	488	
	3	25	A						A	7.5	24.8	5.8	622	
	3	50	A						A	7.6	24.7	6.1	906	
	3	100	A						A	7.9	25.0	6.3	1520	
	3		A						A					
	Measured by:									JD	JD	JD	JD	
	Recorded by:									JD	JD	JD	JD	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	sample:	Control	B						B					
	3		B						B					
	3		B						B					
	3		B						B					
	3		B						B					
	3		B						B					
	3		B						B					
	Measured by:													
	Recorded by:													
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	sample:	Control	C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	Measured by:													
	Recorded by:													
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	sample:	Control							D					
	3								D					
	3								D					
	3								D					
	3								D					
	3								D					
	3								D					
	Measured by:													
	Recorded by:													

Sample NOT Received MF 3/14/11

Comments: Third Sample not received MF 3/14/11

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

Page 18

(Pages 19-20 not used)

Appendix B. (continued)

Test ID: City of Plainwater Dates: 1-11-11 — 1-15-11

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 (#5) (SN61990624)	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #5
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓ n/a
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓ n/a

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

1/18/2 J.D

Page 21

V 1.1 9/21/10 MF/jd

Appendix C. SRT Bench Sheets and Statistical Analysis

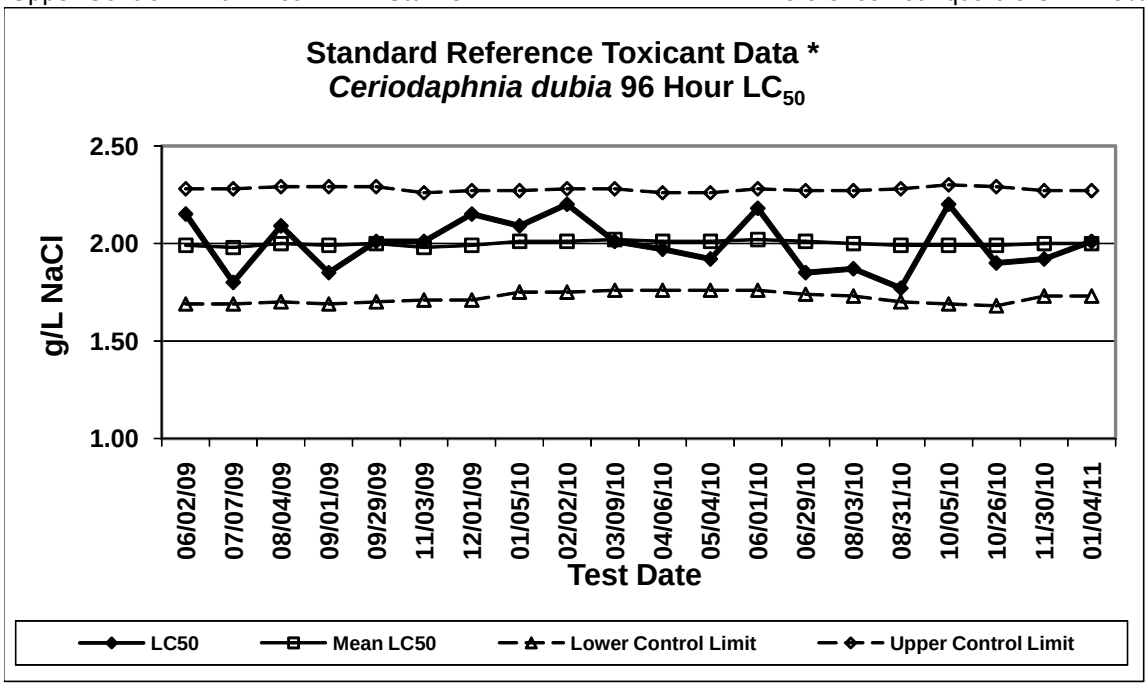
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
06/02/09	2.15	1.99	0.15	1.69	2.28
07/07/09	1.80	1.98	0.15	1.69	2.28
08/04/09	2.09	2.00	0.15	1.70	2.29
09/01/09	1.85	1.99	0.15	1.69	2.29
09/29/09	2.01	2.00	0.15	1.70	2.29
11/03/09	2.01	1.98	0.14	1.71	2.26
12/01/09	2.15	1.99	0.14	1.71	2.27
01/05/10	2.09	2.01	0.13	1.75	2.27
02/02/10	2.20	2.01	0.13	1.75	2.28
03/09/10	2.01	2.02	0.13	1.76	2.28
04/06/10	1.97	2.01	0.12	1.76	2.26
05/04/10	1.92	2.01	0.12	1.76	2.26
06/01/10	2.18	2.02	0.13	1.76	2.28
06/29/10	1.85	2.01	0.13	1.74	2.27
08/03/10	1.87	2.00	0.14	1.73	2.27
08/31/10	1.77	1.99	0.14	1.70	2.28
10/05/10	2.20	1.99	0.15	1.69	2.30
10/26/10	1.90	1.99	0.15	1.68	2.29
11/30/10	1.92	2.00	0.14	1.73	2.27
01/04/11	2.01	2.00	0.14	1.73	2.27

Lower Control Limit = mean - 2 * Std Dev
Upper Control Limit = mean + 2 * Std Dev

CV = 6.82
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

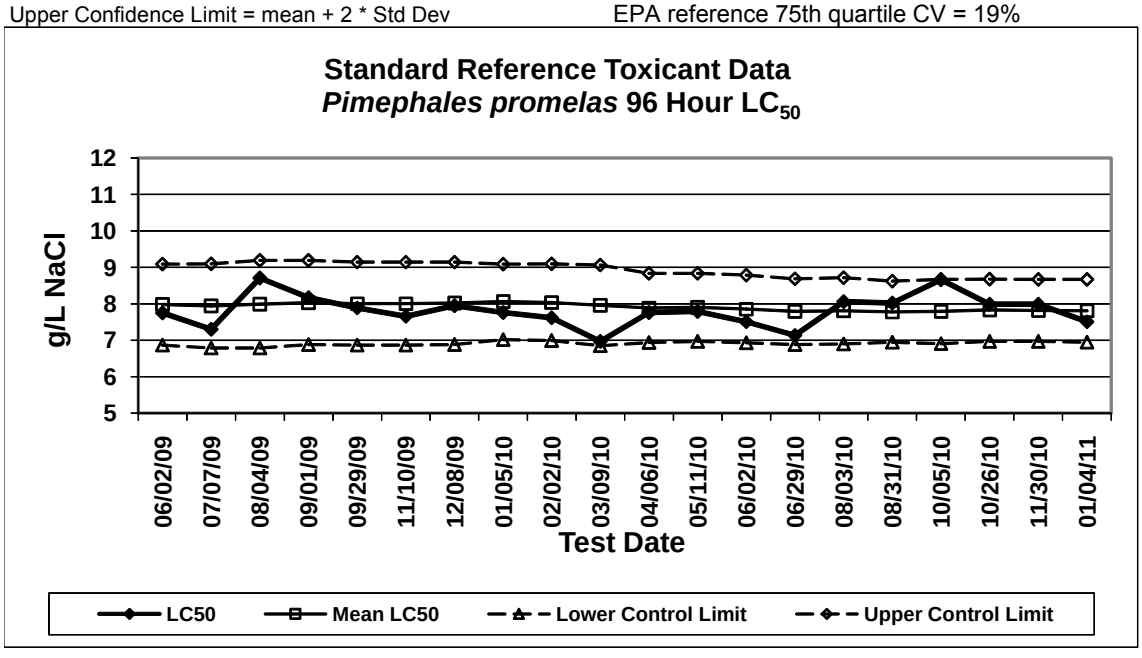
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Pimephales promelas (fathead minnow) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
06/02/09	7.75	7.98	0.56	6.87	9.09
07/07/09	7.30	7.94	0.58	6.79	9.10
08/04/09	8.71	7.99	0.60	6.79	9.19
09/01/09	8.17	8.03	0.58	6.88	9.19
09/29/09	7.89	8.01	0.57	6.87	9.15
11/10/09	7.66	8.01	0.57	6.87	9.15
12/08/09	7.95	8.02	0.57	6.88	9.15
01/05/10	7.76	8.06	0.52	7.02	9.09
02/02/10	7.62	8.04	0.53	6.99	9.10
03/09/10	6.97	7.96	0.56	6.85	9.07
04/06/10	7.76	7.89	0.48	6.94	8.84
05/11/10	7.79	7.9	0.47	6.97	8.84
06/02/10	7.51	7.86	0.46	6.93	8.79
06/29/10	7.14	7.79	0.45	6.88	8.69
08/03/10	8.06	7.81	0.45	6.9	8.72
08/31/10	8.02	7.78	0.42	6.95	8.62
10/05/10	8.66	7.79	0.44	6.91	8.67
10/26/10	7.99	7.83	0.43	6.97	8.68
11/30/10	7.99	7.82	0.42	6.97	8.67
01/04/11	7.51	7.81	0.43	6.95	8.67

Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

CV = 5.51
EPA reference 75th quartile CV = 19%



Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
- ☐ *Americamysis bahia* — Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* — Method 2006.0 TA07.04
- ☐ *Hyalella azteca* — Method 100.1 EPA-600-R-99-064
- ☒ *Ceriodaphnia dubia* — Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* — Method 2000.0 TA07.02
- ☐ *Pimephales promelas* — Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☑ renewal

Test Page 1 of 2

Diluent/ Batch #: 20% DMW/12.13.10 **Organism Batch:** 1-4-11 **Test Beginning:** Date: 1-4-11 Time: 0930

Toxicant/ Batch#: ~~NaCl 12.03.10~~ KC DI. 03.11 Age: 24 hrs **Test Ending:** Date: 1-8-11 Time: 1100

MF- eleven, hundred hours

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AG-R
Alkalinity (mg/L as $CaCO_3$):	80	TA06_08	KC
Hardness (mg/L as $CaCO_3$):	80	TA06_09	KC
Total Ammonia (mg/L as N):	<0.07	TA06_17	MF
Conductivity: ~~µmhos~~ mmhos	781	TA06_25	KC
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	11-17-10
☑ *P. subcapitata*	6-24-10
☐ Artemia Lot #	

Artemia Batch:

0 hr:	
24 hr:	
48 hr:	
72 hr:	

Chamber size: 30 mL

Test volume: 20 mL per replicate

Concentrations prepared by: JD/DP/MF Temperature Range °C:(if used)

Test Incubated in: Incubator # 2 Waterbath # ___ Incubator # 2 min. 26.1 max. 27.1 mean ___

Light Intensity: 50-100 Ft. candles Waterbath # ___ min. ___ max. ___ mean ___

Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 22.8 max. 23.9 mean ___

Feeding: √as needed

- ☑ Before test
- ☐ 0 hr
- ☐ 24 hr
- ☒ 48 hr
- ☐ 72 hr

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

Concentration µg/L	mg/L	g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control			A	A	5	5	5	5	5	5
			B	B	5	5	5	5	5	5
			C	C	5	5	5	5	5	5
			D	D	5	5	5	5	5	5
1.5			A	A	5	5	5	5	5	4 1D
			B	B	5	5	5	5	5	5
			C	C	5	5	5	5	5	5
			D	D	5	5	5	MF 5	5	5
2.0			A	A	5	4 1D	3 1D	3	3	3
			B	B	5	5	4 1D	4	2 2D	2
			C	C	5	3 2D	3	3	3	2 1D
			D	D	5	5	5	5	5	5
2.5			A	A	5	2 3D	0 2D	—	—	—
			B	B	5	2 3D	0 2D	—	—	—
			C	C	5	3 2D	1 2D	1	1	0 1D
			D	D	5	3 2D	3	3	1 2D	0 1D
3.0			A	A	5	1 4D	0 1D	—	—	—
			B	B	5	2 3D	0 2D	—	—	—
			C	C	5	0 5D	—	—	—	—
			D	D	5	3 2D	0 3D	—	—	—
4.0			A	A	5	0 5D	—	—	—	—
			B	B	5	0 5D	—	—	—	—
			C	C	5	0 5D	—	—	—	—
			D	D	5	0 5D	—	—	—	—

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Organisms loaded by: MF Checked by: KC JS MF MF MF

Loading Verified by: KC AR = after renewal

m = missing d = dead BR = before renewal hr = hour

Comments:

Investigators' Signatures

Marybeth Fair-death

Jaime Powell

Amelia Parker

Kara Cox

Jason David Bruce Neale

Reviewer: Liz Miller

Method: TSK

Statistics: LC50

	95% confidence intervals Lower	Upper
48 hour: 2.18	2.05	2.32
96 hour: 2.01	1.89	2.15

Page 27

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☒ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 1-4-11 Time: 0930
Test Ending: Date: 1-8-11 Time: 1100

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (g/L)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)
Control	M	0 hr	8.0	25.3	8.6	0.181	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.0	24.4	8.1	0.192	–
	M	48 hr AR	7.9	24.7	8.2	0.176	–
	–	72 hr	–	–	–	–	–
	A	96 hr	8.0	24.3	8.1	0.197	–
1.5	M	0 hr	8.0	25.9	8.3	3.08	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.0	24.4	8.0	3.15	–
	M	48 hr AR	8.0	24.8	8.0	3.07	–
	–	72 hr	–	–	–	–	–
	A	96 hr	8.0	24.4	7.8	3.14	–
2.0	M	0 hr	8.0	25.5	8.3	4.04	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.0	24.5	8.0	4.21	–
	M	48 hr AR	8.0	24.8	8.0	3.90	–
	–	72 hr	–	–	–	–	–
	A	96 hr	8.0	24.4	7.8	4.10	–
2.5	M	0 hr	8.0	24.9	8.3	4.93	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.1	24.6	7.9	5.03	–
	M	48 hr AR	8.0	24.8	8.0	4.87	–
	–	72 hr	–	–	–	–	–
	C	96 hr	8.0	24.5	7.7	5.01	–
3.0	M	0 hr	8.0	24.3	8.2	5.73	–
	~~M~~ (A) JD	24 hr	–	24.0	–	–	–
	A	48 hr BR	8.0	24.5		5.94	–
	M	48 hr AR	–	~~24.5~~ MF	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–
4.0	M	0 hr	8.0	25.2	8.8	7.65	–
	M	24 hr	7.6	24.5	8.3	7.54	–
	–	48 hr BR	–	–	–	–	–
	–	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–

Investigators Signatures
Michelle Feinberth
Diane Powell
Amelia Rankin
Tara Cox
James Barsi Bruce Neville
Reviewed By: Liz Milleson

Measured by:
0 hr: MF DP MF
24 hr: JD
48 hr BR: MF
48 hr AR: MF
72 hr: –
96 hr: MF

Measure/record salinity for marine tests

Comments: (A) all died in C. Rep. MF 1-6-11
0-96 hr = EC#5

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
☐ *Americamysis bahia* Method 2007.0 TA07.03 ☐ *Menidia Beryllina* Method 2006.0 TA07.04 ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01 ☐ *Cyprinella leedsi* Method 2000.0 TA07.02 ☒ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☑ renewal
Test Page 1 of 2

Diluent/ Batch #: MHW 101.03.11 **Organism Batch:** 1.4.11 **Test Beginning:** Date: 01.04.11 Time: 1310
Toxicant/ Batch#: NaCl 101.03.11 Age: 3 days **Test Ending:** Date: 1-8-11 Time: 1140

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	0.03	TA06_22	AGR
Alkalinity (mg/L as $CaCO_3$):	76	TA06_08	KC
Hardness (mg.L as $CaCO_3$):	89	TA06_09	KC
Total Ammonia (mg/L as N):	0.017	TA06_17	MF
Conductivity (µmhos) mmhos	333	TA06_25	KC
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☒ Artemia Lot # 23613	

Artemia Batch:
0 hr: 1-11
24 hr: KC
48 hr: 3-11
72 hr:

Chamber size: 1000 mL
Test volume: 400 mL per replicate

Concentrations prepared by: JD/KC
Test Incubated in: Incubator # 2 Waterbath # ____ Temperature Range °C:(if used) Incubator # 2 min. 26.1 max. 27.1 mean____
Light Intensity: 50-100 Ft. candles Waterbath # ___ min.____ max.____ mean____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 22.8 max. 23.4 mean____

Feeding: √as needed

☒	Before test
☐	0 hr
☐	24 hr
☒	48 hr
☐	72 hr

all species 2 hrs prior to test
mysids daily
all species except *H. azteca* 2 hr prior to renewal
H. azteca 0 hr and 48 hr

Concentration µg/L mg/L (%)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A1	10	10	10	10	10	10
	B	A2	10	10	10	10	10	10
6	A	A3	10	10	10	10	9D	9
	B	A4	10	10	10	10	10	10
7	A	A5	10	10	10	10	8D	7D
	B	A6	10	10	10	10	9D	9
8	A	A7	10	10	5SD	5	4D	4
	B	A8	10	5D	6SD	6	1SD	1
9	A	A9	10	6MD	0GD	—	—	—
	B	A10	10	5SD	1HD	1	1	1
10	A	A11	10	0MD	-	-	-	-
	B	A12	10	0MD	-	-	-	-
Organisms loaded by: JD Checked by:			~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	MF

Loading Verified by: KC AR = after renewal
m = missing d = dead BR = before renewal hr = hour

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Comments:

Investigators' Signatures
Marshall Faircloth
James Daniels
Kara Cook
Bryan Akers
Jennifer Parker
Reviewer: Liz Miller

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.06	7.83	8.31
96 hour: 7.51	7.21	7.83

Page 31

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☒ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 01-04-11 KC Time: 1310
Test Ending: Date: 1-8-11 Time: 1140

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control	A	0 hr	8.2	25.8	7.8	0.333	–
	B	24 hr	8.0	24.8	7.6	0.393	–
	A	48 hr BR	7.9	25.1	7.7	0.332	–
	A	48 hr AR	7.9	24.0	8.6	0.344	–
	B	72 hr	7.7	25.0	7.6	0.336	–
	A	96 hr	8.1	25.7	7.3	0.346	–
6	A	0 hr	8.0	25.9	KC ~~8.0~~ 7.9	11.4	–
	B	24 hr	7.9	25.5	7.4	11.0	–
	A	48 hr BR	7.8	25.4	7.2	11.2	–
	A	48 hr AR	7.9	24.0	8.4	10.9	–
	B	72 hr	7.8	24.9	7.3	11.1	–
	A	96 hr	7.9	25.5	7.2	11.5	–
7	A	0 hr	8.0	25.7	KC ~~7.9~~ 7.7	13.1	–
	B	24 hr	7.8	24.6	7.2	KC ~~12.~~ 12.6	–
	A	48 hr BR	7.8	25.6	7.3	12.9	–
	A	48 hr AR	7.8	24.1	8.4	13.0	–
	B	72 hr	7.8	24.9	7.3	13.2	–
	A	96 hr	7.9	25.9	6.9	13.5	–
8	A	0 hr	8.0	25.7	KC ~~8.0~~ 7.6	14.7	–
	B	24 hr	7.8	24.5	KC ~~7.1~~ 7.4	14.2	–
	A	48 hr BR	7.8	25.2	7.0	14.3	–
	A	48 hr AR	7.8	24.2	8.3	14.3	–
	B	72 hr	7.7	24.9	7.1	14.6	–
	A	96 hr	7.9	25.6	6.9	14.9	–
9	A	0 hr	8.0	25.6	KC ~~8.0~~ 7.5	16.5	–
	B	24 hr	7.8	24.6	KC ~~7.2~~ 7.1	15.9	–
	A	48 hr BR	7.8	25.2	7.1	16.0	–
	B	48 hr AR	7.9	24.4	8.3	16.0	–
	B	72 hr	7.7	24.9	7.0	16.4	–
	B	96 hr	7.9	25.9	6.8	16.6	–
10	A	0 hr	8.0	25.7	KC ~~8.1~~ 7.4	18.4	–
	B	24 hr	7.8	24.6	7.1	17.5	–
–	–	48 hr BR	~~7.8~~ KC	–	–	–	–
–	–	48 hr AR	–	–	–	–	–
–	–	72 hr	–	–	–	–	–
–	–	96 hr	–	–	–	–	–

Investigators Signatures
Maykell Faircloth
James Danos
Kelia Cox
Bryce Nicole
Shelia Rankin
Reviewed By: Liz Miller

Measured by:
0 hr: KC
24 hr: KC
48 hr BR: KC
48 hr AR: KC
72 hr: KC
96 hr: MF

Measure/record salinity for marine tests

Comments: thermometer used 0-96 hr - ECHS

Page 32

Appendix C. (continued)

***Ceriodaphnia dubia* Acute Standard Reference Toxicant Test**

DATE: 1-4-11 DURATION: 96 h TOXICANT: NaCl
SPECIES: ***Ceriodaphnia dubia***

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	1
2.00	20	8
2.50	20	20
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.01
95% LOWER CONFIDENCE: 1.89
95% UPPER CONFIDENCE: 2.15

***Pimephales promelas* Acute Standard Reference Toxicant Test**

DATE: 1-4-11 DURATION: 96 h TOXICANT: NaCl
SPECIES: ***Pimephales promelas***

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
6.00	20	1
7.00	20	4
8.00	20	15
9.00	20	19
10.00	20	20

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: LC50: 7.51
95% LOWER CONFIDENCE: 7.21
95% UPPER CONFIDENCE: 7.83

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 1/3/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150 ac	4 days	MS 101230	25	8.0	20
Menidia beryllina	150 ac	13 days	SS 101221	25	8.0	20
						Hardness mg/L
Cyprinella leedsi	150 ac	13 days	CL 101221	25	7.8	80
Pimephales promelas	150 ac	7 days	FM 101227	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

Appendix D. (continued)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 1/10/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	100 ac	16 days	CL 101231	25	7.8	80
Pimephales promelas	~~600~~ 550	<24 HRS	FM 110109-1600	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

Appendix E. Chemical Analyses performed on the effluent from the City of Clearwater Marshall Street Advanced Wastewater Treatment Plant Outfall D-001, sampled on January 10, 2011.

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
1/10/2011 11:00	Effluent	AGP/LN	Algal Growth Potential	150	V	mg DryWt/L	0.3	0.9
1/10/2011 11:00	Effluent	AGP/LN	Algal Growth Potential-Salinity Adjusted	73.4		mg DryWt/L	3	3
1/10/2011 11:00	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
1/10/2011 11:00	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
1/10/2011 11:00	Effluent	Overflow	Fecal Coliforms-Membrane Filter	11	B	cfu/100 mL	1	1
1/10/2011 11:00	Effluent	Nutrients	O-Phosphate-P	0.23		mg P/L	0.004	0.01
1/10/2011 11:00	Effluent	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
1/10/2011 11:00	Effluent	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
1/10/2011 11:00	Effluent	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
1/10/2011 11:00	Effluent	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
1/10/2011 11:00	Effluent	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
1/10/2011 11:00	Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
1/10/2011 11:00	Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
1/10/2011 11:00	Effluent	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
1/10/2011 11:00	Effluent	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
1/10/2011 11:00	Effluent	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
1/10/2011 11:00	Effluent	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
1/10/2011 11:00	Effluent	Pesticides	Alachlor	0.6	UJ	ug/L	0.6	2.4
1/10/2011 11:00	Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
1/10/2011 11:00	Effluent	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
1/10/2011 11:00	Effluent	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
1/10/2011 11:00	Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
1/10/2011 11:00	Effluent	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
1/10/2011 11:00	Effluent	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
1/10/2011 11:00	Effluent	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
1/10/2011 11:00	Effluent	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
1/10/2011 11:00	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
1/10/2011 11:00	Effluent	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
1/10/2011 11:00	Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
1/10/2011 11:00	Effluent	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
1/10/2011 11:00	Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
1/10/2011 11:00	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
1/10/2011 11:00	Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
1/10/2011 11:00	Effluent	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
1/10/2011 11:00	Effluent	Pesticides	Parathion Ethyl	0.15	UJ	ug/L	0.15	0.6
1/10/2011 11:00	Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
1/10/2011 11:00	Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
1/10/2011 11:00	Effluent	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
1/10/2011 11:00	Effluent	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
1/10/2011 11:00	Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Pesticides	Metolachlor	0.5	UJ	ug/L	0.5	2
1/10/2011 11:00	Effluent	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
1/10/2011 11:00	Effluent	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
1/10/2011 11:00	Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Dimethyl phthalate	9.5	U	ug/L	9.5	38
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	11
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Dibromochloromethane	23		ug/L	0.2	1
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2-Chlorophenol	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95	U	ug/L	0.95	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
1/10/2011 11:00	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.6
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	11
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	11
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	11
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	11
1/10/2011 11:00	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Benzidine	95	UJ	ug/L	95	380
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.6
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Chloroform	5		ug/L	0.2	1
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	9.5	U	ug/L	9.5	38
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2-Nitrophenol	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	UJ	ug/L	38	150
1/10/2011 11:00	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.6
1/10/2011 11:00	Effluent	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Bromodichloromethane	12		ug/L	0.2	1
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Bromoform	9.2		ug/L	0.5	2
1/10/2011 11:00	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Diethyl phthalate	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.76

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
1/10/2011 11:00	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	11
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.76
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	11
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Isophorone	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.6
1/10/2011 11:00	Effluent	Priority Organic Pollutants	Phenol	0.95	U	ug/L	0.95	3.8
1/10/2011 11:00	Effluent	Field Parameter	Dissolved Oxygen	10.18		mg/L		
1/10/2011 11:00	Effluent	Field Parameter	Sample Depth	0.2		m		
1/10/2011 11:00	Effluent	Field Parameter	Temperature	21.48		C		
1/10/2011 11:00	Effluent	Field Parameter	Specific Conductance	1473		umhos/cm		
1/10/2011 11:00	Effluent	Field Parameter	pH	7.82				
1/10/2011 10:50	EFB-01	Nutrients	TSS	4	U	mg/L	4	16
1/10/2011 10:20	Comp. Blank	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.2	UJ	mg/L	0.2	2
1/10/2011 10:20	Comp. Blank	Metals	Antimony	0.25	U	ug/L	0.25	1
1/10/2011 10:20	Comp. Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
1/10/2011 10:20	Comp. Blank	Metals	Iron	30	U	ug/L	30	120
1/10/2011 10:20	Comp. Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
1/10/2011 10:20	Comp. Blank	Metals	Beryllium	0.4	U	ug/L	0.4	1.6
1/10/2011 10:20	Comp. Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
1/10/2011 10:20	Comp. Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
1/10/2011 10:20	Comp. Blank	Metals	Aluminum	60	U	ug/L	60	240
1/10/2011 10:20	Comp. Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
1/10/2011 10:20	Comp. Blank	Metals	Lead	0.9		ug/L	0.2	0.8
1/10/2011 10:20	Comp. Blank	Metals	Cadmium	0.12	I	ug/L	0.03	0.12
1/10/2011 10:20	Comp. Blank	Metals	Copper	2.85		ug/L	0.5	1
1/10/2011 10:20	Comp. Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
1/10/2011 10:20	Comp. Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
1/10/2011 10:20	Comp. Blank	Metals	Zinc	5	U	ug/L	5	20
1/10/2011 10:20	Comp. Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
1/10/2011 10:20	Comp. Blank	Nutrients	NO2NO3-N	0.005	I	mg N/L	0.004	0.01
1/10/2011 10:20	Comp. Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
1/10/2011 10:20	Comp. Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
1/10/2011 10:30	Grab Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
1/10/2011 10:30	Grab Blank	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
1/10/2011 10:30	Grab Blank	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
1/10/2011 10:30	Grab Blank	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
1/10/2011 10:30	Grab Blank	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
1/10/2011 10:30	Grab Blank	Pesticides	Atrazine	0.049	U	ug/L	0.049	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Chlorpyrifos Methyl	0.097	U	ug/L	0.097	0.39
1/10/2011 10:30	Grab Blank	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
1/10/2011 10:30	Grab Blank	Pesticides	Metribuzin	0.097	U	ug/L	0.097	0.39
1/10/2011 10:30	Grab Blank	Pesticides	Naled	0.78	UJ	ug/L	0.78	3.1
1/10/2011 10:30	Grab Blank	Pesticides	Parathion Ethyl	0.15	UJ	ug/L	0.15	0.6
1/10/2011 10:30	Grab Blank	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
1/10/2011 10:30	Grab Blank	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
1/10/2011 10:30	Grab Blank	Pesticides	Ethion	0.049	U	ug/L	0.049	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Metolachlor	0.49	UJ	ug/L	0.49	2
1/10/2011 10:30	Grab Blank	Pesticides	Chlorpyrifos Ethyl	0.049	U	ug/L	0.049	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Ethoprop	0.097	U	ug/L	0.097	0.39
1/10/2011 10:30	Grab Blank	Pesticides	Phorate	0.049	U	ug/L	0.049	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
1/10/2011 10:30	Grab Blank	Pesticides	Simazine	0.049	U	ug/L	0.049	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
1/10/2011 10:30	Grab Blank	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
1/10/2011 10:30	Grab Blank	Pesticides	Butylate	0.19	UJ	ug/L	0.19	0.76
1/10/2011 10:30	Grab Blank	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
1/10/2011 10:30	Grab Blank	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
1/10/2011 10:30	Grab Blank	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
1/10/2011 10:30	Grab Blank	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
1/10/2011 10:30	Grab Blank	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
1/10/2011 10:30	Grab Blank	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
1/10/2011 10:30	Grab Blank	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
1/10/2011 10:30	Grab Blank	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
1/10/2011 10:30	Grab Blank	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
1/10/2011 10:30	Grab Blank	Pesticides	Diazinon	0.049	U	ug/L	0.049	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Fonofos	0.097	U	ug/L	0.097	0.39
1/10/2011 10:30	Grab Blank	Pesticides	Hexazinone	0.097	U	ug/L	0.097	0.39
1/10/2011 10:30	Grab Blank	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
1/10/2011 10:30	Grab Blank	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
1/10/2011 10:30	Grab Blank	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
1/10/2011 10:30	Grab Blank	Pesticides	Ametryn	0.049	U	ug/L	0.049	0.2
1/10/2011 10:30	Grab Blank	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
1/10/2011 10:30	Grab Blank	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
1/10/2011 10:30	Grab Blank	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Pesticides	Alachlor	0.58	UJ	ug/L	0.58	2.3
1/10/2011 10:30	Grab Blank	Pesticides	Parathion Methyl	0.097	U	ug/L	0.097	0.39
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	60
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Phenanthrene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Bromodichloromethane	0.2	U	ug/L	0.2	1
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Fluorene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	40
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Bromoform	0.5	U	ug/L	0.5	2
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Chloroform	0.2	U	ug/L	0.2	1
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	40

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Fluoranthene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	UJ	ug/L	40	160
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	400
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5	U	ug/L	5	20
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Naphthalene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Pyrene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	60
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	U	ug/L	3	12
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Acenaphthene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Anthracene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	60
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Pentachlorophenol	3	U	ug/L	3	12
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Dibromochloromethane	0.2	U	ug/L	0.2	1
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Acenaphthylene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.2	U	ug/L	0.2	0.8
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Chrysene	0.2	U	ug/L	0.2	0.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5	U	ug/L	5	20
1/10/2011 10:30	Grab Blank	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8
1/11/2011 10:30	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.1	I	mg/L	0.2	2
1/11/2011 10:30	Effluent	Metals	Zinc	16	I	ug/L	5	20
1/11/2011 10:30	Effluent	Metals	Lead	0.48	I	ug/L	0.2	0.8
1/11/2011 10:30	Effluent	Metals	Selenium	0.2	U	ug/L	0.2	0.8
1/11/2011 10:30	Effluent	Metals	Calcium	67.6		mg/L	0.075	0.3
1/11/2011 10:30	Effluent	Metals	Beryllium	0.4	U	ug/L	0.4	1.6
1/11/2011 10:30	Effluent	Metals	Magnesium	19.2		mg/L	0.04	0.16
1/11/2011 10:30	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
1/11/2011 10:30	Effluent	Metals	Aluminum	120	I	ug/L	60	240
1/11/2011 10:30	Effluent	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
1/11/2011 10:30	Effluent	Metals	Chromium	0.3	U	ug/L	0.3	1.2
1/11/2011 10:30	Effluent	Metals	Nickel	1.49		ug/L	0.25	1
1/11/2011 10:30	Effluent	Metals	Arsenic	1.32		ug/L	0.25	1
1/11/2011 10:30	Effluent	Metals	Iron	50	I	ug/L	30	120
1/11/2011 10:30	Effluent	Metals	Copper	0.95	I	ug/L	0.5	1
1/11/2011 10:30	Effluent	Metals	Antimony	0.67	I	ug/L	0.25	1
1/11/2011 10:30	Effluent	Nutrients	TSS	4	U	mg/L	4	16
1/11/2011 10:30	Effluent	Nutrients	Ammonia-N	0.056		mg N/L	0.01	0.02
1/11/2011 10:30	Effluent	Nutrients	Kjeldahl Nitrogen	0.8		mg N/L	0.08	0.2
1/11/2011 10:30	Effluent	Nutrients	NO2NO3-N	1.5		mg N/L	0.02	0.05
1/11/2011 10:30	Effluent	Nutrients	Total-P	0.24	A	mg P/L	0.005	0.05
1/12/2011 8:00	Effluent	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		
1/12/2011 8:00	Effluent	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100	L	LC50		

Appendix F. Facility Summary, Effluent Limits, and Permit Violations Recorded on Discharge Monitoring Report

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Jason Cohen Jason.Cohen@dep.state.fl.us	**Contact Number:** 813-632-7600 x429
Facility Name (as it appears on permit): City of Clearwater Marshall Street AWWTF	**Former Names:**
NPDES Permit Number: FL0021857	**Permit Expiration Date:** October 12, 2011
Physical Address: 1605 Harbor Drive Clearwater, Fl 33755	
District: Southwest	**County:** Pinellas
Function of Facility: Type I domestic advanced wastewater treatment facility	
Facility Type: Major	**Permitted Capacity (MGD):** 10.0 MGD annual average daily flow (AADF)
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): (11/09-10/10) D-001 3.7 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

Page 1 of 7 **v3.0 07/07/08**

Appendix F. (continued)

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):

Monitoring Location Site Number	Description of Monitoring Location
EFA-01	After disinfection
EFB-01	After filtration and prior to disinfection
EFD-01	After dechlorination and prior to final discharge
FLW-02	Flow measured with rectangular weir and sonic meter.

Description of Permitted Outfall(s):

Surface Water Discharge: An existing 10.0 MGD annual average daily flow (AADF) permitted discharge to Stevenson's Creek to Clearwater Harbor (Class III marine waters and Outstanding Florida Water) at Discharge Location D-001 which is approximately 20 feet in length and discharges at a depth of approximately 4 feet. The point of discharge is located approximately at latitude 27 ° 58' 56" N, longitude 82 ° 47' 19" W.

Mixing Zone: The permittee is granted a mixing zone for Dichlorobromomethane and Dibromochloromethane consisting of a distance of four meters from the centerline of the outfall in either direction of the discharge.

REUSE:

Land Application: An existing 10.0 MGD annual average daily flow (AADF) permitted capacity slow-rate public access system R-001. The City of Clearwater Marshall Street AWWTF serves as a source plant for the City of Clearwater Master Reuse System, FLA186261.

Appendix F. (continued)

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

An existing 10.0 MGD annual average daily flow (AADF) Type I domestic advanced wastewater treatment facility (AWWTF), using the Bardenpho BNR process, consisting of the following components: an on-site influent pumping station with three variable rate dry-pit pumps; preliminary treatment consisting of two mechanically cleaned fine bar screens, a four unit vortex-cyclonic grit removal system with associated grit classifier, and an influent flow measurement via a 36-inch Parshall flume with an ultrasonic flow meter; primary treatment consisting of sedimentation in four 49,370 gallon rectangular basins and four 52,960 gallon rectangular basins; a biological treatment process consisting of a five stage Bardenpho BNR process that includes three 250,000 gallon fermentation basins, three 333,000 gallon first anoxic reactors, 13 aeration basins or nitrification reactors (three 363,170 gallon basins and ten 127,160 gallon basins), four 280,000 gallon second anoxic basins, and four 63,000 gallon re-aeration basins; four 100 foot diameter secondary clarifiers; four return activated sludge pumps; an intermediate effluent pumping station using three 60-inch diameter Archimedes screw lifts and three centrifugal pumps; polishing filtration consisting of 12 rapid sand, pulsed filtration gravity-type, automatic backwash filters with a total surface area of 4,320 square feet; an effluent disinfection system using gaseous chlorination and a 315,000 gallon, dual channel chlorine contact basin. Also on-site is a 5 MG reclaimed water storage tank and accompanying high service pumps.

Chlorinated effluent from the chlorine contact basin is directed the Master Reuse System (R-001) or to a 315,000 gallon de-chlorination basin that uses flow-paced sulfur dioxide to eliminate the remaining chlorine residual, then through a 100,000 gallon re-aeration basin, and finally through a 48-inch diameter outfall pipe that discharges to Stevenson's Creek, 20 feet from shore (D-001).

Waste sludge from the primary clarifiers is pumped to two anaerobic digesters (one 1,189,641 gallon unit and one 1,292,450 gallon unit). Waste sludge off the secondary clarifiers is pumped to two 108,000 gpd rotary drum thickeners equipped with polymer injection. The sludge from the digesters and the rotary drum thickener is then directed to a single 127,000 gallon sludge blend tank. The blended sludge is dewatered using two 2-meter belt filter presses. All primary and secondary sludge currently is pumped to the Blending tank until the primary digester refurbishment is complete.

Appendix F. (continued)

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD	Maximum	10.0	Report	-	-	Continuous	Recording flow meters and totalizers	FLW-02	See Cond.I.A.4
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	5 Days/Week	24-hour flow proportioned composite	EFD-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	5 Days/Week	24-hour flow proportioned composite	EFD-01	
Nitrogen, Total (as N)	MG/L	Maximum	3.0	3.75	4.5	6.0	5 Days/Week	24-hour flow proportioned composite	EFD-01	
Phosphorus, Total (as P)	MG/L	Maximum	1.0	1.25	1.5	2.0	5 Days/Week	24-hour flow proportioned composite	EFD-01	
pH	SU	Range	-	-	-	6.5 to 8.5	Continuous	Meter	EFA-01	See Cond.I.A.3
Coliform, Fecal, % less than detection	PERCENT	Minimum		75			Monthly	Calculation	EFA-01	See Cond.I.A.5
Coliform, Fecal	#/100ML	Maximum				25	7 Days/Week	Grab	EFA-01	See Cond.I.A.5
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	7 Days/Week	Grab	EFD-01	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	1.0	Continuous	Meter	EFA-01	See Cond.I.A. 6
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	7 Days/Week	Grab	EFD-01	
Copper, Total Recoverable	UG/L	Maximum	-	-	-	3.7	Monthly	Grab	EFD-01	

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Dichlorobromomethane	UG/L	Maximum	24	Report	-	-	Monthly	Grab	EFD-01	See Cond.I.A.10
Dibromochloromethane	UG/L	Maximum	46	Report	-	-	Monthly	Grab	EFD-01	See Cond.I.A.10
Nitrogen, Total (as N)	Tons/Yr	Maximum	46	Report (Mo. Total)	-	-	Monthly	Calculation	EFD-01	See Cond.I.A.7
Phosphorus, Total (as P)	Tons/Yr	Maximum	15	Report (Mo. Total)	-	-	Monthly	Calculation	EFD-01	See Cond.I.A.7
Chronic Whole Effluent Toxicity	PERCENT	Minimum	-	-	-	100	Quarterly	24-hour flow proportioned composite	EFD-01	See Cond. I. A. 8.

3. Hourly measurement of pH during the period of required operator attendance may be substituted for continuous measurement. *[Chapter 62-601, Figure 2]*

4. Recording flow meters and totalizers shall be utilized to measure flow and calibrated at least annually. *[62-601.200(17) and .500(6)]*

5. Over a 30-day period, at least 75 percent of the fecal coliform values shall be below the detection limits. No sample shall exceed 25 fecal coliforms per 100 mL. No sample shall exceed 5.0 mg/L of total suspended solids (TSS) at a point before the application of the disinfectant. Note: To report the "% less than detection," count the number of fecal coliform observations that were less than detection, divide by the total number of fecal coliform observations in the month, and multiply by 100% (round to the nearest integer). *[62-600.440(5)(f)]*

6. A minimum of 1.0 mg/L total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. *[62-600.440(5)(b) and (6)(b)]*

7. The permittee is allowed to discharge up to 10.0 MGD, calculated as an annual average flow. The daily Total Nitrogen loading and the daily Total Phosphorus loading shall be calculated from the daily Total Nitrogen concentration and daily Total Phosphorus concentration, respectively and the flow discharged to D-001. The monthly totals shall be recorded as a summation of the daily loadings. The twelve month annual maximum Total Nitrogen and Total Phosphorus loading shall be calculated as a twelve month rolling maximum beginning fourteen months after the permit is issued and shall not exceed 46 tons and 15 tons per year, respectively.

10. An existing 10.0 MGD AADF permitted discharge to Stevenson Creek to Clearwater Harbor (Class III marine water, Outstanding Florida Water) at Discharge Location D001, which is approximately 20 feet in length and discharges at a depth of approximately 4 feet. The permittee is granted a mixing zone consisting of a distance of four meters from the centerline of the outfall in either direction of the discharge located approximately at latitude 27 o 58' 56 N, longitude 82 o 47' 19" W.

Appendix F. (continued)

PART I: Continued	
Receiving Waters: Stevenson's Creek to Clearwater Harbor	**Classification (indicate whether fresh or marine):** (Class III marine waters and Outstanding Florida Water)

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

a. Effluent Limitation

1. A No Observed Effect Concentration (NOEC) of greater than or equal to 100% effluent in any routine test or any additional follow-up test shall constitute compliance with these permit conditions and Rule 62-302.530(62), F.A.C.
2. A NOEC of less than 100% effluent in any routine test or additional test shall constitute a failure of the test. The permittee shall notify the Department via telephone or e-mail within 24 hours of notification that a routine or additional test failed.

b. Monitoring Frequency

The "routine" toxicity tests specified shall be conducted *once every three months.*

c. Routine Test Requirements

1. The permittee shall conduct a daphnid, *Ceriodaphnia dubia*, Survival and Reproduction Test and a fathead minnow, *Pimephales promelas*, Larval Survival and Growth Test, concurrently.
2. All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th ed., EPA-821-R-02-013, or the most current edition. Any deviation of the toxicity procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.
3. The control water and dilution water used shall be moderately hard water as described in EPA-821-R-02-013, Section 7, or the most current edition.

d. Sampling Requirements

1. For each routine test or additional test required, a total of three 24-hour, flow-proportioned composite samples of final effluent shall be collected and used per the sampling protocol discussed in EPA-821-R-02-013, Section 8, or the most current edition. The first sample shall be used to initiate the test. The remaining two composite samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test. If the duration of the discharge is less than 24-hours, the duration of discharge shall be documented on the chain of custody.

e. Additional Testing Requirements, if required

1. If chronic toxicity (an NOEC of less than 100% effluent) is found in any routine test, the permittee shall conduct two additional definitive tests on each species indicating an NOEC of less than 100% effluent.
2. Each additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent. The dilution series may be modified in the second test to more accurately bracket the toxicity, such that at least two dilutions above (not to exceed 100% effluent) and two dilutions below the target concentration and a control (0% effluent) are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-013, or the most current edition.
3. The first additional test shall be initiated within two weeks of the end of the failed routine test. The second valid additional test shall be conducted one week thereafter. The additional tests will be used to evaluate the persistence of the observed toxicity.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):

Appendix F. (continued)

Facility Mixing Zone Details (if applicable):

Mixing Zone: The permittee is granted a mixing zone for Dichlorobromomethane and Dibromochloromethane consisting of a distance of four meters from the centerline of the outfall in either direction of the discharge.

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:

Date	Parameter and Units	Limit	Result
11/30/09	Chlorodibromomethane (ug/L)	46 (annual average)	50
12/31/09	Chlorodibromomethane (ug/L)	46 (annual average)	51
1/31/10	Chlorodibromomethane (ug/L) CBOD (mg/L)	46 (annual average) 10.0 (maximum)	50 17.0
2/28/10	Chlorodibromomethane (ug/L)	46 (annual average)	52
3/31/10	Chlorodibromomethane (ug/L)	46 (annual average)	52
4/30/10	Chlorodibromomethane (ug/L)	46 (annual average)	50
5/31/10	Chlorodibromomethane (ug/L) Dichlorobromomethane (ug/L)	46 (annual average) 24 (annual average)	54 33
6/30/10	Dichlorobromomethane (ug/L) Chlorodibromomethane (ug/L) CBOD (mg/L)	24 (annual average) 46 (annual average) 10.0 (maximum)	26 49 11.0
7/31/10	Dichlorobromomethane (ug/L) Chlorodibromomethane (ug/L)	24 (annual average) 46 (annual average)	26 48
8/31/10	Dichlorobromomethane (ug/L)	24 (annual average)	25

Describe previous FYI and WQBEL study:

Describe previous or current Enforcement Actions (including WLs):

Describe any violations or problems noted in previous inspection:

Discuss whether DMR trends within previous five years are improving or declining:

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

Appendix G. EPA End Sheet

The Bioassay of City of Clearwater Marshall Street Advanced Wastewater Treatment Plant effluent sampled on January 10 and 12, 2011. NPDES #FL0021857.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 1 8 5 7 11	12 1 1 0 1 1 0	18 B	19 S	20 1

Remarks

66

The Priority Pollutants Analysis of City of Clearwater Marshall Street Advanced Wastewater Treatment Plant effluent sampled on January 10, 2011. NPDES #FL0021857.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 1 8 5 7 11	12 1 1 0 1 1 0	18 X	19 S	20 1

Remarks

66

Biological Analyses of City of Clearwater Marshall Street Advanced Wastewater Treatment Plant effluent sampled on January 10, 2011. NPDES #FL0021857.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 1 8 5 7 11	12 1 1 0 1 1 0	18 S	19 S	20 1

Remarks

66