

Effluent Quality Assessment

Buccaneer WWTF

(Atlantic Beach II WWTF)

Duval County

NPDES #FL0023248

Sampled August 13, 2007

November 2007

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

Buccaneer WWTF (Atlantic Beach II WWTF), 739 Wonderwood Drive, Jacksonville, Duval County, Florida, 32233, NPDES #FL0023248. Effluent samples for this facility were collected on August 13, 2007.

Introduction

Buccaneer WWTF (Atlantic Beach II WWTF) is an advanced secondary wastewater treatment facility. The facility uses the activated-sludge process to treat domestic wastewater. The facility has a design flow of 1.9 million gallons per day (MGD) annual average daily flow (AADF). The AADF from August 1, 2006, through July 31, 2007, was 0.729 MGD. The facility consists of an influent screening unit, a master pump station, a grit removal unit, an odor control system, three sequencing batch reactors, two chlorine contact chambers, one dechlorination basin and two aerobic digestors. Chlorine gas is used for disinfection. Sulfur dioxide is used for dechlorination. Treated effluent is discharged to the Class III marine waters of the St. Johns River through Outfall D-001. Outfall D-001 is approximate 76.2 m (250 feet) in length and discharges at a depth of approximately 2.44 m (8 feet). Outfall D-001 is located approximately at latitude 30º 22' 58" N, longitude 81º 26' 20" W. Residuals are transported to the Atlantic Beach WWTF for further treatment and final disposal.

There are no Administrative Orders or Consent Orders for this facility. The facility has a mixing zone for copper. The mixing zone is concurrent with three additional wastewater treatment facilities. The mixing zone has an area of about 91,579 m^2. The total AADF limit to the mixing zone is 10.9 MGD and the total recoverable copper concentration limit is15 µg/L. A review of Discharge Monitoring Report (DMR) data for the past year revealed permit violations for total residual chlorine for disinfection (value 0.4 mg/L, limit ≥ 0.5 mg/L) in February 2007 and for fecal coliform (value 20,000 colonies/100 mL, limit ≤ 800 colonies/100 mL) in October 2006. There are no noticeable trends in effluent quality. The last Compliance Evaluation Inspection (CEI) was performed on July 25, 2005, and the facility was rated as *In Compliance*. (Facility information provided by Jennifer Paris of FDEP Northeast District.)

Methods

Samples were collected from the EFD-1 NPDES sampling point for Outfall D-001 by Joseph Emery (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 48-hour acute screening toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_03, TA07_04, 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. While the 48-hour acute screening toxicity test does not reflect the permit required conditions, the Department uses it to provide reasonable assurance that the facility does not adversely affect waters of the state.

The bioassay sample was salinity-adjusted from an apparent salinity (based on temperature and conductivity) of approximately 0.4 parts per thousand (ppth) to a salinity of approximately 20 ppth using 40 Fathoms® artificial sea salts per permit conditions. A salt control was prepared by diluting 20 ppth artificial seawater (ASW) with well water to a salinity of approximately 0.4 ppth then salting this solution with artificial sea salts to match the salinity of the test solution (approximately 20 ppth). The purpose of the salt control was to confirm that there was no effect of adding artificial sea salts to the sample. There was no mortality in the salt controls of the *Americamysis bahia* test. There was 5% mortality in the salt controls of the *Menidia beryllina* test.

An aliquot of the AGP sample was salinity-adjusted to meet the minimum salinity requirement of the marine test species. Both freshwater and marine AGP tests were performed.

Toxicity Test Results

Tests were performed August 14 - 16, 2007.

Americamysis bahia 48-hour acute screening bioassay –	LC_{50} > 100%, 0% mortality* in 100% sample at 48 hours
Menidia beryllina 48-hour acute screening bioassay –	LC_{50} > 100%, 0% mortality* in 100% sample at 48 hours

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

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.

*NOTE: In a 48-hour acute screening test of 100% effluent, mortality of <20% provides reasonable assurance 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% provides reasonable assurance 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.).

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 336 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Shultz (1987) found 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 437 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

The effluent Algal Growth Potential (AGP) was 442 mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Shultz found that AGP values above 10.0 mg dry weight/L represent a "problem" threshold for marine receiving waters, implying nutrient enrichment (personal communication with Ron Raschke USEPA Region 4, 1987).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine was not detected in the bioassay sample in the laboratory. The total ammonia concentration detected in the bioassay sample in the laboratory was 1.43 mg/L. The total ammonia concentration in the sample collected and preserved for chemical analysis was 1.5 mg/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

The effluent dissolved oxygen (2.68 mg/L) as measured in the field violated both Class III marine water quality criteria (≥ 4.0 mg/L) (62-302.530, (30) F.A.C.) and the permit limit (≥ 4.0 mg/L).

Copper*, iron, nickel, and zinc were detected in the effluent at levels that comply with Class III marine water quality criteria (62-302.530, F.A.C.) or permit conditions. Aluminum, arsenic,

cadmium, diethyl phthalate, and lead were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

*The facility has a mixing zone for copper; therefore, effluent copper (5.05 µg/L) while exceeding the Class III Marine copper standard of ≤ 3.7 µg/L (62-302.530 (23), F.A.C.) did not exceed the mixing zone limit of 15 µg/L.

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.

Conclusion

The effluent sample collected from the EFD-1 NPDES sampling point for Outfall D-001 for this facility on August 13, 2007, was not acutely toxic to either test species during the 48-hour acute screening bioassays. The effluent AGP results exceeded the "problem" threshold for both fresh and marine receiving waters, suggesting nutrient enrichment may be an issue. The effluent dissolved oxygen (2.68 mg/L) as measured in the field violated both Class III marine water quality criteria (≥ 4.0 mg/L) (62-302.530, (30) F.A.C.) and the permit limit (≥ 4.0 mg/L).

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.

Table 1. 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,* the AGP (salinity adjusted) of the saltwater species *Dunaliella teriolecta,* and ratios of nitrogen to phosphorus for samples collected from Buccaneer WWTF (Atlantic WWTF II) on August 13, 2007.

Buccaneer WWTF (Atlantic Beach II WWTF)						
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	AGP (Salinity Adjusted)	Inorganic N:P ratio	Total N:P ratio
Effluent	336	437 ± 87.4	490.2 ± 98.0	442	3.7	5.0

Table 2. Effluent limits, Class III Criteria for predominantly marine waters, chemical and microbiological data for samples collected from Buccaneer WWTF (Atlantic Beach II WWTF) on August 13, 2007.

Buccaneer WWTF (Atlantic Beach II WWTF) NPDES #FL0023248	Class III Stds	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
Diethyl phthalate	-	-	1.1	I
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1500	-	56	I
Arsenic	≤ 50	-	0.58	I
Cadmium	≤ 8.8	-	0.056	I
Calcium (mg/L)	-	-	71.3	
Chromium-III	-	-	1	U
Copper	≤ 3.7	15 s*	5.05	
Iron	≤ 300	-	74	
Lead	≤ 8.5	Report	0.37	I
Magnesium (mg/L)	-	-	28.8	
Mercury	≤ 0.025	0.025 s	0.12	U
Nickel	≤ 8.3	8.3 s	2.16	
Selenium	≤ 71	-	0.5	U
Silver	≤ 2.3	-	0.025	U
Zinc	≤ 86	-	43	
Nutrients (mg/L)				
Ortho-phosphate	-	Report [1]	3.1	
Total Phosphorus	-	Report [1]	2.6	
Total Ammonia	-	Report [1]	1.5	
Un-ionized Ammonia	-	-	< 0.02	c
Nitrate and Nitrite	-	Report [1]	10	
Total Kjeldahl Nitrogen	-	-	2.9	
Organic Nitrogen	-	Report [1]	1.4	c
Total Nitrogen	-	Report [1]	12.9	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 4.0 s	2.7	
pH (SU)	6.5 - 8.5	6.5 - 8.5 s	6.9	
Conductivity (µmhos/cm)	-	-	946	
Temperature °C	-	-	30.6	
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	0.03	£U
Total Suspended Solids (mg/L)	-	60 s	6	I
CBOD, 5 day (mg/L), N - inhibited	-	60 s	15	L
Fluoride (mg/L)	≤ 5.0	Report	0.66	
Flow (MGD)	-	1.9 a	0.724	a
Hardness (mg $CaCO_3$)	-	-	296.63	c
Microbiology (Number of counts/100ml)				
Fecal Coliforms	≤ 800 s	≤ 800 s	63	AB

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
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
L - Actual value is known to be greater than value given
U - Material analyzed for but not detected; value reported is the method detection limit
* - Facility has a mixing zone for copper.
1 - permit requires quarterly sampling with results reported as an attachmentto Discharge Monitoring Report
£ - Measured in Bioassay Laboratory.

Appendix A. Chain of Custody Form

NEDFS-01-06
1/19/07

Department of Environmental Protection Northeast District Field Sheet

Sample Source: Alligator Lake Inventory RQ#: 2007-08-13-32 Date 8/13/07 Page 1 of 1

Meter # 3 Acid Kit# 1 Ortho Kit # 3 Sampling Team Joseph Emily

LAB ID*	Site Name:	Storet #:	Measured By:

Time	Temp °C	Cond µohm cm⁻¹	Sal ‰	pH s.u.	DO mg/L	DO Sat %	Secchi m	WTR V ft/sec	Tide Ebb/Fld,LS/HS	Total Depth	Sample Depth
1044	30.55	946	0.46	6.87	2.69	35.6					

Mode: ☐ Wading ☐ Shore ☐ Gas Motor ☐ Canoe ☐ Bridge ☐ Dock Equipment: ☑ Grab ☐ Horizontal Sampler ☐ Pole Sampler

Parameters / Method	Preserve*	Suite**	Initials
Preserved Nutrients: ☐ N/A ☐ All ☐ TKN ☐ NO_2-NO_3 ☐ NH_3 ☐ TOC ☐ TP	☐ Ice ☐ H_2SO_4 ☐ pH<2	A	
Filtered Nutrients: ☐ N/A ☐ oP ☐ Other: _____	☐ Ice ☐ 0.45µm flt	A	
BOD: ☐ N/A ☐ cBOD-Inhb ☐ BOD-Unin	☐ Ice	A	
Chlorophyll: ☐ N/A ☐ CHL-PPTN-W	☐ Ice	A	
Physical/Aggregate Properties: ☐ N/A ☐ All ☐ TSS ☐ Turbidity ☐ W-Cl-IC ☐ W-F ☐ W-SO_4-IC ☐ Color ☐ TDS ☐ Alk	☐ Ice	A	
Metals: ☐ N/A ☐ W-ICP ☐ W-FIAS ☐ W-ICPMS ☐ W-ICP-Tr	☐ HNO_3	A	
AGP/Other: ☐ N/A ☐ AA-AGP ☐ AA-Lim-Nut ☐ Other F	☐ Ice	A	
Micro: ☐ N/A ☐ All ☐ T Coli ☐ F Coli	☐ Ice	A	

Comments and conditions:

LAB ID*	Site Name:	Storet #:	Measured By:

Time*	Temp °C	Cond µohm cm⁻¹	Sal ‰	pH s.u.	DO mg/L	DO Sat %	Secchi m	WTR V ft/sec	Tide Ebb/Fld,LS/HS	Total Depth	Sample Depth

Mode: ☐ Wading ☐ Shore ☐ Gas Motor ☐ Canoe ☐ Bridge ☐ Dock Eqnipment: ☐ Grab ☐ Horizontal Sampler ☐ Pole Sampler

Parameters / Method	Preserve*	Suite**	Initials
Preserved Nutrients: ☐ N/A ☐ All ☐ TKN ☐ NO_2-NO_3 ☐ NH_3 ☐ TOC ☐ TP	☐ Ice ☐ H_2SO_4 ☐ pH<2	B	
Filtered Nutrients: ☐ N/A ☐ oP ☐ Other: _____	☐ Ice ☐ 0.45µm flt	B	
BOD: ☐ N/A ☐ CBOD-Inhb ☐ BOD-Unin	☐ Ice	B	
Chlorophyll: ☐ N/A ☐ CHL-PPTN-W	☐ Ice	B	
Physical/Aggregate Properties: ☐ N/A ☐ All ☐ TSS ☐ Turbidity ☐ W-Cl-IC ☐ W-F ☐ W-SO_4-IC ☐ Color ☐ TDS ☐ Alk	☐ Ice	B	
Metals: ☐ N/A ☐ W-ICP ☐ W-FIAS ☐ W-ICPMS ☐ W-ICP-Tr	☐ HNO_3	B	
AGP/Other: ☐ N/A ☐ AA-AGP ☐ AA-Lim-Nut ☐ Other F	☐ Ice	B	
Micro: ☐ N/A ☐ All ☐ T Coli ☐ F Coli	☐ Ice	B	

Comments and conditions:

LAB ID*	Site Name:	Storet #:	Measured By:

Time	Temp °C	Cond µohm cm⁻¹	Sal ‰	pH s.u.	DO mg/L	DO Sat %	Secchi m	WTR V ft/sec	Tide Ebb/Fld,LS/HS	Total Depth	Sample Depth

Mode: ☐ Wading ☐ Shore ☐ Gas Motor ☐ Canoe ☐ Bridge ☐ Dock Equipment: ☐ Grab ☐ Horizontal Sampler ☐ Pole Sampler

Parameters / Method	Preserve*	Suite**	Initials
Preserved Nutrients: ☐ N/A ☐ All ☐ TKN ☐ NO_2-NO_3 ☐ NH_3 ☐ TOC ☐ TP	☐ Ice ☐ H_2SO_4 ☐ pH<2		
Filtered Nutrients: ☐ N/A ☐ oP ☐ Other: _____	☐ Ice ☐ 0.45µm flt		
BOD: ☐ N/A ☐ CBOD-Inhb ☐ BOD-Unin	☐ Ice		
Chlorophyll: ☐ N/A ☐ CHL-PPTN-W	☐ Ice		
Physical/Aggregate Properties: ☐ N/A ☐ All ☐ TSS ☐ Turbidity ☐ W-Cl-IC ☐ W-F ☐ W-SO_4-IC ☐ Color ☐ TDS ☐ Alk	☐ Ice		
Metals: ☐ N/A ☐ W-ICP ☐ W-FIAS ☐ W-ICPMS ☐ W-ICP-Tr	☐ HNO_3		
AGP/Other: ☐ N/A ☐ AA-AGP ☐ AA-Lim-Nut ☐ Other	☐ Ice		
Micro: ☐ N/A ☐ All ☐ T Coli ☐ F Coli	☐ Ice		

Comments and conditions:

*Preservatives: 1ml/L added per 500 mL sample unless otherwise noted; iced within 15 minutes ** J: samples run in Jacksonville Lab

Relinquished: Joshua	Date/time 8/13/07 1402	Received: Tom E 8/14/07 9305	☐ <6°C ☐ on ice ☐ <2 pH
Relinquished:	Date/time 8-14-07	Received: B Marsh	Shipping:

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: Buckman WWTF (Atlantic Blvd. II WWTF)

Address: 739 Wonderwood Drive

City: Jacksonville **County:** Duval

Contact/District: Joseph Emery, NE - District

NPDES Permit #: FL 0023248

LIMS Job # TLH-2007-08-14-19 **LIMS Sample #:** 1034844 8h 1034846

Lims Data Entry: 8/17/07 MF Data Entry Verification: 8/20/07 DJ

Sample Collection: Date: 8-13-07 Time: 10:40

Hold Time Start: Date: 8-13-07 Time: 10:40

Comments:
Acute @ 24 hrs 48 hrs to be DO in 10% concentration (A.Baha)
Samples salinity adjusted from 0.4 parts per thous. (ppth) to approximately 20 ppth by the addition of artificial seasalts per permit requirements MF 8/20/07
Salted dilution is prepared by adjusting 20 ppth artificial seawater to ≈ 0.4 ppth salinity with well water then salting the well water to match the salinity of the diluted samples. MF 8/20/07

Instructions (for below): Circle appropriate wording. If yes is circled, complete blanks.

Test Type: (Screen)
(Static) / Static Renewal / Flow-through
Test Duration: (48) 96 Hours.

Test 1 validation: **Test 1:** SOP TA 07 05
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Test 2 validation: **Test 2:** SOP TA 07 04
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Initial sample handling:
PH adjustment : yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____
Aeration : yes (no) Initial DO: ____mg/L Final DO: ____mg/L Duration: ____ minutes Rate: ~ ____ bubbles/min
Salinity adjusted (Test 1): (yes) no Initial Salinity: 0.4 ppt Final Salinity: 20.0 ppt Salts: Hypersaline brine
Salinity adjusted (Test 2): (yes) no Initial Salinity: 0.4 ppt Final Salinity: 20.0 ppt Salts: Hypersaline brine
Dechlorination: yes (no) ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Sample Validation:
Temperature: Shipped ≤6°C (Yes) No Hand Delivered: Cooling (received °C < collected °C) Yes No
Holding Time: ≤36 Hours (Yes) No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min 25.3 max 26.1 mean 25.7
~~Water bath #~~ ____ min 25.3 max 26.1 mean 26.0 ← Alpha only
Room B246 min 24.9 max 26.1 mean 25.6

Investigators' Signatures
James Daniels
Burke Fields
Marshall Faircloth

Loretta Wolfe
REVIEWER

Water Quality Parameters	20% DMW	Moderately Hard Water/ Well Water	Salt Water (ASW) NSW Test 1	Salt Water ASW NSW Test 2	Other: Salt Corr	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	—	Not Measured	—	—	MF
Lab Total Residual Cl_2 (mg/L):			<0.03		<0.03	<0.03	HACH	DD	RA
Alkalinity (mg/L as $CaCO_3$):			238		200	119	HACH	BA	DJ
Hardness (mg/L as $CaCO_3$):			-		-	285	HACH	BA	DJ
Total Ammonia (mg/L as N):			<0.07		<0.07	1.43	DENVER	BA	DJ
Salinity (ppth)			≈ 20		~~<0.07~~ ≈ 20 BA	0.4	YSI / Mettler	BA	DJ

V 1.4 9/12/05

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 103494 Test #: 1/2 SOP#:TA 07 03 Test Started: Date 8.1.07 Time: 13:30

Organism/Batch/Age: A. bahia 8-14-07/5 days Test Ended: Date 8/6/07 Time: 1300

Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: ASW 12-27-07

Food/Batch: YCT — P.sub — Artemia 0hr 127-07 24hr 127-07 48hr — 72hr — Artemia Lot# 450-536-50

Feeding: Prior to Test Prior to Renewal Daily (circled)

Concentration	Replicate	Chamber #	Test Hour: 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	C1	5	5	5			
	B	C2	5	5	5			
	C	C3	5	5	5			
	D	C4	5	5	5			
100% SALTED	A	C5	5	5	5			
	B	C6	5	5	5			
	C	C7	5	5	5			
	D	C8	5	5	5			
Salt Ctrl	A	C9	5	5	5			
	B	C10	5	5	5			
	C	C11	5	5	5			
	D	C12	5	5	5			
Loaded/Verified by: DA / DJ		Checked by:	DJ	DJ	DJ			

m = missing d = dead BR/AR = Before/After Renewal

Comments:

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 0 LC50: > 100%

If Calculated: 95% CI________ Method__________

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 10348 tc Test #: 2/2 SOP#:TA 07_04 Test Started: Date 8.14.07 Time: 13:45

Organism/Batch/Age: Mbay/May 18: 14-08/12 days Test Ended: Date 8/16/07 Time: 1305

Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: ASW / 7-27-07

Food/Batch: YCT ~ P.sub ~ Artemia 0hr 7-27-07 24hr ~ 48hr ~ 72hr ~ Artemia Lot# 954-536-20

Feeding: Prior to Test Prior to Renewal Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	C13	5	5	5			
	B	C14	5	5	5			
	C	C15	5	5	5			
	D	C16	5	4D	4			
100% Salt	A	C17	5	5	5			
	B	C18	5	5	5			
	C	C19	5	5	5			
	D	C20	5	5	5			
Salt Ctrl	A	C21	5	5	5			
	B	C22	5	5	5			
	C	C23	5	5	5			
	D	C24	5	4D	4			

Loaded/Verified by: JD / BA Checked by: JD JD JD

m = missing d = dead BR/AR = Before/After Renewal

Comments:

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 0 LC50: 7100 %

If Calculated: 95% CI_____ Method_____

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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000003

[redacted]

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample #: 103-19246 Test #: 1 of 2

TEST SOP #: TA07_03 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:_____

Concentration ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.4	8.4	8.3			
Temperature °C	25.1	24.1	25.1			
Dissolved Oxygen mg/L	7.1	6.5	7.2			
Conductivity µmhos (mmhos)	32.3	33.0	32.5			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.3	8.2	8.2			
Temperature °C	25.1	~~24.3~~ 24.3	25.1			
Dissolved Oxygen mg/L	7.7	3.6 @	6.8			
Conductivity µmhos (mmhos)	31.3	32.0	31.8			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments: @ diluted after 24 for low d.o. all test replicates and controls were aerated. JD by mkf 8/20/07 8/14/07

Concentration salt ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.4	8.4	8.2			
Temperature °C	25.1	24.3	25.0			
Dissolved Oxygen mg/L	7.3	5.4	6.7			
Conductivity µmhos (mmhos)	31.7	32.6	32.2			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos (mmhos)						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

000004

V 2.0 2/24/04

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 10348946 **Test #:** 2 of 2

TEST SOP #: TA07_ 04 **Test Species:** *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:

Concentration ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.4	8.4	8.3			
Temperature °C	25.1	24.3	24.8			
Dissolved Oxygen mg/L	7.0	6.2	6.8			
Conductivity µmhos (mmhos)	32.5	33.4	33.2			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.3	8.2	8.1			
Temperature °C	25.0	24.1	24.9			
Dissolved Oxygen mg/L	7.8	4.9	D.O. 6.5.6			
Conductivity µmhos (mmhos)	30.6	33.2	31.9			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration 50% ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.4	8.4	8.3			
Temperature °C	25.2	24.2	24.7			
Dissolved Oxygen mg/L	7.5	5.9	6.3			
Conductivity µmhos (mmhos)	31.3	33.1	32.7			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

V 2.0 2/24/04

Appendix C. SRT Bench Sheets and Statistical Analysis

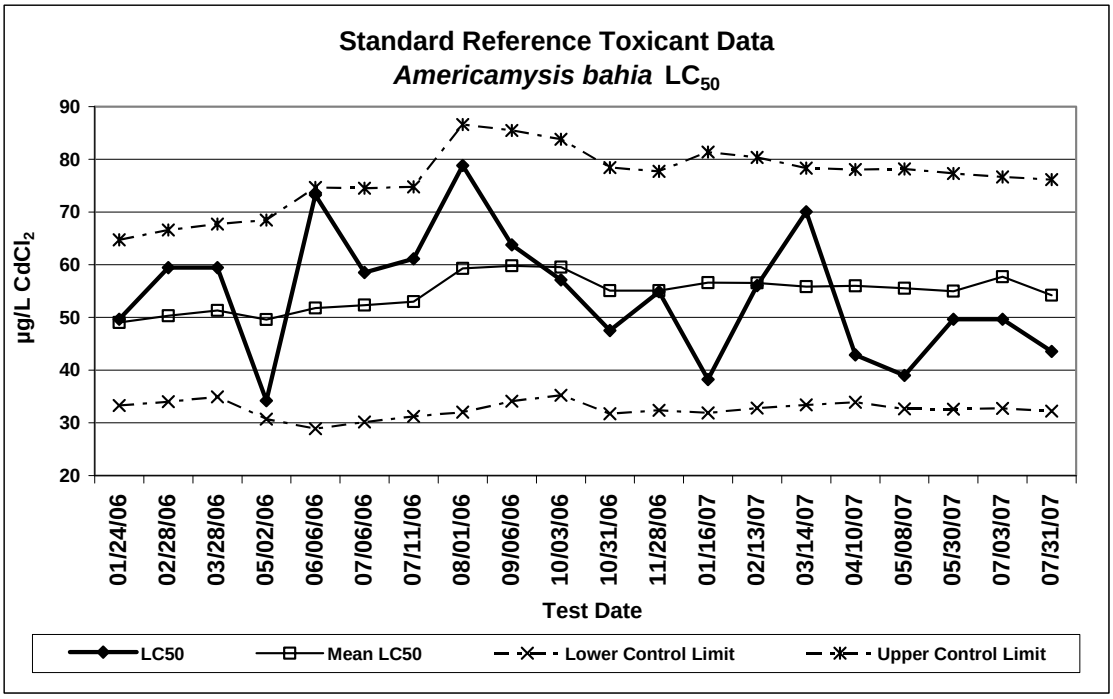
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Americamysis bahia (mysid shrimp) - Cadmium Chloride ($CdCl_2$)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
01/24/06	49.65	49.01	7.84	33.32	64.70
02/28/06	59.45	50.32	8.15	34.03	66.61
03/28/06	59.42	51.33	8.20	34.93	67.73
05/02/06	34.19	49.62	9.44	30.73	68.50
06/06/06	73.23	51.76	11.44	28.88	74.65
07/06/06	58.53	52.33	11.08	30.16	74.49
07/11/06	61.12	53.00	10.89	31.22	74.78
08/01/06	78.84	59.30	13.65	32.01	86.60
09/06/06	63.78	59.80	12.85	34.10	85.50
10/03/06	57.10	59.53	12.15	35.24	83.82
10/31/06	47.52	55.07	11.67	31.73	78.42
11/28/06	54.87	55.06	11.33	32.41	77.71
01/16/07	38.23	56.61	12.37	31.87	81.35
02/13/07	56.06	56.57	11.89	32.80	80.34
03/14/07	70.07	55.86	11.23	33.40	78.32
04/10/07	42.91	56.00	11.04	33.91	78.08
05/08/07	39.00	55.53	11.38	32.65	78.19
05/30/07	49.64	54.95	11.17	32.61	77.30
07/03/07	49.64	57.70	10.97	32.76	76.64
07/31/07	43.54	54.19	10.97	32.25	76.13

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

CV = 20.34
EPA reference 75th quartile CV = 26%



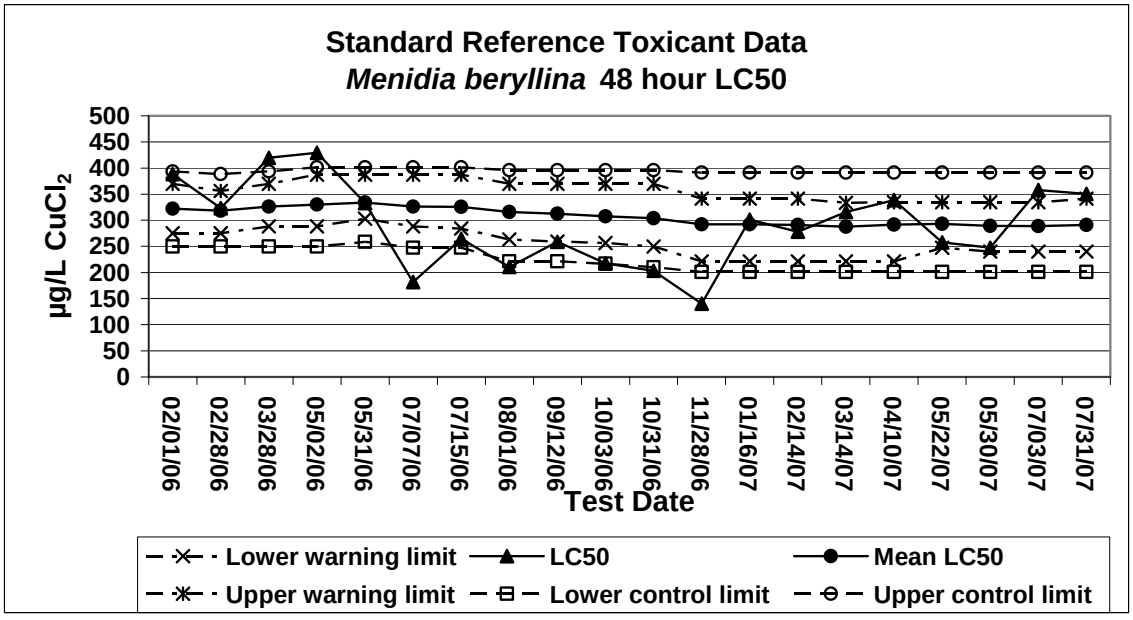
Appendix C. (continued)

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - Acute Toxicity
Menidia beryllina (Inland silverside) - Copper Chloride ($CuCl_2$)

Date	LC50	Mean LC50	Lower control limit	Lower warning limit	Upper warning limit	Upper control limit
02/01/06	388.25	322.40	250.0	275.4	369.7	393.6
02/28/06	323.38	318.11	250.0	275.4	356.1	388.7
03/28/06	419.55	326.32	250.0	288.5	369.7	393.6
05/02/06	429.19	330.10	250.0	288.5	387.2	401.5
05/31/06	333.13	334.26	258.8	303.2	387.2	401.5
07/07/06	181.98	326.28	247.2	288.5	387.2	401.5
07/15/06	264.59	325.48	247.2	284.4	387.2	401.5
08/01/06	210.80	316.05	221.3	263.4	369.7	395.6
09/12/06	258.82	312.50	221.3	259.6	369.7	395.6
10/03/06	217.64	307.20	217.0	256.6	369.7	395.6
10/31/06	203.06	304.28	210.0	249.7	369.7	395.6
11/28/06	140.31	292.22	201.0	221.3	341.2	391.4
01/16/07	301.29	291.93	201.0	221.3	341.2	391.4
02/14/07	278.00	291.27	201.0	221.3	341.2	391.4
03/14/07	316.16	287.74	201.0	221.3	333.3	391.4
04/10/07	338.35	291.67	201.0	221.3	334.8	391.4
05/22/07	257.44	293.42	201.0	247.5	334.8	391.4
05/30/07	247.36	289.10	201.0	239.9	334.4	391.4
07/03/07	357.65	288.79	201.0	239.9	334.4	391.4
07/31/07	350.68	290.88	201.0	239.9	341.4	391.4

Means are of the last 20 SRT tests.
Upper warning and control limits are the 75th and 90th percentiles, respectively, of the past 20 LC50s.
Lower warning and control limits are the 25th and 10th percentiles, respectively, of the past 20 LC50s.
EPA reference 75th quartile CV = 21% **CV = 27.09**



Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* (Method 2007.0) / *Menidia beryllina* (Method 2006.0) / *Hyalella azteca* (Method 100.1 EPA-600-R-99-064) / *Ceriodaphnia dubia* (Method 2002.0) / *Cyprinella leedsi* / *Pimephales promelas* (Method 2000.0) Other: _____

Method from EPA-821-R-02-012
Test Type: 48 hour non-renewal / (96) hour renewal
Test Page 1 of 2

Diluent/ Batch #: ASW / 72707
Toxicant/ Batch#: SDS / 73007

Test Beginning: Date: 7.31.07 Time: 13:05
Test Ending: Date: 8-4-07 Time: 1030

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	238	Hach	JD
Hardness (mg.L as $CaCO_3$):	–	Hach	–
Total Ammonia (mg/L as N):	<0.034	Denver	MF
Salinity (ppth):	~20	Mettler	BA

Organism Batch #/ Age: 7-31-07 / 5 days
Feeding: Prior to test / (Prior to renewal) / (Daily)
Food: YCT P.subcapitata Artemia: Lot # 951-516-40
Food Batch: — — 0hr 116-07 24hr 117-07 48hr 116-07 72hr 119-07
Chamber size: 400 mL
Test volume: 250 mL per replicate

Conc. g/L / µg/L / mg/L	Rep.	Chamber #	Number Live 0 hr	24 hr	48 hr	pH (SU) 0 hr	24 hr	48 hr	Temperature (° C) 0 hr	24 hr	48 hr	D.O. (mg/L) 0 hr	24 hr	48 hr	Uncorrected Conductivity µmhom/cm (µmhos/cm) 0 hr	24 hr	48 hr
			~~48 hr~~	~~72 hr~~	~~96 hr~~	~~48 hr~~	~~72 hr~~	~~96 hr~~	~~48 hr~~	~~72 hr~~	~~96 hr~~	~~48 hr~~	~~72 hr~~	~~96 hr~~	~~48 hr~~	~~72 hr~~	~~96 hr~~
Control	A	Tox 1	5	5	5	8.4			24.5			6.8			31.7		
	B	Tox 2	5	5	5		8.1			24.0			5.2			33.1	
	C	Tox 3	5	5	5			8.0			24.5			4.3			32.7
	D	Tox 4	5	5	5												
20	A	Tox 5	5	5	5	8.4			24.6			6.8			31.9		
	B	Tox 6	5	5	5		8.2			24.0			5.3			33.1	
	C	Tox 7	5	5	5			8.0			24.3			4.4			33.0
	D	Tox 8	5	5	5												
30	A	Tox 9	5	5	4.10	8.4			24.5			6.9			31.9		
	B	Tox 10	5	5	4.10		8.2			24.0			5.3			33.3	
	C	Tox 11	5	5	@1405			8.0			24.2			4.2			33.1
	D	Tox 12	5	5	~~2305~~												
45	A	Tox 13	5	4.10	3.10	8.4			24.4			6.9			31.9		
	B	Tox 14	5	5	3.20		8.2			24.1			5.9			33.1	
	C	Tox 15	5	5	@1405			8.1			24.2			4.4			33.0
	D	Tox 16	5	5	@2330												
67	A	Tox 17	5	5	0.50	8.4			24.4			6.9			31.7		
	B	Tox 18	5	5	0.50		8.2			24.2			5.4			33.1	
	C	Tox 19	5	5	1.40			8.1			24.2			4.7			33.5
	D	Tox 20	5	5	0.50												
100	A	Tox 21	5	5	2.30	8.4			24.3			6.8			31.9		
	B	Tox 22	5	4.10	0.40		8.1			24.2			5.4			33.3	
	C	Tox 23	5	5	0.50			8.0			24.2			4.8			33.1
	D	Tox 24	5	4.10	0.40												
	A																
	B																
	C																
	D																
Loaded / measured by:			JD	JD	JD	JD	BA	JD	JD	BA	JD	JD	BA	JD	JD	BA	JD
Recorded by:			JD	JD	JD	JD	BA	JD	JD	BA	JD	JD	BA	JD	JD	BA	JD

Investigators' Signatures
James Daniels
Marshall Faircloth
Bill Aahn

Loretta Wolfe
REVIEWER

Concentrations prepared by: JD
Loading verified by: BA
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 25.2 max. 26.3 mean 25.6
Incubator # ___ min. _____ max. _____ mean _____
Room B246 min. 24.8 max. 26.3 mean 25.6

Comments:
@ 48hr 30745 conc. rep end values written in wrong place J.D. 8.2.07

Statistics: Method: Spearman-Karber
48 / 96 hour LC_{50}: 43.51
95% Confidence Interval: lower 38.69 upper 49.00

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Appendix C. (continued)

[redacted]

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* (Method 2007.0) *Menidia beryllina* (Method 2006.0) *Hyalella azteca* (Method 100.1 EPA-600-R-99-064) *Ceriodaphnia dubia* (Method 2002.0) *Cyprinella leedsi* (Method 2000.0) *Pimephales promelas* (Method 2000.0) Other: _____

Method from EPA-821-R-02-012
Test Type: 48 hour non-renewal / 96 hour renewal
Test Page 2 of 2

Diluent/ Batch #: ASW / 7.27.07
Toxicant/ Batch#: $CdCl_2$ / 7.30.07

Test Beginning: Date: 7.31.07 Time: 1305
Test Ending: Date: 8-4-07 Time: 1030

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	238	Hach	JD
Hardness (mg.L as $CaCO_3$):	—	Hach	—
Total Ammonia (mg/L as N):	2.0054	Denver	MF
Salinity (ppth):	~20	Mettler	BA

Organism Batch #/ Age: 7-31-07 / 5 days
Feeding: Prior to test / Prior to renewal / Daily
Food: YCT — *P.subcapitata* — Artemia: Lot # 051536-90
Food Batch: — —
0hr 11:07 24hr 11:07 48hr 11:15-07 72hr 11:19-07
Chamber size: 400 mL
Test volume: 350 mL per replicate

Conc. g/L (µg/L) mg/L	Rep.	Chamber #	Number Live 0 hr / 24 hr / 48 hr	pH (SU) 0 hr / 24 hr / 48 hr	Temperature (°C) 0 hr / 24 hr / 48 hr	D.O. (mg/L) 0 hr / 24 hr / 48 hr	Uncorrected Conductivity µmhom/cm (mmhos/cm) 0 hr / 24 hr / 48 hr
			48 hr / 72 hr / 96 hr	48 hr / 72 hr / 96 hr	48 hr / 72 hr / 96 hr	48 hr / 72 hr / 96 hr	48 hr / 72 hr / 96 hr
Control	A	tox 1	5 / 5 / 5	8.4 / / 8.2	24.0 / / 25.5	6.3 / / 5.5	31.8 / / 33.1
	B	tox 2	5 / 5 / 5	/ 8.2 /	/ 24.7 /	/ 5.7 /	/ 32.2 /
	C	tox 3	5 / 5 / 5				
	D	tox 4	5 / 5 / 5				
20	A	tox 5	5 / 5 / 3 2D	8.3 / / 8.1	24.0 / / 24.9	6.3 / / 5.7	32.5 / / 34.8
	B	tox 6	5 / 5 / 2 3D	/ 8.2 /	/ 24.7 /	/ 5.6 /	/ 32.6 /
	C	tox 7	5 / 5 / 3 2D				
	D	tox 8	5 / 5 / 1 4D				
30	A	tox 9	4 / 4 / 2 2D	8.4 / / 8.1	24.2 / / 24.9	6.3 / / 5.9	32.3 / / 33.7
	B	tox 10	4 / 4 / 1 3D	/ 8.2 /	/ 24.1 /	/ 5.5 /	/ 32.5 /
	C	tox 11	5 / 5 / 2 3D				
	D	tox 12	5 / 5 / 1 4D				
45	A	tox 13	3 / 2 1D / 0 2D	8.4 / / 8.1	24.2 / / 25.2	6.4 / / 5.8	32.0 / / 33.9
	B	tox 14	3 / 2 1D / 0 2D	/ 8.2 /	/ 24.0 /	/ 5.5 /	/ 32.4 /
	C	tox 15	1 / 0 1D / —				
	D	tox 16	2 / 1 1D / 1				
67	A	tox 17	— / — / —	8.4 / /	24.2 / /	6.4 / /	32.3 / /
	B	tox 18	— / — / —	/ 8.3 /	/ 24.0 /	/ 5.6 /	/ 32.4 /
	C	tox 19	1 / 0 1D / —				
	D	tox 20	— / — / —				
100	A	tox 21	2 / 2 / 0 2D	8.4 / ↑ / 8.3	24.2 / ↑ / 25.0	6.5 / ↑ / 6.1	32.2 / ↑ / 32.5
	B	tox 22	— / — / —	/ 8.2 /	/ 24.0 /	/ 5.9 /	/ 32.0 /
	C	tox 23	— / — / —				
	D	tox 24	— / — / —				
	A						
	B						
	C						
	D						
Loaded / measured by:			JD / JD / MF	JD / JD / MF	JD / JD / MF	JD / JD / MF	JD / JD / MF
Recorded by:			JD / JD / MF	JD / JD / MF	JD / JD / MF	JD / JD / MF	JD / JD / MF

Investigators' Signatures
James Daniels
Marshall Faircloth
Bruce Abelson
Loretta Wolfe
REVIEWER

Concentrations prepared by: JD
Loading verified by: JSD
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator #2 min 25.2 max 26.3 mean 25.8
Incubator # ___ min ___ max ___ mean ___
Room B246 min 24.8 max 26.3 mean 25.6

Comments: Probit analysis is reported MF 8-7-07
TSK message: Minimum Required trim is too large 55.0, so SIC is not calculable - DA 8-6-07

Statistics: Method: Spearman-Karber
48 (96) hour LC_{50}: 20.1
95% Confidence Interval: lower 13.0 upper 24.6

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Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0 (*Menidia beryllina* Method 2006.0) *Hyalella azteca* Method 100.1 EPA-600-R-99-064 — **Method from EPA-821-R-02-012**

Ceriodaphnia dubia Method 2002.0 *Cyprinella leedsi* Method 2000.0 *Pimephales promelas* Method 2000.0 Other: _____

Test Type: 48 hour non-renewal (96 hour renewal)

Test Page 1 of 2

Diluent/ Batch #: ASW / 7.27.07

Toxicant/ Batch#: $CuCl_2$ / 7.30.07

Test Beginning: Date: 7.31.07 Time: 1300

Test Ending: Date: 8-4-07 Time: 1030

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	238	Hach	JD
Hardness (mg.L as $CaCO_3$):	—	Hach	—
Total Ammonia (mg/L as N):	<0.04	Denver	MF 4034
Salinity (ppth):	~20	Mettler	BA

Organism Batch #/ Age: 7-31-07 13 days

Feeding: (Prior to test / Prior to renewal) X Daily

Food: YCT *P.subcapitata* Artemia; Lot # GSL-526-05

Food Batch: — — 0hr 11:07 24hr — 48hr 11:07 72hr —

Chamber size: 1000 mL

Test volume: 500 mL per replicate

Conc. g/L (µg/L mg/L)	Rep.	Chamber #	Number Live 0 hr (48 hr)	24 hr (72 hr)	48 hr (96 hr)	pH (SU) 0 hr (48 hr)	24 hr (72 hr)	48 hr (96 hr)	Temperature (°C) 0 hr (48 hr)	24 hr (72 hr)	48 hr (96 hr)	D.O. (mg/L) 0 hr (48 hr)	24 hr (72 hr)	48 hr (96 hr)	Uncorrected Conductivity µmhom/cm (mmhos/cm) 0 hr (48 hr)	24 hr (72 hr)	48 hr (96 hr)
Control	A	C13	10	10	10	8.4		8.3	24.2		24.9	6.4		6.2	31.6		32.6
	B	C14	10	10	9 (10)		8.3			24.1			6.3			33.3	
	C							(8.3)									
	D																
100	A	C15	10	10	10	8.4		8.3	24.5		24.8	6.8		5.9	31.9		32.5
	B	C16	10	10	10		8.3			24.3			6.2			33.0	
	C							(8.3)									
	D																
200	A	C17	10	9 (10)	9	8.4		8.3	24.7		24.8	6.8		6.0	32.1		32.6
	B	C18	10	8 (10)	8		8.3			24.2			6.1			33.2	
	C							(8.3)									
	D																
300	A	C19	10	8 (10)	8	8.4		8.3	24.8		24.7	6.6		6.1	32.1		32.8
	B	C20	10	8 (10)	7 (10)		8.3			24.2			6.0			33.2	
	C							(8.3)									
	D																
400	A	C21	10	5 (10)	5	8.4		8.3	24.9		24.7	6.6		6.2	31.7		32.4
	B	C22	10	4 (10)	4		8.3			24.2			5.9			32.7	
	C							(8.3)									
	D																
500	A	C23	10	1 (10)	1	8.4		8.3	24.8		25.0	6.8		6.4	32.1		32.9
	B	C24	10	0 (10)	—		8.3			24.2			5.8			33.1	
	C																
	D																
	A																
	B																
	C																
	D																
Loaded / measured by:			JD	JD	JD	JD	BA	JD	JD	BA	JD	JD	BA	JD	JD	BA	JD
Recorded by:			JD	JD	JD	JD	BA	JD	JD	BA	JD	JD	BA	JD	JD	BA	JD

Investigators' Signatures

James Daniel

Marshall Pursiath

Bill Dohm

Reviewer: Martha Wolfe

Concentrations prepared by: JD

Loading verified by: BA

Light Intensity: 50-100 Ft. candles

Photoperiod: 16 hours Light / 8 hours dark

Temperature Range °C:

Incubator # 2 min 25.2 max 26.3 mean 25.8

Incubator # ___ min ___ max ___ mean ___

Room B248 min 24.8 max 26.3 mean 25.6

Comments:

@ all 48 hr DH 36.1 although - wrong rep. JD 8.2.07

Statistics: Method: Spearman-Karber

48 / 96 hour LC_{50}: 350.68

95% Confidence Interval: lower 308.72 upper 398.34

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Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* (Method 2007.0) / ~~*Menidia beryllina* (Method 2006.0)~~ / *Hyalella azteca* (Method 100.1 EPA-600-R-99-064) / *Ceriodaphnia dubia* (Method 2002.0) / *Cyprinella leedsi* (Method 2000.0) / *Pimephales promelas* (Method 2000.0) / Other: _____

Method from EPA-821-R-02-012
Test Type: 48 hour non-renewal / (96) hour renewal
Test Page 2 of 2

Diluent/ Batch #: ASW / 72707
Toxicant/ Batch#: CuCl2 / 73007

Test Beginning: Date: 7/31/07 Time: 1300
Test Ending: Date: 8-4-07 Time: 1030

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	238	Hach	JD
Hardness (mg.L as $CaCO_3$):	—	Hach	—
Total Ammonia (mg/L as N):	0.034	Denver	MF
Salinity (ppth):	~30	Mettler	BA

Organism Batch #/ Age: 7-31-07/ 13days
Feeding: (Prior to test / Prior to renewal) Daily
Food: YCT *P.subcapitata* Artemia: Lot # GSL-536-40
Food Batch: _____ _____ 0hr 11h-24hr — 48hr 11h-72hr —
Chamber size: 1000 mL
Test volume: 500 mL per replicate

Conc. g/L (µg/L) mg/L	Rep.	Chamber #	Number Live 0 hr	Number Live 24 hr	Number Live 48 hr	Number Live 72 hr	Number Live 96 hr	pH (SU) 0 hr	pH (SU) 24 hr	pH (SU) 48 hr	pH (SU) 72 hr	pH (SU) 96 hr	Temperature (°C) 0 hr	Temperature (°C) 24 hr	Temperature (°C) 48 hr	Temperature (°C) 72 hr	Temperature (°C) 96 hr	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 hr	D.O. (mg/L) 48 hr	D.O. (mg/L) 72 hr	D.O. (mg/L) 96 hr	Uncorrected Conductivity µmhom/cm (mmhos/cm) 0 hr	24 hr	48 hr	72 hr	96 hr
Control	A	C13	10	10	9 10			8.4		8.3			24.2				25.2	6.7		6.7			31.1		33.1		
	B	C14	9	9	9				8.3					24.0					6.2					32.6			
	C																										
	D																										
100	A	C15	10	10	10			8.4		8.3			24.3				25.3	6.5		6.5			32.3		32.9		
	B	C16	10	10	10				8.3					24.2					6.1					32.4			
	C																										
	D																										
200	A	C17	9	9	9			8.4		8.3			24.3				25.5	6.6		6.6			32.2		33.4		
	B	C18	8	8	8				8.3					24.3					6.1					32.7			
	C																										
	D																										
300	A	C19	8	8	8			8.4		8.3			24.3				25.3	6.7		6.7			32.3		33.3		
	B	C20	7	7	7				8.3					24.3					6.1					32.3			
	C																										
	D																										
400	A	C21	5	5	5			8.4		8.3			24.3				25.3	6.7		6.7			32.0		33.1		
	B	C22	4	4	4				8.3					24.2					6.3					32.3			
	C																										
	D																										
500 (A)	A	C23	1	1	1			8.4		8.3			24.4				25.8	6.7		7.0			32.3		33.2		
	B	C24	—	—	—				8.4					24.5					6.4					32.7			
	C																										
	D																										
	A																										
	B																										
	C																										
	D																										
Loaded / measured by:			JD	JD	MF	JD	JD	MF	JD	JD	MF	JD	JD	JD	MF	JD	JD	MF	JD	JD	MF	JD	JD	MF	JD	JD	MF
Recorded by:			JD	JD	MF	JD	JD	MF	JD	JD	MF	JD	JD	JD	MF	JD	JD	MF	JD	JD	MF	JD	JD	MF	JD	JD	MF

Investigators' Signatures
James Dowds
Marshall Faircloth
Bruce Neuhaus
Loretta Wolfe
REVIEWER

Concentrations prepared by: JD
Loading verified by: BA
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 25.2 max. 26.3 mean 25.8
Incubator # ___ min. _____ max. _____ mean _____
Room B246 min. 24.8 max. 26.3 mean 25.6

Comments: (A) 72hour Parameters are from Replicate A. for the 500ug/L concentration. MF 8/8/07

Statistics: Method: Spearman-Karber
48 / (96) hour LC_{50}: 359.44
95% Confidence Interval: lower 319 upper 405

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revised 08/24/06 SP

Appendix C. (continued)

DATE: 7/31/07 TEST NUMBER: 1 DURATION: 48 h
TOXICANT : CdCl2
SPECIES: *Americamysis bahia*

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	0
20.00	20	0
30.00	20	2
45.00	20	11
67.00	20	19
100.00	20	18

SPEARMAN-KARBER TRIM: 7.50%

SPEARMAN-KARBER ESTIMATES: LC50: 43.54
95% LOWER CONFIDENCE: 38.69
95% UPPER CONFIDENCE: 49.00

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING. ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

DATE: 7/31/07 TEST NUMBER: 1 DURATION: 48 h
TOXICANT : CuCl2
SPECIES: *Menidia beryllina*

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	1
100.00	20	0
200.00	20	3
300.00	20	5
400.00	20	11
500.00	20	19

SPEARMAN-KARBER TRIM: 5.13%

SPEARMAN-KARBER ESTIMATES: LC50: 350.68
95% LOWER CONFIDENCE: 308.72
95% UPPER CONFIDENCE: 398.34

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING. ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

Appendix D. Test Organism Receipts

MBL Aquaculture
4569 Samuel Street
Sarasota, Florida 34233
TEL: (800) 889-0384
FAX: (941) 922-3874
EMAIL: sales@mblaquaculture.com
WEB: www.MBLAquaculture.com

NELAC Accredited

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 7/30/07

Shipped to: FLDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temperature	Salinity
Mysidopsis bahia	150	4 DAYS	MS070726	25°C	20‰
Menidia beryllina	150	12 DAYS	SS070718	25°C	20‰
Cyprinella leedsi	150	10 DAYS	CL070720	25°C	
Pimephales promelas	150	7 DAYS	FM070723	25°C	

Packed by: JL

Shipped Via: Fed Ex.

Notes:

Thank you for your order.

Appendix D. (continued)

MBL Aquaculture
4569 Samuel Street
Sarasota, Florida 34233
TEL: (800) 889-0384
FAX: (941) 922-3874
EMAIL: sales@mblaquaculture.com
WEB: www.MBLAquaculture.com

NELAC Accredited

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 8/13/07

Shipped to: FLDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temperature	Salinity
Mysidopsis bahia	100	4 DAYS	MS070809	25°C	20
Menidia beryllina	100	11 DAYS	MS070802	25°C	20
Cyprinella leedsi					
Pimephales promelas					

Packed by: RB

Shipped Via: Fed Ex

Notes:

Thank you for your order.

Appendix E. Chemical Analyses performed on the effluent from the Buccaneer WWTF (Atlantic Beach II WWTF) Outfall D-001, sampled on August 13, 2007.

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
8/13/2007 10:40	Effluent	AGP/LN	Algal Growth Potential	336		mg DryWt/L	0.3	0.9
8/13/2007 10:40	Effluent	AGP/LN	Algal Growth Potential-Salinity Adjusted	442		mg DryWt/L	3	3
8/13/2007 10:40	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	15	L	mg/L	0.2	2
8/13/2007 10:40	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1	I	ug/L	0.62	1.9
8/13/2007 10:40	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	I	ug/L	0.27	0.8
8/13/2007 10:40	Effluent	Toxicology	Bioassay-Acute-Screen-SW-Fish, LC50	100	L	LC50		
8/13/2007 10:40	Effluent	Toxicology	Bioassay-Acute-Screen-SW-Mysid, LC50	100	L	LC50		
8/13/2007 10:40	Effluent	Metals	Mercury	0.12	U	ug/L	0.12	0.5
8/13/2007 10:40	Effluent	Metals	Aluminum	56	I	ug/L	20	80
8/13/2007 10:40	Effluent	Metals	Calcium	71.3		mg/L	0.05	0.2
8/13/2007 10:40	Effluent	Metals	Iron	74		ug/L	10	40
8/13/2007 10:40	Effluent	Metals	Magnesium	28.8		mg/L	0.03	0.12
8/13/2007 10:40	Effluent	Metals	Arsenic	0.58	I	ug/L	0.5	2
8/13/2007 10:40	Effluent	Metals	Cadmium	0.056	I	ug/L	0.02	0.08
8/13/2007 10:40	Effluent	Metals	Chromium	1	U	ug/L	1	4
8/13/2007 10:40	Effluent	Metals	Copper	5.05		ug/L	0.25	1
8/13/2007 10:40	Effluent	Metals	Lead	0.37	I	ug/L	0.2	0.8
8/13/2007 10:40	Effluent	Metals	Nickel	2.16		ug/L	0.25	1
8/13/2007 10:40	Effluent	Metals	Selenium	0.5	U	ug/L	0.5	2
8/13/2007 10:40	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/13/2007 10:40	Effluent	Metals	Zinc	43		ug/L	5	20
8/13/2007 10:40	Effluent	Nutrients	Fluoride	0.66		mg F/L	0.05	0.1
8/13/2007 10:40	Effluent	Nutrients	Ammonia-N	1.5		mg N/L	0.05	0.1
8/13/2007 10:40	Effluent	Nutrients	NO2NO3-N	10		mg N/L	0.08	0.2
8/13/2007 10:40	Effluent	Nutrients	O-Phosphate-P	3.1		mg P/L	0.12	0.3
8/13/2007 10:40	Effluent	Nutrients	Kjeldahl Nitrogen	2.9		mg N/L	0.08	0.2
8/13/2007 10:40	Effluent	Nutrients	Total-P	2.6		mg P/L	0.1	0.3
8/13/2007 10:40	Effluent	Nutrients	TSS	6	I	mg/L	4	16
8/13/2007 10:40	Effluent	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
8/13/2007 10:40	Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
8/13/2007 10:40	Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
8/13/2007 10:40	Effluent	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
8/13/2007 10:40	Effluent	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
8/13/2007 10:40	Effluent	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
8/13/2007 10:40	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
8/13/2007 10:40	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
8/13/2007 10:40	Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
8/13/2007 10:40	Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
8/13/2007 10:40	Effluent	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
8/13/2007 10:40	Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
8/13/2007 10:40	Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
8/13/2007 10:40	Effluent	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
8/13/2007 10:40	Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
8/13/2007 10:40	Effluent	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
8/13/2007 10:40	Effluent	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
8/13/2007 10:40	Effluent	Pesticides	Metribuzin	0.36	U	ug/L	0.36	1.4
8/13/2007 10:40	Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
8/13/2007 10:40	Effluent	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
8/13/2007 10:40	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
8/13/2007 10:40	Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
8/13/2007 10:40	Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
8/13/2007 10:40	Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
8/13/2007 10:40	Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
8/13/2007 10:40	Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
8/13/2007 10:40	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	1,2-Dichlorobenzene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	1,3-Dichlorobenzene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	1,4-Dichlorobenzene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
8/13/2007 10:40	Effluent	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
8/13/2007 10:40	Effluent	Priority Organic Pollutants	4,4'-DDD	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	4,4'-DDE	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	4,4'-DDT	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Acenaphthene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Acenaphthylene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Aldrin	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Anthracene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Chrysene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Dieldrin	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Diethyl phthalate	1.1	I	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Dimethyl phthalate	49	U	ug/L	49	190
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Endosulfan I	3.9	U	ug/L	3.9	16
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Endosulfan II	3.9	U	ug/L	3.9	16

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Endosulfan sulfate	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Endrin	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Endrin aldehyde	3.9	U	ug/L	3.9	16
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Fluoranthene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Fluorene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Heptachlor	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Heptachlor epoxide	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	UJ	ug/L	2.9	12
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Naphthalene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Phenanthrene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	Pyrene	0.97	U	ug/L	0.97	3.9
8/13/2007 10:40	Effluent	Priority Organic Pollutants	alpha-BHC	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	beta-BHC	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	delta-BHC	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Priority Organic Pollutants	gamma-BHC	1.5	U	ug/L	1.5	5.8
8/13/2007 10:40	Effluent	Nutrients	Dissolved Oxygen	2.68		mg/L		
8/13/2007 10:40	Effluent	Nutrients	Specific Conductance	946		umhos/cm		
8/13/2007 10:40	Effluent	Nutrients	Temperature	30.55		C		
8/13/2007 10:40	Effluent	Nutrients	pH	6.87				
8/13/2007 11:30	Blank	Metals	Mercury	0.12	U	ug/L	0.12	0.5
8/13/2007 11:30	Blank	Metals	Aluminum	20	U	ug/L	20	80
8/13/2007 11:30	Blank	Metals	Calcium	0.05	U	mg/L	0.05	0.2
8/13/2007 11:30	Blank	Metals	Iron	10	U	ug/L	10	40

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
8/13/2007 11:30	Blank	Metals	Magnesium	0.03	U	mg/L	0.03	0.12
8/13/2007 11:30	Blank	Metals	Arsenic	0.5	U	ug/L	0.5	2
8/13/2007 11:30	Blank	Metals	Cadmium	0.02	U	ug/L	0.02	0.08
8/13/2007 11:30	Blank	Metals	Chromium	1	U	ug/L	1	4
8/13/2007 11:30	Blank	Metals	Copper	0.25	U	ug/L	0.25	1
8/13/2007 11:30	Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
8/13/2007 11:30	Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
8/13/2007 11:30	Blank	Metals	Selenium	0.5	U	ug/L	0.5	2
8/13/2007 11:30	Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/13/2007 11:30	Blank	Metals	Zinc	5	U	ug/L	5	20
8/13/2007 11:30	Blank	Nutrients	Fluoride	0.05	U	mg F/L	0.05	0.1
8/13/2007 11:30	Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
8/13/2007 11:30	Blank	Nutrients	NO2NO3-N	0.28		mg N/L	0.004	0.01
8/13/2007 11:30	Blank	Nutrients	O-Phosphate-P	0.012		mg P/L	0.004	0.01
8/13/2007 11:30	Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
8/13/2007 11:30	Blank	Nutrients	Total-P	0.02	U	mg P/L	0.02	0.06
8/13/2007 11:30	Blank	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
8/13/2007 11:30	Blank	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
8/13/2007 11:30	Blank	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
8/13/2007 11:30	Blank	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
8/13/2007 11:30	Blank	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
8/13/2007 11:30	Blank	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
8/13/2007 11:30	Blank	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
8/13/2007 11:30	Blank	Pesticides	Chlorpyrifos Methyl	0.095	U	ug/L	0.095	0.38
8/13/2007 11:30	Blank	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
8/13/2007 11:30	Blank	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
8/13/2007 11:30	Blank	Pesticides	Ethoprop	0.095	U	ug/L	0.095	0.38
8/13/2007 11:30	Blank	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
8/13/2007 11:30	Blank	Pesticides	Fonofos	0.095	U	ug/L	0.095	0.38
8/13/2007 11:30	Blank	Pesticides	Hexazinone	0.095	U	ug/L	0.095	0.38
8/13/2007 11:30	Blank	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
8/13/2007 11:30	Blank	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
8/13/2007 11:30	Blank	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
8/13/2007 11:30	Blank	Pesticides	Metribuzin	0.095	U	ug/L	0.095	0.38

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
8/13/2007 11:30	Blank	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
8/13/2007 11:30	Blank	Pesticides	Naled	0.76	U	ug/L	0.76	3
8/13/2007 11:30	Blank	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
8/13/2007 11:30	Blank	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
8/13/2007 11:30	Blank	Pesticides	Parathion Methyl	0.095	U	ug/L	0.095	0.38
8/13/2007 11:30	Blank	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
8/13/2007 11:30	Blank	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
8/13/2007 11:30	Blank	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
8/13/2007 11:30	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	1,2-Dichlorobenzene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	1,3-Dichlorobenzene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	1,4-Dichlorobenzene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.5	U	ug/L	9.5	38
8/13/2007 11:30	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
8/13/2007 11:30	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	2-Chlorophenol	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	11
8/13/2007 11:30	Blank	Priority Organic Pollutants	2-Nitrophenol	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
8/13/2007 11:30	Blank	Priority Organic Pollutants	4,4'-DDD	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	4,4'-DDE	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	4,4'-DDT	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.6
8/13/2007 11:30	Blank	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
8/13/2007 11:30	Blank	Priority Organic Pollutants	Acenaphthene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Acenaphthylene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Aldrin	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	Anthracene	0.95	U	ug/L	0.95	3.8

Appendix E. (continued)

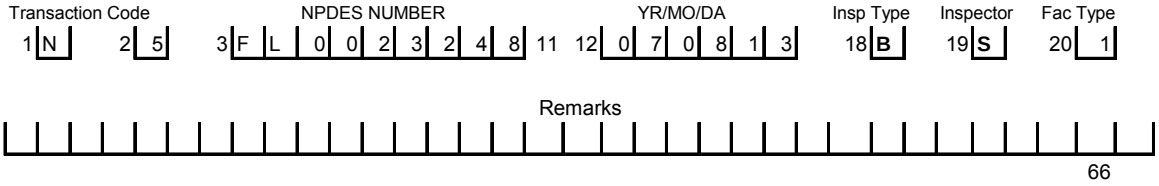
Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
8/13/2007 11:30	Blank	Priority Organic Pollutants	Benzidine	95	U	ug/L	95	380
8/13/2007 11:30	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	11
8/13/2007 11:30	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
8/13/2007 11:30	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
8/13/2007 11:30	Blank	Priority Organic Pollutants	Chrysene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
8/13/2007 11:30	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Dieldrin	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	Diethyl phthalate	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Dimethyl phthalate	48	U	ug/L	48	190
8/13/2007 11:30	Blank	Priority Organic Pollutants	Endosulfan I	3.8	U	ug/L	3.8	15
8/13/2007 11:30	Blank	Priority Organic Pollutants	Endosulfan II	3.8	U	ug/L	3.8	15
8/13/2007 11:30	Blank	Priority Organic Pollutants	Endosulfan sulfate	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	Endrin	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	Endrin aldehyde	3.8	U	ug/L	3.8	15
8/13/2007 11:30	Blank	Priority Organic Pollutants	Fluoranthene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Fluorene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Heptachlor	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	Heptachlor epoxide	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	11
8/13/2007 11:30	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	UJ	ug/L	2.9	11
8/13/2007 11:30	Blank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	11
8/13/2007 11:30	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Isophorone	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.6

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
8/13/2007 11:30	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.6
8/13/2007 11:30	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	11
8/13/2007 11:30	Blank	Priority Organic Pollutants	Naphthalene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.6
8/13/2007 11:30	Blank	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	11
8/13/2007 11:30	Blank	Priority Organic Pollutants	Phenanthrene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Phenol	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	Pyrene	0.95	U	ug/L	0.95	3.8
8/13/2007 11:30	Blank	Priority Organic Pollutants	alpha-BHC	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	beta-BHC	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	delta-BHC	1.4	U	ug/L	1.4	5.7
8/13/2007 11:30	Blank	Priority Organic Pollutants	gamma-BHC	1.4	U	ug/L	1.4	5.7

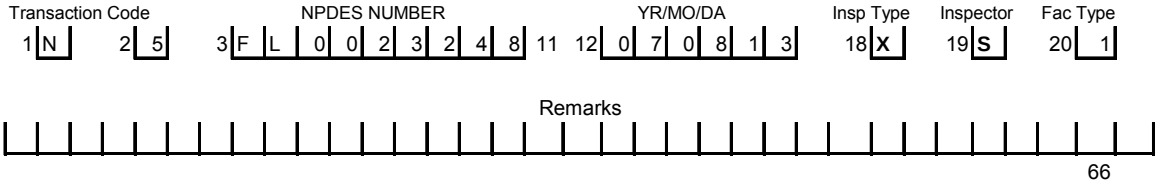
The Bioassay of the Buccaneer Wastewater Treatment Facility (Atlantic Beach II WWTF) effluent sampled on August 13, 2007. NPDES #FL0023248.

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



The Priority Pollutants Analysis of the Buccaneer Wastewater Treatment Facility (Atlantic Beach II WWTF) effluent sampled on August 13, 2007. NPDES #FL0023248.

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



Biological Analyses of the Buccaneer Wastewater Treatment Facility (Atlantic Beach II WWTF) effluent sampled on August 13, 2007. NPDES #FL0023248.

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

