

Effluent Quality Assessment

Daytona Beach/Bethune Point WWTF

Volusia County

NPDES #FL0025984

Sampled May 10, 2010

September 2010

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 and chemical 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

Daytona Beach/Bethune Point Wastewater Treatment Facility, 1 Shady Place, Daytona Beach, Volusia County, Florida, 32114. NPDES #FL0025984. Effluent grab samples for bioassay and chemical analyses for this facility were collected on May 10, 2010.

Introduction

Daytona Beach/Bethune Point WWTF is an advanced domestic wastewater treatment facility which uses a 5-stage Bardenpho system to treat domestic wastewater. (See Appendix F for detailed facility information provided by Blake Vahlsing of FDEP Central District.)

Methods

Samples were collected from the EFD-1 NPDES sampling point for Outfall D-001 by Phil Kane, Steven Kent, Blake Vahlsing, and Milton Andrade (FDEP Central 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 96-hour acute definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, 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.

An aliquot of the AGP test for the saltwater species *Dunaliella tertiolecta* was salinity adjusted to 7ppt to meet the minimum salinity requirements of the test species.

Results and Discussion

- **Toxicity Test Results**
  Tests were performed May 11 - 15, 2010.

  Ceriodaphnia dubia 96-hour acute definitive bioassay – LC_{50} > 100%, 5%* mortality in 100% sample at 96 hours

  Pimephales promelas 96-hour acute definitive 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 103 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 77.3 (±20%) mg dry wt/L (Table 1a; Miller et al. 1978).

The salinity-adjusted effluent Algal Growth Potential (AGP) was 27.4 mg dry wt/L of the saltwater species *Dunaliella tertiolecta* (Table 1b). Raschke and Schultz found 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 1a and Table 1b for AGP results.

- **Chemistry Results**
  Total residual chlorine (TRC) (0.08 mg/L) was detected in the bioassay sample in the laboratory. The TRC result is thought to be due to interference within the sample since chlorine is not used in the wastewater treatment process. Total ammonia was not detected in the bioassay sample in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.035 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.

  Copper and zinc were detected in the effluent at levels that comply with Class III marine water quality criteria (62-302.530, F.A.C.). Aluminum, arsenic, iron, lead, and nickel were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Nickel was detected between the MDL and the PQL in the equipment blanks.

  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-1 NPDES sampling point for Outfall D-001 for this facility on May 10, 2010, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The effluent AGP result was greater than the "problem” thresholds for both fresh and marine receiving waters, suggesting nutrient enrichment may be an issue. Effluent water quality samples collected on May 10, 2010, did not exceed any applicable water quality standards or violate any permit conditions. Residual chlorine detected in the bioassay sample is thought to be due to interfering substances within the sample since chlorine is not used in the wastewater treatment process.

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 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 Daytona Beach/ Bethune Point Wastewater Treatment Facility on May 10, 2010.

Daytona Beach/ Bethune Point WWTF NPDES # FL0025984					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
D-001	103.0	77.3 ± 15.5	111.0 ± 22.2	6.6	9.1

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 Daytona Beach/ Bethune Point Wastewater Treatment Facility on May 10, 2010.

Daytona Beach/ Bethune Point WWTF NPDES # FL0025984			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
D-001	27.4 *	6.6	9.1

* - sample salinity adjusted to 7ppt

Table 2. Effluent limits, Class III Criteria for predominantly marine waters and chemical data for samples collected from the Daytona Beach/ Bethune Point Wastewater Treatment Facility on May 10, 2010.

Daytona Beach/ Bethune Point WWTF NPDES # FL0025984	Class III Criteria	Effluent Limits	D-001	
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1500	-	80	I
Arsenic	≤ 50	-	0.48	I
Cadmium	≤ 8.8	-	0.03	U
Calcium (mg/L)	-	-	55.6	
Chromium-III	-	-	0.3	U
Copper	≤ 3.7	-	3.25	
Iron	≤ 300	-	54	I
Lead	≤ 8.5	-	0.3	I
Magnesium (mg/L)	-	-	9.62	
Nickel	≤ 8.3	-	0.97	IF
Selenium	≤ 71	-	0.2	U
Silver	≤ 2.3	-	0.025	U
Zinc	≤ 86	-	27	
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.31	
Total Phosphorus	-	≤ 5.0 s*	0.32	A
Total Ammonia	-	-	0.035	
Un-ionized Ammonia	-	-	≤ 0.02	c
Nitrate and Nitrite	-	-	2	
Total Kjeldahl Nitrogen	-	-	0.92	
Organic Nitrogen	-	-	0.885	c
Total Nitrogen	-	≤ 12.0 s*	2.92	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 2.0 s	8.1	
pH (SU)	6.5 - 8.5	6.5 - 8.5	7.6	
Conductivity (µmhos/cm)	-	-	790	
Temperature (°C)	-	-	26.7	
Salinity	-	-	< 0.37	c
Total Residual Chlorine (mg/L)	≤ 0.01	-	0.08	£
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	1.1	I
Cyanide (µg/L)	≤ 1.0	≤ 1.0 s	0.005	U
Flow (MGD)	-	20.0 a	8.6	a †
Hardness (mg $CaCO_3$)	-	-	178.45	c

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
s - Single sample
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
* - limits reflect Consent Orders 08-175 and 09-0674
£ - measured in Central Labs and entered into Tox Sheets.
† - Measured from February '09 to January '10

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-05-10-32
Daytona Beach/ Bethune Point FYI3

Requester: Cari Butler

Field Report Prepared By: KANE

Customer: CEN-DIST

Collected By: KANE, KENT, VAHLSING, ANDRADE

Send Final Report To ~~Gary Miller~~ PK PHIL KANE

Project ID: FYI3

Sampling Agency: FDEP CENTRAL DISTRICT

PMAS: 1143

Lab ID *	Location DAYTONA BEACH/BETHUNE POINT WWTF 1 SHADY PLACE DAYTONA BEACH, FL 32114			☐ Comp ☑ Grab	Collection (begin) Date 5/10/10 Time 9:15	Eastern Central	Collection (end) PK Date ~~Time~~	Eastern ~~Central~~	Bottle Group(s)**
	Field ID DAYB			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 8.09		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc) EFFLUNT	Temp (C) 26.69	pH 7.63	Sample Depth ☐ m ☐ ft SURFACE	790.0		☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	NPDES Number FL0025984	
	Latitude o ' "	Longitude o ' "		Comments ~~metals~~ pH/less than 2, Nutrients less than 2, CN pH >12					
Lab ID *	Location DAYTONA BEACH/BETHUNE POINT WWTF 1 SHADY PLACE DAYTONA BEACH, FL 32114			☐ Comp ☑ Grab	Collection (begin) Date 5/10/10 Time 9:10	Eastern Central	Collection (end) PK Date ~~Time~~	Eastern ~~Central~~	Bottle Group(s)**
	Field ID DAYB			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 8.09		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc) EFFLUENT BIOASSAY	Temp (C) 26.69	pH 7.63	Sample Depth ☐ m ☐ ft SURFACE	790.0		☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	NPDES Number FL0025984	
	Latitude o ' "	Longitude o ' "		Comments BIOASSAY					
Lab ID *	Location DAYTONA BEACH/BETHUNE POINT WWTF 1 SHADY PLACE DAYTONA BEACH, FL 32114			☐ Comp ☑ Grab	Collection (begin) Date 5/10/10 Time 9:25	Eastern Central	Collection (end) PK Date ~~Time~~	Eastern ~~Central~~	Bottle Group(s)**
	Field ID DAYB			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc) BLANK	Temp (C)	pH	Sample Depth ☐ m ☐ ft N/A			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number FL0025984	
	Latitude o ' "	Longitude o ' "		Comments BLANK ~~cyanide~~ pH greater than 12 ~~nutrients~~ and ~~metals~~ less than 2					
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 o ' "	Longitude o ' "		Comments 3 Biossay Rec'd into lab by J.J. 10:26 5.11.10					

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
KANE	5/10/10	FEDEX	[illegible]	5/11/10 09:15				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

1-800-463-3339
FEDEX

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: Daytona Beach/Bethune Po. IF WWTF

Address: 1 Shady Place Fl 32114

City: Daytona Beach County: Volusia

Contact/District: Blake Vehling / Central district

NPDES Permit #: FL 0025984

LIMS Job #: TLH-2010-05-11-56 LIMS Sample #: 1269973

Lims Data Entry: 5-20-10-MF Data Entry Verification: 5.20.10 JD

Sample Collection: Date: 5.10.10 Time: 0910

Hold Time Start: Date: 5.10.10 Time: 0910

Comments:

Initial sample handling:

Instructions: Check yes or no. If yes is checked, complete blanks

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: ____ Final Salinity: ____ Salts Hypersaline brine

Salinity adjusted (Test 2): ☐ yes ☑ no Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine

Dechlorination: ☐ yes ☑ no ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Sample Validation:

Instructions: Check yes or no. Fill in temperatures.

Temperature: Shipped ≤ 6°C ☑ Yes ☐ No — IF Hand Delivered: Cooling ☐ Yes ☐ No (received ____°C collected ____°C)

Holding Time: ≤ 36 Hours ☑ Yes ☐ No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Investigators' Signatures:

	Initials:
Bruce Alexander	BA
Kim Spencer	KMS
Marshall Faircloth	MF
Jason Dowd	JD

REVIEWER: Liz Miller

Diluent/Control Batch#:	5-11-10		5-3-10							
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other: ~~Original~~ Sample	~~Original~~ Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A	Not Measured		MF
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03			0.08		KMS/JD	MF
Alkalinity (mg/L as $CaCO_3$):	87		86			171		BA	MF
Hardness (mg/L as $CaCO_3$):	84		118			~~+8/8~~	188 BA	BA	MF
Total Ammonia (mg/L as N):	<0.017		<0.017			<0.017		MF	BA
Conductivity: ~~X~~ µmhos ~~X~~ mmhos	186		334			823		BA/JD	MF
Salinity (ppth):	—		—			—		—	—

marked mmhos by mistake MF 5/18/10

V 1.8 1/13/10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1269973 SOP#: TA 07 01 Test # 1 of 2

Test Species:
Batch #: 1240 Age: < 24 hr
- [x] *Ceriodaphnia dubia*
- [ ] *Cyprinella leedsi*
- [ ] *Pimephales promelas*
- [ ] *Menidia beryllina*
- [ ] *Americamysis bahia*
- [ ] Other:_____

Test Validation
Control Survival ≥ 90%: [x] Yes [ ] No
Temperature Range ≤ 3° C: [x] Yes [ ] No

Diluent (Batch # 5.11.10)
[ ] ASW [x] 20% DMW
[ ] MHW [ ] Well

Test Type: [x] Acute [ ] Definitive
[ ] Static [x] Static Renewal [ ] Flow-Through

Test Duration:
[ ] 48 hr
[x] 96 hr
[ ] ___hr

Test Started: Date 5-11-10 Time 13:10

Test Ended: Date 5.15.10 Time 1300

Chamber Size 30 ml
Test Volume: 20 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A Bk	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
6.25%	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
12.5%	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	4D
25%	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
50%	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
100%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	4D	4	4	4	4
	D	D	5	5	5	5	5	5
Checked or Verified by:			BA	BA	BA	BA	BA	BA

Food
- [x] YCT Batch# 10.30.8
- [x] P. subcapitata Batch# 12.23.09
- [ ] Artemia Lot#_____

Feeding and Artemia Batch #
- [x] 0 hr ✓ [x] Prior to Test
- [ ] 24 hr___
- [x] 48 hr ✓ [x] Prior to Renewal
- [ ] 72 hr___

Temperature Range (°C)
Incubator # 2
min. 24.8 max. 27.0 mean 25.9
Incubator #___
min.___max.___mean___
Waterbath #___
min.___max.___mean___
Room B246
min. 24.0 max. 25.8 mean 24.9
Light intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: BA / MF
m = missing, d = dead, BR/AR Before/ After Renewal

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 5% LC50: > 100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

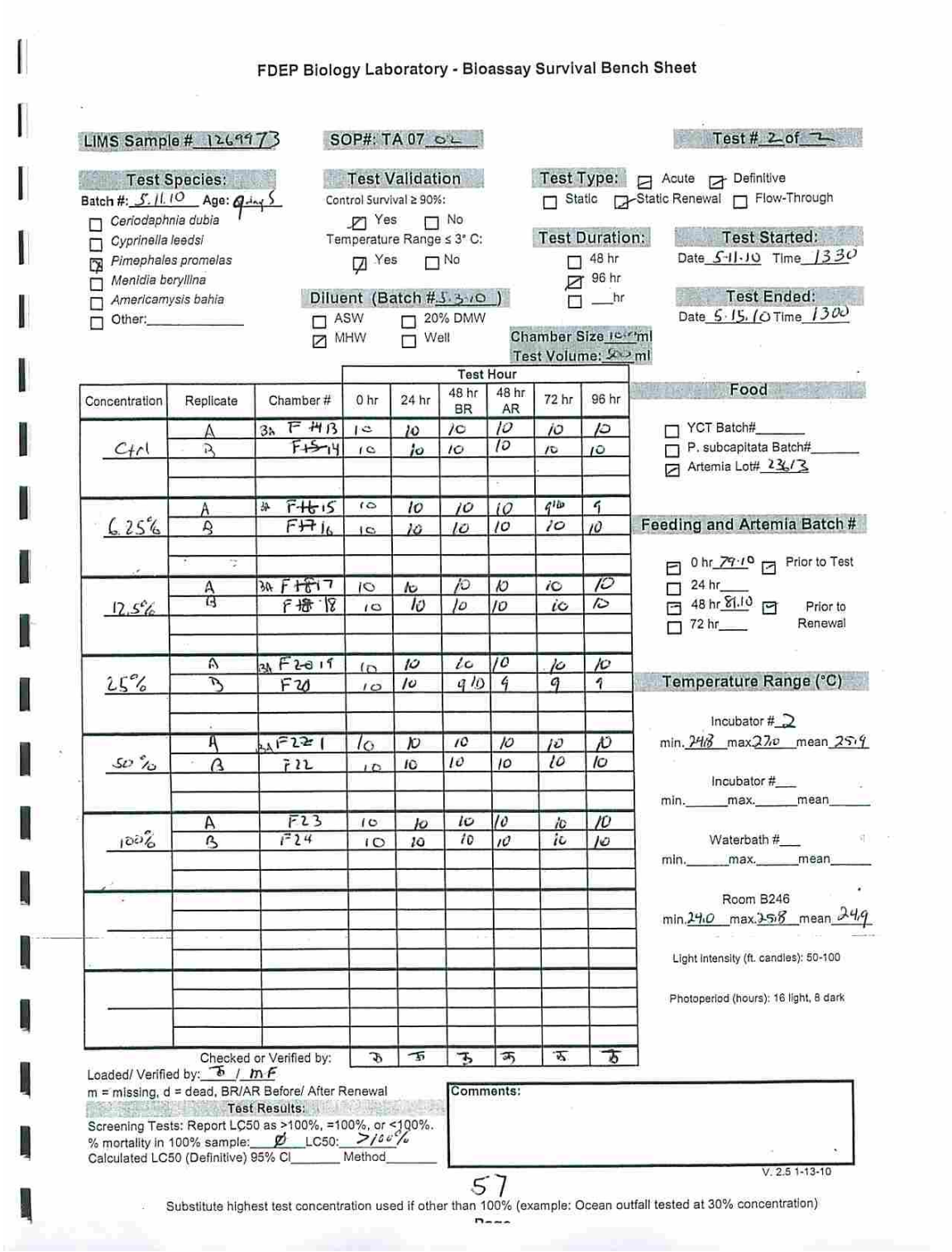
Comments:

V. 2.5 1-13-10

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

Page 56

Appendix B. (continued)



FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1269973 | SOP#: TA 07 02 | Test # 2 of 2

Test Species: Batch #: 5.11.10 Age: 9 day 5
- ☐ *Ceriodaphnia dubia*
- ☐ *Cyprinella leedsi*
- ☒ *Pimephales promelas*
- ☐ *Menidia beryllina*
- ☐ *Americamysis bahia*
- ☐ Other:_____

Test Validation
Control Survival ≥ 90%: ☒ Yes ☐ No
Temperature Range ≤ 3° C: ☒ Yes ☐ No

Diluent (Batch #5.3.10)
☐ ASW ☐ 20% DMW ☒ MHW ☐ Well

Test Type: ☒ Acute ☒ Definitive ☐ Static ☒ Static Renewal ☐ Flow-Through

Test Duration: ☐ 48 hr ☒ 96 hr ☐ ___hr

Test Started: Date 5-11-10 Time 1330

Test Ended: Date 5.15.10 Time 1300

Chamber Size 30 ml
Test Volume: 20 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	F413	10	10	10	10	10	10
	B	F414	10	10	10	10	10	10
6.25%	A	F415	10	10	10	10	9d	9
	B	F416	10	10	10	10	10	10
12.5%	A	F417	10	10	10	10	10	10
	B	F418	10	10	10	10	10	10
25%	A	F2019	10	10	10	10	10	10
	B	F20	10	10	9d10	9	9	9
50%	A	F221	10	10	10	10	10	10
	B	F22	10	10	10	10	10	10
100%	A	F23	10	10	10	10	10	10
	B	F24	10	10	10	10	10	10
Checked or Verified by:			JB	JB	JB	JB	JB	JB

Food
- ☐ YCT Batch#_____
- ☐ P. subcapitata Batch#_____
- ☒ Artemia Lot# 23613

Feeding and Artemia Batch #
- ☒ 0 hr 79.10 ☒ Prior to Test
- ☐ 24 hr____
- ☒ 48 hr 81.10 ☒ Prior to Renewal
- ☐ 72 hr____

Temperature Range (°C)
Incubator # 2
min. 24.8 max 27.0 mean 25.9
Incubator #___
min.____max.____mean____
Waterbath #___
min.____max.____mean____
Room B246
min. 24.0 max. 25.8 mean 24.9
Light Intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: JB / MF
m = missing, d = dead, BR/AR Before/ After Renewal

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 0 LC50: >100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.5 1-13-10

57

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

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 126 9973 Test # 1 of 2

Test Species:

☑ *Ceriodaphnia dubia* ☐ *Pimephales promelas* ☐ *Americamysis bahia*

☐ *Cyprinella leedsi* ☐ *Menidia beryllina* ☐ Other:_____

Test aerated: (if DO is < 4.0 mg/L) ☐ Yes ☐ No

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
	M	0 hr	8.2	24.0	7.5	186	
	–	24 hr	–	–	–	–	
Ctrl	A	48 hr BR	8.2	24.0	7.2	~~180~~ 194 BAS	
	M	48 hr AR	8.1	24.0	7.4	180	
	–	72 hr	–	–	–	–	
	A	96 hr	8.3	24.6	8.0	200	
	M	0 hr	8.2	24.0	7.4	225	
	–	24 hr	–	–	–	–	
6.25%	A	48 hr BR	8.3	24.0	7.1	249	
	M	48 hr AR	8.2	24.0	7.4	222	
	–	72 hr	–	–	–	–	
	A	96 hr	8.4	24.3	8.0	239	
	M	0 hr	8.2	24.0	7.6	266	
	–	24 hr	–	–	–	–	
12.5%	A	48 hr BR	8.3	24.0	7.2	300	
	M	48 hr AR	8.2	24.0	7.3	266	
	–	72 hr	–	–	–	–	
	A	96 hr	8.4	24.3	8.1	287	
	M	0 hr	8.2	24.0	7.6	347	
	–	24 hr	–	–	–	–	
25%	A	48 hr BR	8.3	24.0	7.2	395	
	M	48 hr AR	8.1	24.0	7.3	325	
	–	72 hr	–	–	–	–	
	A	96 hr	8.3	24.2	8.2	357	
	M	0 hr	8.1	24.0	7.6	505	
	–	24 hr	–	–	–	–	
50%	A	48 hr BR	8.4	24.0	7.1	576	
	M	48 hr AR	8.0	24.0	7.5	497	
	–	72 hr	–	–	–	–	
	A	96 hr	8.4	24.1	8.3	551	
	M	0 hr	7.9	24.2	7.7	822	
	–	24 hr	–	–	–	–	
100%	A	48 hr BR	8.5	24.0	7.2	886	
	M	48 hr AR	7.9	24.0	7.5	815	
	–	72 hr	–	–	–	–	
	A	96 hr	8.5	24.0	8.3	887	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments: (A) Transcription error 5.13.10

Measured By:
0 hr: BA
24 hr: –
48 hr BR: BA
48 hr AR: BA
72 hr: –
96 hr: –

Page 58

V. 2.3 1-13-10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1269973 Test # 2 of 2

Test Species:

☐ *Ceriodaphnia dubia* ☒ *Pimephales promelas* ☐ *Americamysis bahia*
☐ *Cyprinella leedsi* ☐ *Menidia beryllina* ☐ Other:_____

Test aerated: (If DO is < 4.0 mg/L) ☐ Yes ☒ No

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☒ µmhos ☐ mmhos	Salinity* (ppth)
Ctrl	A	0 hr	8.10	25.9	8.4	334	
	B	24 hr	7.9	24.7	6.9	345	
	A	48 hr BR	8.0	25.0	7.5	351	
	A	48 hr AR	8.0	25.6	6.7	378	
	B	72 hr	7.9	24.8	6.7	349	
	A	96 hr	8.0	24.6	7.9	370	
6.25%	A	0 hr	8.2	25.9	8.4	363	
	B	24 hr	7.9	24.7	6.9	373	
	A	48 hr BR	8.0	25.1	7.3	379	
	A	48 hr AR	8.1	25.5	6.8	380	
	B	72 hr	7.9	24.7	6.7	378	
	A	96 hr	8.1	25.0	7.8	383	
12.5%	A	0 hr	8.2	25.9	8.7	394	
	B	24 hr	7.9	24.5	7.0	406	
	A	48 hr BR	8.0	25.3	7.3	410	
	A	48 hr AR	8.1	25.5	6.8	409	
	B	72 hr	7.9	24.9	6.6	418	
	A	96 hr	8.0	24.7	7.7	413	
25%	A	0 hr	8.1	25.9	8.8	449	
	B	24 hr	8.0	24.4	7.0	453	
	A	48 hr BR	8.1	25.4	7.2	460	
	A	48 hr AR	8.0	25.3	6.8	466	
	B	72 hr	7.9	24.8	6.6	477	
	A	96 hr	8.1	25.0	7.6	470	
50%	A	0 hr	8.1	25.9	8.8	583	
	B	24 hr	8.0	24.5	7.0	588	
	A	48 hr BR	8.2	25.1	7.2	596	
	A	48 hr AR	8.0	25.0	6.9	582	
	B	72 hr	8.0	24.6	6.7	597	
	A	96 hr	8.1	24.3	7.5	599	
100%	A	0 hr	7.9	25.9	8.9	823	
	B	24 hr	8.1	24.6	7.0	813	
	A	48 hr BR	8.3	25.4	7.3	829	
	A	48 hr AR	7.9	24.6	6.6	824	
	B	72 hr	8.2	24.9	6.8	847	
	A	96 hr	8.3	24.9	7.4	839	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

Measured By:
0 hr: [illegible]
24 hr: [illegible]
48 hr BR: [illegible]
48 hr AR: [illegible]
72 hr: [illegible]
96 hr: [illegible]

59

Page

V. 2.3 1-13-10

Appendix B. (continued)

Bioassay Instrument ID

Test ID: 124973 Daphnia Beetle Dates: 5-11 — 5-15-2010

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	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	SM 2510 B	✓
			Salinity	SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
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. BJ BA 5-11-10
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

V 1.1 6/12/08 MF

PAGE 60

Appendix C. SRT Bench Sheets and Statistical Analysis

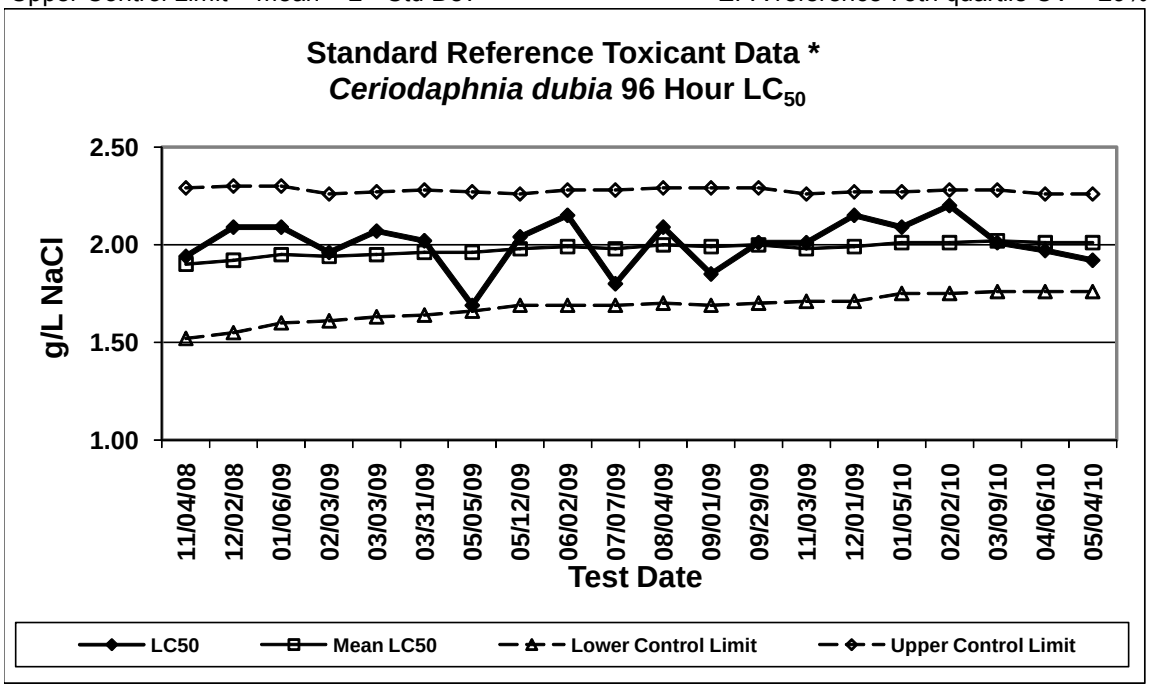
Florida Department of Environmental Protection
Bureau of Laboratories

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
11/04/08	1.94	1.90	0.19	1.52	2.29
12/02/08	2.09	1.92	0.19	1.55	2.30
01/06/09	2.09	1.95	0.17	1.60	2.30
02/03/09	1.96	1.94	0.16	1.61	2.26
03/03/09	2.07	1.95	0.16	1.63	2.27
03/31/09	2.02	1.96	0.16	1.64	2.28
05/05/09	1.69	1.96	0.15	1.66	2.27
05/12/09	2.04	1.98	0.14	1.69	2.26
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

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

CV = 6.20
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

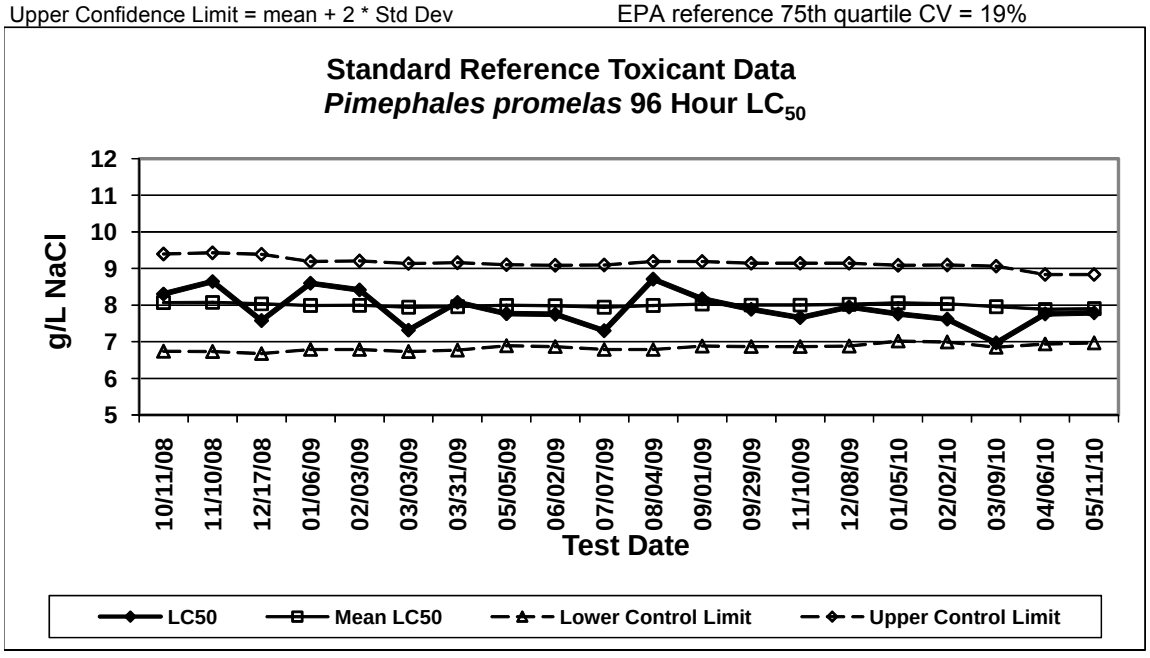
Florida Department of Environmental Protection
Bureau of Laboratories

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

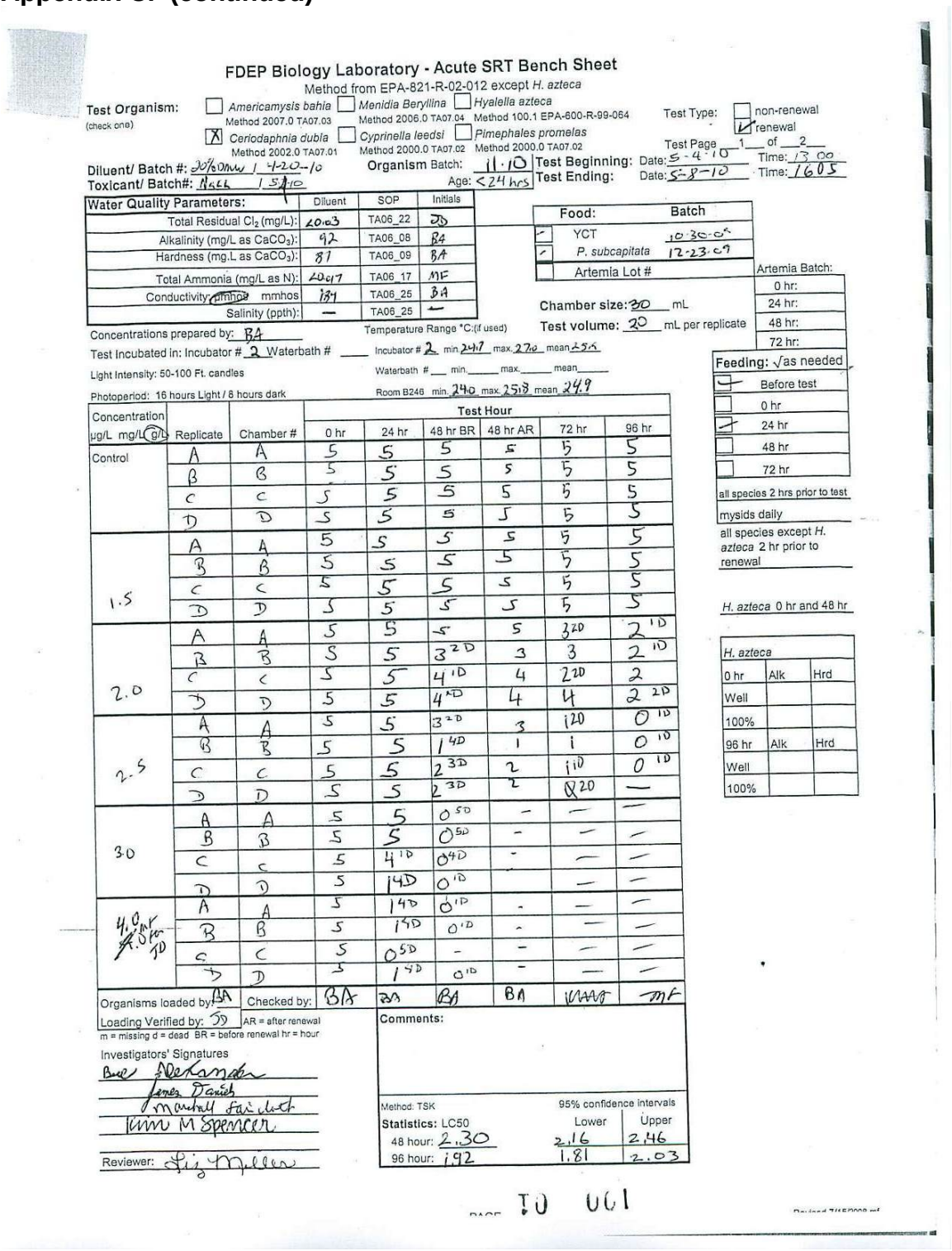
Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
10/11/08	8.31	8.07	0.67	6.74	9.4
11/10/08	8.65	8.08	0.67	6.73	9.43
12/17/08	7.58	8.04	0.68	6.68	9.39
01/06/09	8.60	7.99	0.6	6.79	9.19
02/03/09	8.42	8	0.6	6.79	9.21
03/03/09	7.32	7.94	0.6	6.73	9.14
03/31/09	8.08	7.96	0.6	6.77	9.16
05/05/09	7.77	8	0.55	6.89	9.11
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

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

CV = 5.91
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 #: 30‰MW / 4-20-10

Toxicant/ Batch#: NaCl 1.5/4-10

Organism Batch: 11.10 Age: <24 hrs

Test Beginning: Date: 5-4-10 Time: 13 00

Test Ending: Date: 5-8-10 Time: 1605

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	20.03	TA06_22	ZD
Alkalinity (mg/L as $CaCO_3$):	92	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	87	TA06_09	BA
Total Ammonia (mg/L as N):	20.17	TA06_17	ME
Conductivity (µmhos) mmhos	181	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

Food:	Batch
✓ YCT	10-30-09
✓ *P. subcapitata*	12-23-09
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: BA

Test Incubated in: Incubator # 2 Waterbath # ____ Temperature Range °C:(if used) Incubator # 2 min. 24.7 max. 27.0 mean 25.6

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

Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 24.0 max. 25.8 mean 24.9

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	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
2.0	A	A	5	5	5	5	3 2D	2 1D
	B	B	5	5	3 2D	3	3	2 1D
	C	C	5	5	4 1D	4	2 2D	2
	D	D	5	5	4 1D	4	4	2 2D
2.5	A	A	5	5	3 2D	3	1 2D	0 1D
	B	B	5	5	1 4D	1	1	0 1D
	C	C	5	5	2 3D	2	1 1D	0 1D
	D	D	5	5	2 3D	2	Q 2D	—
3.0	A	A	5	5	0 5D	—	—	—
	B	B	5	5	0 5D	—	—	—
	C	C	5	4 1D	0 4D	—	—	—
	D	D	5	1 4D	0 1D	—	—	—
4.0 or 3.5 for 7D	A	A	5	1 4D	0 1D	—	—	—
	B	B	5	1 4D	0 1D	—	—	—
	C	C	5	0 5D	—	—	—	—
	D	D	5	1 4D	0 1D	—	—	—

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

Organisms loaded by: BA Checked by: BA BA BA BA MF

Loading Verified by: SD

AR = after renewal

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

Comments:

Investigators' Signatures

Bree Dekander

James Daniels

Marshall Faircloth

Jim M Spencer

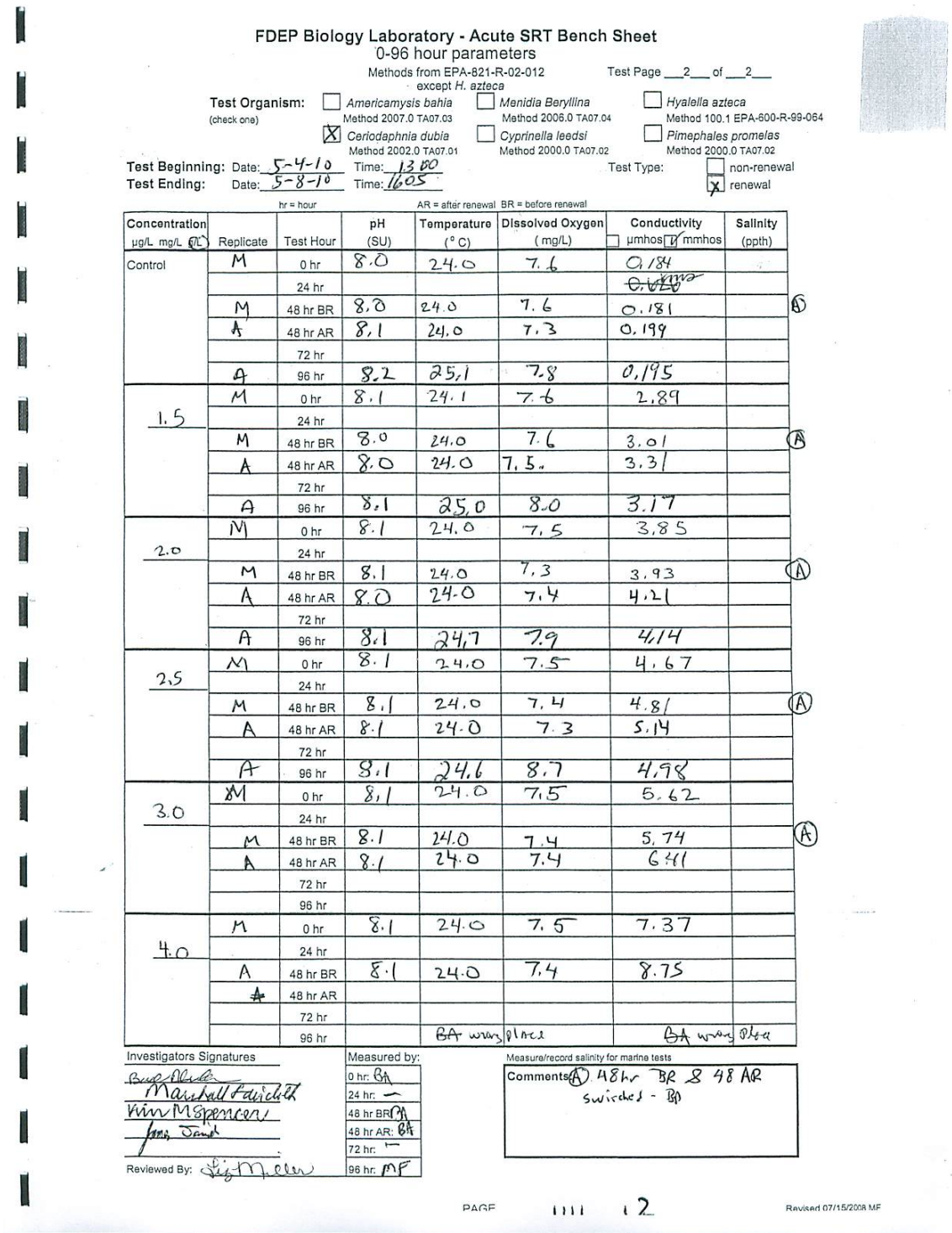
Reviewer: Liz Miller

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 2.30	2.16	2.46
96 hour: 1.92	1.81	2.03

PAGE TO 061

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: 5-4-10 Time: 1350
Test Ending: Date: 5-8-10 Time: 1605
Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (circle)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)	
Control	M	0 hr	8.0	24.0	7.6	0.184		
		24 hr				~~0.~~		
	M	48 hr BR	8.0	24.0	7.6	0.181		(A)
	A	48 hr AR	8.1	24.0	7.3	0.199		
		72 hr						
	A	96 hr	8.2	25.1	7.8	0.195		
1.5	M	0 hr	8.1	24.1	7.6	2.89		
		24 hr						
	M	48 hr BR	8.0	24.0	7.6	3.01		(A)
	A	48 hr AR	8.0	24.0	7.5	3.31		
		72 hr						
	A	96 hr	8.1	25.0	8.0	3.17		
2.0	M	0 hr	8.1	24.0	7.5	3.85		
		24 hr						
	M	48 hr BR	8.1	24.0	7.3	3.93		(A)
	A	48 hr AR	8.0	24.0	7.4	4.21		
		72 hr						
	A	96 hr	8.1	24.7	7.9	4.14		
2.5	M	0 hr	8.1	24.0	7.5	4.67		
		24 hr						
	M	48 hr BR	8.1	24.0	7.4	4.81		(A)
	A	48 hr AR	8.1	24.0	7.3	5.14		
		72 hr						
	A	96 hr	8.1	24.6	8.7	4.98		
3.0	M	0 hr	8.1	24.0	7.5	5.62		
		24 hr						
	M	48 hr BR	8.1	24.0	7.4	5.74		(A)
	A	48 hr AR	8.1	24.0	7.4	6.41		
		72 hr						
		96 hr						
4.0	M	0 hr	8.1	24.0	7.5	7.37		
		24 hr						
	A	48 hr BR	8.1	24.0	7.4	8.75		
	A	48 hr AR						
		72 hr						
		96 hr		BA wrong place		BA wrong place		

Investigators Signatures
Measured by:
0 hr: BA
24 hr: —
48 hr BR: BA
48 hr AR: BA
72 hr: —
96 hr: MF
Reviewed By:

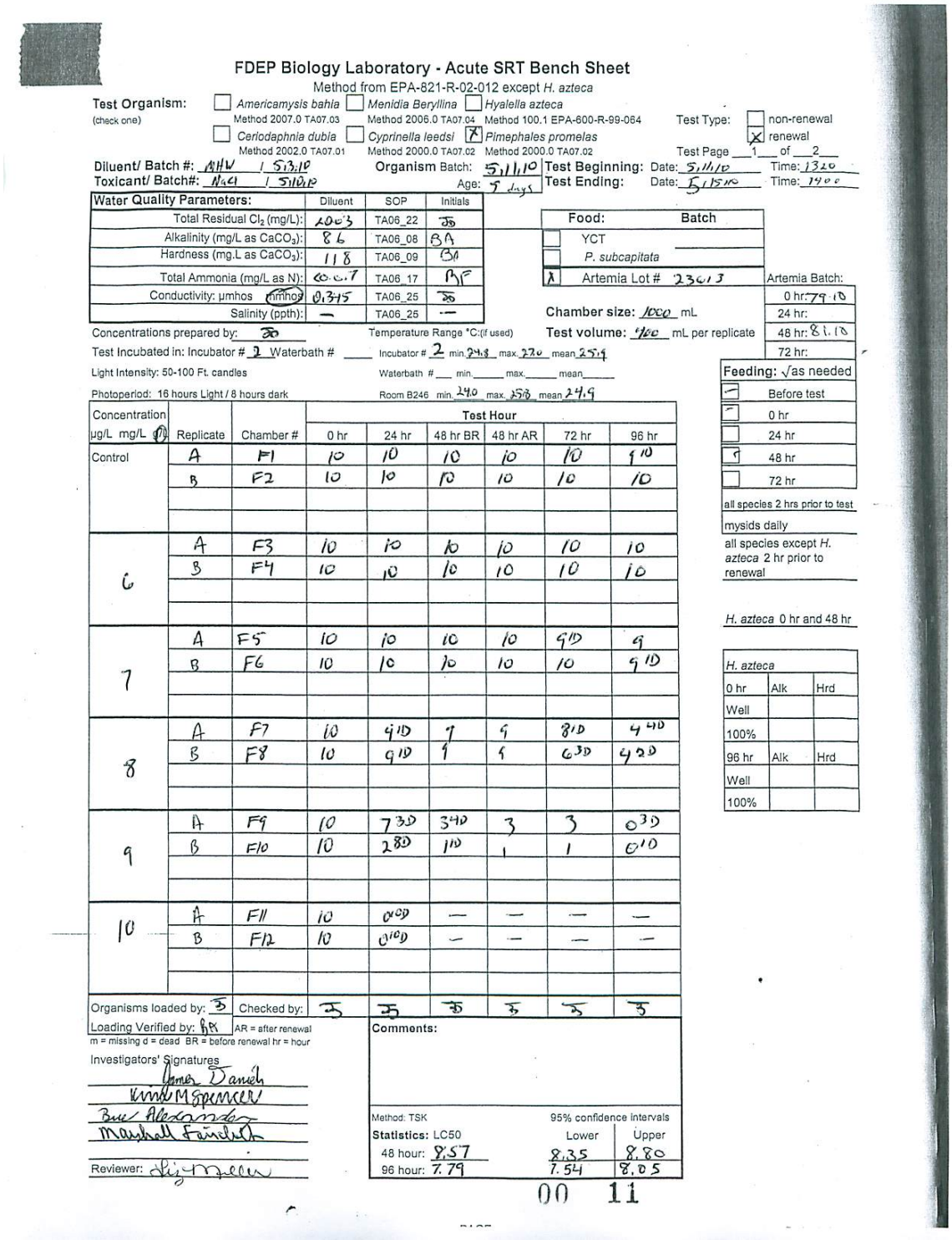
Measure/record salinity for marine tests

Comments: (A) 48hr BR & 48 AR switched - BA

PAGE 1 1 1 1 2

Revised 07/15/2008 MF

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* ☒ *Pimephales promelas* Method 2000.0 TA07.02 Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☒ renewal

Test Page 1 of 2

Diluent/ Batch #: AHW / 513.10

Toxicant/ Batch#: NaCl / 5110.10

Organism Batch: 5.11.10 Age: 5 days

Test Beginning: Date: 5/11/10 Time: 1320

Test Ending: Date: 5/15/10 Time: 1400

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	JS
Alkalinity (mg/L as $CaCO_3$):	86	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	118	TA06_09	BA
Total Ammonia (mg/L as N):	<0.07	TA06_17	BF
Conductivity: µmhos (mmhos)	0.375	TA06_25	JS
Salinity (ppth):	—	TA06_25	—

Concentrations prepared by: JS

Test Incubated in: Incubator # 2 Waterbath # ____

Light Intensity: 50-100 Ft. candles

Photoperiod: 16 hours Light / 8 hours dark

Temperature Range °C:(if used)

Incubator # 2 min. 24.8 max. 27.0 mean 25.9

Waterbath # ___ min.____ max.____ mean____

Room B246 min. 24.0 max. 25.8 mean 24.9

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☒ Artemia Lot # 23013	Artemia Batch:

Chamber size: 1000 mL

Test volume: 400 mL per replicate

Artemia:
0 hr: 79.10
24 hr:
48 hr: 81.10
72 hr:

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

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

Concentration µg/L mg/L (circle)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	F1	10	10	10	10	10	9 10
	B	F2	10	10	10	10	10	10
6	A	F3	10	10	10	10	10	10
	B	F4	10	10	10	10	10	10
7	A	F5	10	10	10	10	9 D	9
	B	F6	10	10	10	10	10	9 D
8	A	F7	10	9 D	9	9	8 D	4 4D
	B	F8	10	9 D	9	9	6 3D	4 2D
9	A	F9	10	7 3D	3 4D	3	3	0 3D
	B	F10	10	2 8D	1 D	1	1	0 1D
10	A	F11	10	0 10D	—	—	—	—
	B	F12	10	0 10D	—	—	—	—
Organisms loaded by: JS		Checked by:	JS	JS	JS	JS	JS	JS

Loading Verified by: BK AR = after renewal

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

Comments:

Investigators' Signatures

James Daniels

Kristi M Spencer

Bree Alexander

Marshall Faircloth

Reviewer: Liz Miller

Method: TSK	95% confidence intervals	
Statistics: LC50	Lower	Upper
48 hour: 8.57	8.35	8.80
96 hour: 7.79	7.54	8.05

00 11

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: 5.11.10 Time: 1320
Test Ending: Date: 5.15.10 Time: 1400

Test Type: ☒ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L ☐	Replicate	Test Hour	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)
Control	A	0 hr	8.2	25.4	7.7	0.345	
	B	24 hr	7.9	25.4	7.0	0.346	
	A	48 hr BR	8.1	25.9	6.8	0.346	
	A	48 hr AR	8.1	25.3	6.8	0.346	
	B	72 hr	8.0	25.5	6.7	0.352	
	A	96 hr	8.2	25.4	7.4	0.362	
	A	0 hr	8.1	25.4	7.5	11.5	
6	B	24 hr	7.8	25.1	6.9	11.3	
	A	48 hr BR	7.9	25.8	7.0	11.3	
	A	48 hr AR	7.9	25.3	6.8	10.8	
	B	72 hr	7.7	25.3	6.6	11.3	
	A	96 hr	7.9	25.4	7.2	11.0	
	A	0 hr	8.0	25.4	7.4	13.1	
7	B	24 hr	7.8	25.2	6.9	13.0	
	A	48 hr BR	7.9	25.5	6.9	13.1	
	A	48 hr AR	7.9	25.3	6.9	13.0	
	B	72 hr	7.7	25.1	6.5	13.4	
	A	96 hr	7.9	25.7	7.2	13.3	
	A	0 hr	8.0	25.4	7.4	14.6	
8	B	24 hr	7.7	25.0	6.8	14.5	
	A	48 hr BR	7.9	25.6	7.0	14.6	
	A	48 hr AR	7.9	25.4	6.8	14.7	
	B	72 hr	7.7	25.6	6.5	15.0	
	A	96 hr	7.9	25.5	7.2	14.7	
	A	0 hr	8.0	25.8	7.5	16.4	
9	B	24 hr	7.7	25.3	6.8	16.2	
	A	48 hr BR	7.9	25.7	7.0	16.6	
	A	48 hr AR	7.9	25.5	6.7	16.5	
	B	72 hr	7.8	25.4	6.8	16.9	
	A	96 hr	7.9	25.6	7.2	17.0	
	A	0 hr	8.0	25.4	7.4	18.2	
10	B	24 hr	7.7	25.8	6.0	18.1	
		48 hr BR	—	—	—	—	
		48 hr AR	—	—	—	—	
		72 hr					
		96 hr					

Investigators Signatures
James Daniels
Kristi Spencer
Bruce Assmann
Marshall Faircloth

Reviewed By: Liz Miller

Measured by:
0 hr: JD
24 hr: JD
48 hr BR: JD
48 hr AR: KMS
72 hr: JD
96 hr: JD

Measure/record salinity for marine tests

Comments:

00 12

PAGE

Revised 07/15/2008 MF

Appendix C. (continued)

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

DATE: 5-4-10 DURATION: 96 hr TOXICANT: NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	0
2.00	20	12
2.50	20	20
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 1.92
95% LOWER CONFIDENCE: 1.81
95% UPPER CONFIDENCE: 2.03

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

DATE: 5-11-10 DURATION: 96 hr TOXICANT: NaCl
SPECIES: *Pimephales promelas*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	1
6.00	20	0
7.00	20	2
8.00	20	12
9.00	20	20
10.00	20	20

SPEARMAN-KARBER TRIM: 0.00%

SPEARMAN-KARBER ESTIMATES: LC50: 7.79
95% LOWER CONFIDENCE: 7.54
95% UPPER CONFIDENCE: 8.05

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

Appendix D. Test Organism Receipt

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 5/10/10

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina	150 ac	12 DAYS	SS100428	25	8.0	20
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	~~150 ac~~ 270 ac	8 DAYS	FM100502	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: FedEx

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 Daytona Beach/ Bethune Point WWTF Outfall D-001, sampled on May 10, 2010.

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
5/10/2010 9:15	Effluent	AGP/LN	Algal Growth Potential	103		mg DryWt/L	0.3	0.9
5/10/2010 9:15	Effluent	AGP/LN	Algal Growth Potential-Salinity Adjusted	27.4		mg DryWt/L	3	3
5/10/2010 9:15	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.1	I	mg/L	0.2	2
5/10/2010 9:15	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
5/10/2010 9:15	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
5/10/2010 9:10	Effluent	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		
5/10/2010 9:10	Effluent	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100	L	LC50		
5/10/2010 9:15	Effluent	Metals	Selenium	0.2	U	ug/L	0.2	0.8
5/10/2010 9:15	Effluent	Metals	Lead	0.3	I	ug/L	0.2	0.8
5/10/2010 9:15	Effluent	Metals	Arsenic	0.48	I	ug/L	0.25	1
5/10/2010 9:15	Effluent	Metals	Copper	3.25		ug/L	0.5	1
5/10/2010 9:15	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
5/10/2010 9:15	Effluent	Metals	Calcium	55.6		mg/L	0.075	0.3
5/10/2010 9:15	Effluent	Metals	Zinc	27		ug/L	5	20
5/10/2010 9:15	Effluent	Metals	Magnesium	9.62		mg/L	0.04	0.16
5/10/2010 9:15	Effluent	Metals	Chromium	0.3	U	ug/L	0.3	1.2
5/10/2010 9:15	Effluent	Metals	Aluminum	80	I	ug/L	60	240
5/10/2010 9:15	Effluent	Metals	Nickel	0.97	I	ug/L	0.25	1
5/10/2010 9:15	Effluent	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
5/10/2010 9:15	Effluent	Metals	Iron	54	I	ug/L	30	120
5/10/2010 9:15	Effluent	Nutrients	O-Phosphate-P	0.31		mg P/L	0.04	0.1
5/10/2010 9:15	Effluent	Nutrients	Kjeldahl Nitrogen	0.92		mg N/L	0.08	0.2
5/10/2010 9:15	Effluent	Nutrients	NO2NO3-N	2		mg N/L	0.04	0.1
5/10/2010 9:15	Effluent	Nutrients	Ammonia-N	0.035		mg N/L	0.01	0.02
5/10/2010 9:15	Effluent	Nutrients	TSS	4	U	mg/L	4	16
5/10/2010 9:15	Effluent	Nutrients	Total-P	0.32	A	mg P/L	0.005	0.05
5/10/2010 9:15	Effluent	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
5/10/2010 9:15	Effluent	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
5/10/2010 9:15	Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
5/10/2010 9:15	Effluent	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
5/10/2010 9:15	Effluent	Pesticides	Hexazinone	0.1	UJ	ug/L	0.1	0.4
5/10/2010 9:15	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
5/10/2010 9:15	Effluent	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
5/10/2010 9:15	Effluent	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
5/10/2010 9:15	Effluent	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
5/10/2010 9:15	Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
5/10/2010 9:15	Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
5/10/2010 9:15	Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
5/10/2010 9:15	Effluent	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
5/10/2010 9:15	Effluent	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
5/10/2010 9:15	Effluent	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
5/10/2010 9:15	Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
5/10/2010 9:15	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
5/10/2010 9:15	Effluent	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
5/10/2010 9:15	Effluent	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
5/10/2010 9:15	Effluent	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
5/10/2010 9:15	Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
5/10/2010 9:15	Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
5/10/2010 9:15	Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
5/10/2010 9:15	Effluent	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
5/10/2010 9:15	Effluent	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
5/10/2010 9:15	Effluent	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
5/10/2010 9:15	Effluent	Pesticides	Methoxychlor	0.05	UJ	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Ethoprop	0.1	UJ	ug/L	0.1	0.4
5/10/2010 9:15	Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
5/10/2010 9:15	Effluent	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
5/10/2010 9:15	Effluent	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
5/10/2010 9:15	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	UJ	ug/L	0.1	0.4
5/10/2010 9:15	Effluent	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
5/10/2010 9:15	Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
5/10/2010 9:15	Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
5/10/2010 9:15	Effluent	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
5/10/2010 9:15	Effluent	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
5/10/2010 9:15	Effluent	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
5/10/2010 9:15	Effluent	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.6
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	11
5/10/2010 9:15	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.6
5/10/2010 9:15	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.6
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Pyrene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Anthracene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Fluoranthene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Naphthalene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
5/10/2010 9:15	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.6
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	11
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Fluorene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	11
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Acenaphthylene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Diethyl phthalate	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Dimethyl phthalate	9.5	U	ug/L	9.5	38
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Phenol	0.95	U	ug/L	0.95	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2-Chlorophenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Benzidine	95	U	ug/L	95	380
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	11
5/10/2010 9:15	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Acenaphthene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	11
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Chrysene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	11
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Isophorone	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	11
5/10/2010 9:15	Effluent	Priority Organic Pollutants	Phenanthrene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2-Nitrophenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95	U	ug/L	0.95	3.8
5/10/2010 9:15	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	9.5	U	ug/L	9.5	38
5/10/2010 9:15	Effluent	Field Parameter	Temperature	26.69		C		
5/10/2010 9:10	Effluent	Field Parameter	Dissolved Oxygen	8.09		mg/L		
5/10/2010 9:15	Effluent	Field Parameter	Specific Conductance	790		umhos/cm		
5/10/2010 9:10	Effluent	Field Parameter	Temperature	26.99		C		
5/10/2010 9:10	Effluent	Field Parameter	Specific Conductance	790		umhos/cm		
5/10/2010 9:10	Effluent	Field Parameter	pH	7.63				
5/10/2010 9:15	Effluent	Field Parameter	Dissolved Oxygen	8.09		mg/L		
5/10/2010 9:15	Effluent	Field Parameter	pH	7.63				
5/10/2010 9:25	Blank	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
5/10/2010 9:25	Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
5/10/2010 9:25	Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
5/10/2010 9:25	Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
5/10/2010 9:25	Blank	Metals	Zinc	5	U	ug/L	5	20
5/10/2010 9:25	Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
5/10/2010 9:25	Blank	Metals	Iron	30	U	ug/L	30	120
5/10/2010 9:25	Blank	Metals	Aluminum	60	U	ug/L	60	240
5/10/2010 9:25	Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
5/10/2010 9:25	Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
5/10/2010 9:25	Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
5/10/2010 9:25	Blank	Metals	Nickel	0.47	I	ug/L	0.25	1
5/10/2010 9:25	Blank	Metals	Copper	1.61		ug/L	0.5	1
5/10/2010 9:25	Blank	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
5/10/2010 9:25	Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
5/10/2010 9:25	Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
5/10/2010 9:25	Blank	Nutrients	NO2NO3-N	0.08		mg N/L	0.004	0.01
5/10/2010 9:25	Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
5/10/2010 9:25	Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
5/10/2010 9:25	Blank	Pesticides	Aldrin	0.0095	U	ug/L	0.0095	0.038
5/10/2010 9:25	Blank	Pesticides	Alpha-BHC	0.0095	U	ug/L	0.0095	0.038
5/10/2010 9:25	Blank	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
5/10/2010 9:25	Blank	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
5/10/2010 9:25	Blank	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
5/10/2010 9:25	Blank	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
5/10/2010 9:25	Blank	Pesticides	Heptachlor	0.0095	U	ug/L	0.0095	0.038
5/10/2010 9:25	Blank	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
5/10/2010 9:25	Blank	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
5/10/2010 9:25	Blank	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
5/10/2010 9:25	Blank	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
5/10/2010 9:25	Blank	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
5/10/2010 9:25	Blank	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
5/10/2010 9:25	Blank	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
5/10/2010 9:25	Blank	Pesticides	Delta-BHC	0.0095	U	ug/L	0.0095	0.038
5/10/2010 9:25	Blank	Pesticides	Ethoprop	0.095	UJ	ug/L	0.095	0.38
5/10/2010 9:25	Blank	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
5/10/2010 9:25	Blank	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
5/10/2010 9:25	Blank	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Endrin	0.048	U	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Gamma-BHC	0.0095	U	ug/L	0.0095	0.038
5/10/2010 9:25	Blank	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Fonofos	0.095	U	ug/L	0.095	0.38
5/10/2010 9:25	Blank	Pesticides	Hexazinone	0.095	UJ	ug/L	0.095	0.38
5/10/2010 9:25	Blank	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
5/10/2010 9:25	Blank	Pesticides	Toxaphene	0.72	U	ug/L	0.72	2.9
5/10/2010 9:25	Blank	Pesticides	Methoxychlor	0.048	UJ	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Beta-BHC	0.0095	U	ug/L	0.0095	0.038
5/10/2010 9:25	Blank	Pesticides	Metribuzin	0.095	U	ug/L	0.095	0.38
5/10/2010 9:25	Blank	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Chlorpyrifos Methyl	0.095	UJ	ug/L	0.095	0.38
5/10/2010 9:25	Blank	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
5/10/2010 9:25	Blank	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
5/10/2010 9:25	Blank	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
5/10/2010 9:25	Blank	Pesticides	Parathion Methyl	0.095	U	ug/L	0.095	0.38
5/10/2010 9:25	Blank	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
5/10/2010 9:25	Blank	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
5/10/2010 9:25	Blank	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076
5/10/2010 9:25	Blank	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
5/10/2010 9:25	Blank	Pesticides	Naled	0.76	UJ	ug/L	0.76	3
5/10/2010 9:25	Blank	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
5/10/2010 9:25	Blank	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
5/10/2010 9:25	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	11
5/10/2010 9:25	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
5/10/2010 9:25	Blank	Priority Organic Pollutants	Acenaphthylene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Diethyl phthalate	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.6
5/10/2010 9:25	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Benzidine	95	U	ug/L	95	380
5/10/2010 9:25	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Chrysene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	11
5/10/2010 9:25	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	11

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
5/10/2010 9:25	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
5/10/2010 9:25	Blank	Priority Organic Pollutants	Acenaphthene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Dimethyl phthalate	9.5	U	ug/L	9.5	38
5/10/2010 9:25	Blank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.6
5/10/2010 9:25	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
5/10/2010 9:25	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
5/10/2010 9:25	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
5/10/2010 9:25	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	11
5/10/2010 9:25	Blank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	11
5/10/2010 9:25	Blank	Priority Organic Pollutants	Isophorone	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.6
5/10/2010 9:25	Blank	Priority Organic Pollutants	Phenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.5	U	ug/L	9.5	38
5/10/2010 9:25	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	11
5/10/2010 9:25	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.6
5/10/2010 9:25	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
5/10/2010 9:25	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Phenanthrene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	2-Chlorophenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Anthracene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Fluoranthene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Fluorene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	11
5/10/2010 9:25	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	2-Nitrophenol	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Naphthalene	0.95	U	ug/L	0.95	3.8
5/10/2010 9:25	Blank	Priority Organic Pollutants	Pyrene	0.95	U	ug/L	0.95	3.8

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: Blake Vahlsing	**Contact Number:** (407) 893-3313
Facility Name (as it appears on permit): Daytona Beach/Bethune Point WWTF	**Former Names:**
NPDES Permit Number: FL0025984	**Permit Expiration Date:** December 9, 2013
Physical Address: 1 Shady Place, Daytona Beach, FL 32114	
District: Central	**County:** Volusia
Function of Facility: Domestic Wastewater Treatment Plant	
Facility Type: Domestic Wastewater	**Permitted Capacity (MGD):** 20.0
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): D-001 outfall flow: 8.6 million gallons per day (MGD) annual average daily flow (aadf), as reported on the January 2010 DMR (February 2009 through January 2010 reporting period).	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): R-001 public access reuse system: 0.101 MGD aadf; R-002 flow to the Convergence Point: 5.0 MGD aadf, as reported on the January 2010 DMR (February 2009 through January 2010 reporting period).	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

Page 1 of 9 **v3.0 07/07/08**

Appendix F. (continued)

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):
The sampling location of D-001 is EFD-1, located at the Convergence point. The sampling location of R-002 is EFA-1, located at the sampling point at the outlet of the UV reactor channel. Total suspended solids grab samples are collected from EFB-1, after filtration and prior to disinfection.

Description of Permitted Outfall(s):

The Discharge Location (D-001) outfall consists of the combined flow from the Bethune and Westside Regional Facilities, limited to 22.8 MGD maximum daily flow, and is monitored at the concrete sampling structure (Convergence Point) adjacent to the Bethune WWTF site. The outfall discharges to the Halifax River (Class III marine waters, WBID 2363A) at D-001 which is approximately 1029 feet in length and discharges at a depth of approximately 4 feet.

Flow from the Bethune WWTF only is described as R-002 for monitoring purposes, which is the discharge to Convergence Point, and has an existing capacity of 13.0 MGD. The point of discharge to the Halifax River is located approximately at latitude 29 ° 11' 43" N, longitude 81 ° 00' 05" W.

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):
Daytona Beach/Bethune Point WWTF is an advanced domestic wastewater treatment plant consisting of a biological nutrient removal system (5-stage Bardenpho system) with influent screening, grit removal, aeration, secondary clarification, chemical feed (including a new alum feed system), filtration, ultraviolet (uv) disinfection, and pumping of residuals to the Daytona Beach/Westside Regional WWTF.

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	20.0	-	-	-	Continuous	Recording flow meters and totalizers	FLW-2	
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-1	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	5 Days/Week	24-hour flow proportioned composite	EFD-1	
pH	SU	Range	-	-	-	6.5 to 8.5	Continuous	Meter	EFD-1	
Nitrogen, Total (as N)	MG/L	Maximum	4.1*	7.0*	11.0*	12.0*	5 Days/Week	24-hour flow proportioned composite	EFD-1	
Phosphorus, Total (as P)	MG/L	Maximum	1.7*	2.50*	3.50*	5.00*	5 Days/Week	24-hour flow proportioned composite	EFD-1	
Cyanide, Total (as CN)	MG/L	Maximum	-	-	-	1.0	Monthly	24-hour flow proportioned composite	EFD-1	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	2.0	Daily	Grab	EFD-1	
Whole Effluent Toxicity (Chronic)	See Permit Condition I.A.5.								EFD-1	
Enterococci	#/100 ML	Maximum	-	35 (Mo. Geo. Mean)	-	-	5 Days/Week	Grab	EFD-1	
BOD, Carbonaceous 5 day, 20C	LB/D	Maximum	1900				5 Days/Week	Calculated	EFD-1	See Cond. I.A.6.
Nitrogen, Total (as N)	LB/D	Maximum	570				5 Days/Week	Calculated	EFD-1	See Cond. I.A.6.
Phosphorus, Total (as P)	LB/D	Maximum	190				5 Days/Week	Calculated	EFD-1	See Cond. I.A.6.

Table Above: * limits reflect Consent Orders 08-175 and 09-0674
Condition I.A.6 allocates the combined discharge TMDLs to the Halifax River for Daytona Beach facilities: CBODs (1900 LB/D), Total Nitrogen (570 LB/D), and Total Phosphorus (190 LB/D).

Appendix F. (continued)

PART I: Continued	
Receiving Waters: Halifax River	**Classification (indicate whether fresh or marine):** Class III marine waters, WBID 2363A

Appendix F. (continued)

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

The permittee shall comply with the following requirements to evaluate chronic whole effluent toxicity of the discharge from outfall D-001

1. Effluent Limitation
   - Whole effluent chronic toxicity shall not exceed a 25 percent inhibition concentration (IC25) of less than 100% effluent in any test. [Rules 62-302.530(61) and 62-4.241(1)(b), F.A.C.
   - Whole effluent acute toxicity shall not exceed a 96 hour LC50 of less than 100% effluent in any test. [Rule 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]
2. Monitoring Frequency
   - Routine toxicity tests shall be conducted once every three months the first starting within 60 days of permit issuance and lasting for the permit duration..
   - Upon completion of four consecutive, valid routine tests that demonstrate compliance with the effluent limitation in 5.a.(1) above, the permittee may submit a written request to the Department for a reduction in monitoring frequency to once every six months. The request shall include a summary of the data and the complete bioassay laboratory reports for each test used to demonstrate compliance. The Department shall act on the request within 45 days of receipt. Reductions in monitoring shall only become effective upon the Department's written confirmation that the facility has completed four consecutive valid routine tests that demonstrate compliance with the effluent limitation in 5.a.(1) above.
   - If a test within the sequence of the four is deemed invalid based on the acceptance criteria in EPA-821-R-02-013, but is replaced by a repeat valid test initiated within 21 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive valid tests for the purpose of evaluating the reduction of monitoring frequency.
3. Sampling Requirements
   - For each routine test or additional follow-up test conducted, a total of three 24-hour composite samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.
   - The first sample shall be used to initiate the test. The remaining two 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.
   - Samples for routine and additional follow-up tests shall not be collected on the same day.
4. Test Requirements
   - Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: 100%, 50%, 25%, 12.5%, and 6.25% final effluent.
   - The permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction Test and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test, concurrently.
   - 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. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.
   - The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.
5. Quality Assurance Requirements
   - A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly chronic toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.
   - If the mortality in the control (0% effluent) exceeds 20% for either species in any test or does not meet "test acceptability criteria", the test for that species (including the control) shall be invalidated and the test repeated. Test acceptability criteria for each species are defined in EPA-821-R-02-013, Section 13.12 (Ceriodaphnia dubia) and Section 11.11 (Pimephales promelas). The repeat test shall begin within 21 days after the last day of the invalid test.
   - If 100% mortality occurs in all effluent concentrations prior to the end of any test and the control mortality is less than 20% at that time, the test (including the control) shall be terminated with the conclusion that the test fails and constitutes non-compliance.
   - Additional follow-up tests shall be evaluated for acceptability based on the observed dose-response relationship as required by EPA-821-R-02-013, Section 10.2.6., and the evaluation shall be included with the bioassay laboratory reports.
6. Reporting Requirements
   - Results from all required tests shall be reported on the Discharge Monitoring Report (DMR) as follows:
   (a) Routine and Additional Follow-up Test Results: The calculated IC25 for each test species shall be entered on the DMR.
   - A bioassay laboratory report for each routine test shall be prepared according to EPA-821-R-02-013, Section 10, Report Preparation and Test Review, and mailed to the Department at the address below within 30 days after the last day of the test.
   - For additional follow-up tests, a single bioassay laboratory report shall be prepared according to EPA-821-R-02-013, Section 10, and mailed within 30 days after the last day of the second valid additional follow-up test.
   - Data for invalid tests shall be included in the bioassay laboratory report for the repeat test.
   - The same bioassay data shall not be reported as the results of more than one test.
   - All bioassay laboratory reports shall be sent to: Florida Department of Environmental Protection, 3319 Maguire Blvd. Suite 232,Orlando, Florida 32803
7. Test Failures
   - A test fails when the test results do not meet the limits in 5.a.(1).
   - Additional Follow-up Tests:
   (a) If a routine test does not meet the chronic toxicity limitation in 5.a.(1) above, the permittee shall notify the Department at the address above within 21 days after the last day of the failed routine test and conduct two additional follow-up tests on each species that failed the test in accordance with 5.d.
   (b) The first test shall be initiated within 28 days after the last day of the failed routine test. The remaining additional follow-up tests shall be conducted weekly thereafter until a total of two valid additional follow-up tests are completed.
   (c) The first additional follow-up 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 permittee may modify the dilution series in the second additional follow-up test to more accurately bracket the toxicity such that at least two dilutions above 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.
   - In the event of three valid test failures (whether routine or additional follow-up tests) within a 12-month period, the permittee shall notify the Department within 21 days after the last day of the third test failure.
   (a) The permittee shall submit a plan for correction of the effluent toxicity within 60 days after the last day of the third test failure.
   (b) The Department shall review and approve the plan before initiation.
   (c) The plan shall be initiated within 30 days following the Department's written approval of the plan.
   (d) Progress reports shall be submitted quarterly to the Department at the address above.
   (e) During the implementation of the plan, the permittee shall conduct quarterly routine whole effluent toxicity tests in accordance with 5.d. Additional follow-up tests are not required while the plan is in progress. Following completion or termination of the plan, the frequency of monitoring for routine and additional follow-up tests shall return to the schedule established in 5.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-013, a repeat test shall be initiated within 21 days after the last day of the invalid routine test.
   (f) Upon completion of four consecutive, valid routine tests that demonstrate compliance with the effluent limitation in 5.a.(1) above, the permittee may submit a written request to the Department to terminate the plan. The plan shall be terminated upon written verification by the Department that the facility has passed at least four consecutive valid routine whole effluent toxicity tests.
   If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 21 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive valid tests for the purpose of terminating the plan.
   - If chronic toxicity test results indicate greater than 50% mortality within 96 hours in an effluent concentration equal to or less than the effluent concentration specified as the acute toxicity limit in 5.(1)(b), the Department may revise this permit to require acute definitive whole effluent toxicity testing.
   - The additional follow-up testing and the plan do not preclude the Department taking enforcement action for acute or chronic whole effluent toxicity permit limit violations.

Appendix F. (continued)

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
The facility has the following open Administrative and Consent Orders:

- Administrative Order DW-08-0013 (executed 12/10/2008) specifies an interim cyanide limit of 10.0 ug/L.
- Consent Order OGC No. 09-0674 (executed 7/8/2009) addressed Total Nitrogen, pH, and fecal coliform problems. Total Nitrogen interim limits for discharge to the Halifax River were implemented. The Consent Order raised the Total Nitrogen annual average (4.1 mg/L), monthly average (7.0 mg/L), weekly average (11.0 mg/L, and daily maximum (12.0 mg/L).
- Consent Order OGC File No. 08-0175 (executed 7/10/2008) addressed Total Phosphorus and fecal coliform problems.
- Consent Order OGC File No. 04-1390 (executed 9/24/2004) addressed Total Nitrogen limits.

Facility Mixing Zone Details (if applicable):
N/A

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

Date	Parameter, Units, and Location	Limit	Result
February 2009	Total Nitrogen Annual Avg. mg/L (D-001)	3.0	3.7
	Total Nitrogen Monthly Avg. mg/L (D-001)	3.0	4.6
	Total Nitrogen Weekly Avg. mg/L (D-001)	4.5	5.0
	Total Nitrogen Max. mg/L (D-001)	6.0	8.7
	Total Phosphorus Monthly Avg. mg/L (D-001)	1.0	1.1
	Total Phosphorus Weekly Avg. mg/L (D-001)	1.5	1.7
	Total Phosphorus Max. mg/L (D-001)	2.0	4.0
	Total Phosphorus as P lbs./day (D-001)	190	255
March 2009	Total Nitrogen Annual Avg. mg/L (D-001)	3.0	3.6
	Total Nitrogen Monthly Avg. mg/L (D-001)	3.0	4.3
	Total Nitrogen Weekly Avg. mg/L (D-001)	4.5	5.5
	Total Nitrogen Max. mg/L (D-001)	6.0	6.4
April 2009	Total Nitrogen Annual Avg. mg/L (D-001)	3.0	3.6
	Total Nitrogen Monthly Avg. mg/L (D-001)	3.0	3.1
May 2009	pH minimum (D-001)	6.5	6.4
	Total Nitrogen Annual Avg. mg/L (D-001)	3.0	3.7
	Total Nitrogen Monthly Avg. mg/L (D-001)	3.0	4.1
	Total Nitrogen Weekly Avg. mg/L (D-001)	4.5	5.2
	Total Nitrogen Max. mg/L (D-001)	6.0	6.6
	Total Phosphorus Monthly Avg. mg/L (D-001)	1.0	1.3
	Total Phosphorus Weekly Avg. mg/L (D-001)	1.5	2.0
	Total Phosphorus Max. mg/L (D-001)	2.0	2.8
	Total Phosphorus as P lbs./day (D-001)	190	563
	Total Nitrogen as N lbs./day (D-001)	570	1315
June 2009	pH minimum (D-001)	6.5	6.4
	Total Nitrogen Annual Avg. mg/L (D-001)	3.0	3.9
	Total Nitrogen Monthly Avg. mg/L (D-001)	3.0	4.7

Appendix F. (continued)

	Total Nitrogen Weekly Avg. mg/L (D-001)	4.5	5.0
	Total Phosphorus Monthly Avg. mg/L (D-001)	1.0	1.4
	Total Phosphorus Weekly Avg. mg/L (D-001)	1.5	2.1
	Total Phosphorus Max. mg/L (D-001)	2.0	2.4
	Total Phosphorus as P lbs./day (D-001)	190	236
	Total Nitrogen as N lbs./day (D-001)	570	771
	Total Suspended Solids max mg/L (R-001)	5.0	9.9
July 2009	Total Nitrogen Annual Avg. mg/L (D-001)	3.0	4.1
	Total Nitrogen Monthly Avg. mg/L (D-001)	3.0	5.3
	Total Nitrogen Weekly Avg. mg/L (D-001)	4.5	5.3
	Total Nitrogen Max. mg/L (D-001)	6.0	6.1
	Total Phosphorus Monthly Avg. mg/L (D-001)	1.0	1.3
	Total Phosphorus Weekly Avg. mg/L (D-001)	1.5	1.6
	Total Phosphorus as P lbs./day (D-001)	190	219
	Total Nitrogen as N lbs./day (D-001)	570	910
August 2009	Total Suspended Solids max mg/L (D-001)	10.0	10.5
	Total Nitrogen Annual Avg. mg/L (D-001)	4.1	4.2
	Total Phosphorus Monthly Avg. mg/L (D-001)	1.0	1.2
	Total Nitrogen as N lbs./day (D-001)	570	659
	Fecal Coliform max fcc/100mL (R-001)	25	890
	Fecal Coliform 90th percentile (R-002)	400	439
	Fecal Coliform max fcc/100mL (R-002)	800	12800
October 2009	Total Suspended Solids max mg/L (D-001)	10.0	26.0
	Total Suspended Solids Wk. Avg. mg/L (D-001)	7.5	7.8
	Total Suspended Solids max mg/L (R-001)	5.0	13.7
November 2009	Fecal Coliform % less than Detect (R-001)	75%	16.7%
	Fecal Coliform max fcc/100mL (R-001)	25	71
January 2010	Total Suspended Solids max mg/L (R-001)	5.0	5.7
	Fecal Coliform max fcc/100mL (R-001)	25	650

Describe previous FYI and WQBEL study:

A Bioassay of this facility was last performed is March 2003. The following results were gathered during the assessment:

- *Ceriodaphnia dubia* chronic screen- The No Observed Effect Concentration for survival and fecundity was 100%.
- Pimephales promelas chronic screen- The No Observed Effect Concentration for survival was 100%. Biomass was significantly decreased in the 100% effluent concentration, producing a no observed effect concentration of less than 100% effluent.
- Total residual chlorine was not detected in the bioassay samples in the laboratory.
- Total ammonia and unionized ammonia were detected in samples collected on March 5 and March 7 levels of 0.122 mg/L total, 0.010 mg/L unionized and 0.278 mg/L total, 0.015 mg/L unionized, respectively.

The samples of effluent collected from this facility did not show chronic *C. dubia* during the 7-day chronic bioassay tests. The 100% effluent significantly decreased the biomass of P. promelas, producing a no observed effect concentration of less than 100% effluent, indicating chronic toxicity. However, the cause of this chronic toxicity affect is undetermined.

Appendix F. (continued)

Describe previous or current Enforcement Actions (including WLs):

- Consent Order OGC No. 09-0674 was issued in accordance with Warning Letter No. OWL-WW-08-0043 (issued 12/18/2008). The consent order total penalties were $19,500.00. The facility is currently performing a Pollution Protection Project (P2 Project) to offset the penalties.
- Consent Order OGC No. 08-0175 was issued in accordance with Warning Letter No. OWL-WW-07-0032. The consent order total penalties were $11,000.00. The facility performed a P2 Project to offset the penalties.

Describe any violations or problems noted in previous inspection:

The facility has had multiple exceedances of several parameters on their Discharge Monitoring Reports. Other than continually exceeding permit limits, the facility does not have any notable compliance issues.

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

Over the past five years, Total Phosphorus weekly and monthly averages have remained relatively stable. Total Nitrogen weekly and monthly averages have raised over the past five years. Flow to the outfall, pH, and TSS have remained stable over the past five years.

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

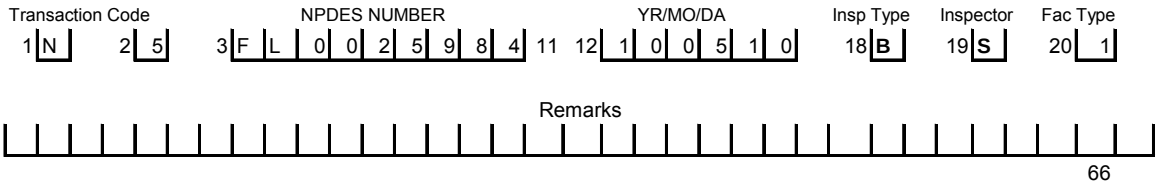
Appendix F. (continued)

PART II: Sampling Event Information	
Date(s) sample collected:	Sampler(s):
Temperature (Deg C):	pH (SU):
Dissolved Oxygen (mg/L):	Conductivity (umhos/cm):
Total Residual Chlorine (mg/L):	Total Residual Chlorine - after Dechlorination (mg/L):
Method of Chlorination:	Method of De-chlorination:
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☐ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix G. EPA End Sheet

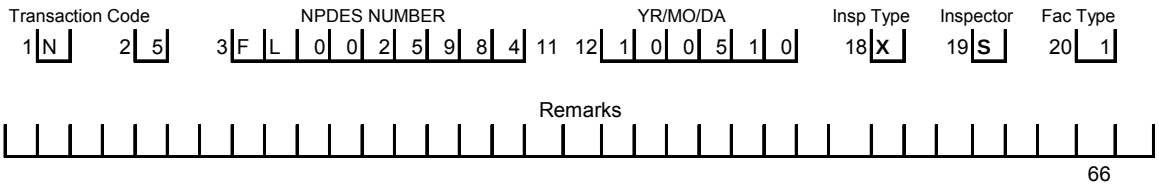
The Bioassay of Daytona Beach/ Bethune Point WWTF effluent sampled on May 10, 2010. NPDES #FL0025984.

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



The Priority Pollutants Analysis of Daytona Beach/ Bethune Point WWTF effluent sampled on May 10, 2010. NPDES #FL0025984.

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



Biological Analyses of Daytona Beach/ Bethune Point WWTF effluent sampled on May 10, 2010. NPDES #FL0025984.

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

