

Effluent Quality Assessment

South Cross Bayou AWWTF

Pinellas County

NPDES #FL0040436

Sampled February 21, 23 and 25

May 2011

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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South Cross Bayou Advanced Wastewater Treatment Facility (AWWTF) 7401 54th Avenue North, St. Petersburg, Pinellas County, Florida, 33709. NPDES #FL0040436. Effluent grab and composite samples for biological and chemical analyses for this facility were collected on February 21, 2011. Additional composite samples were collected for bioassay analyses on February 23 and 25, 2011.

Introduction

South Cross Bayou AWWTF is a Type 1 advanced wastewater treatment facility which uses the activated sludge process to treat domestic wastewater. (See Appendix F for detailed facility information provided by Peter Wenner and Michele Duggan of FDEP Southwest District.)

Methods

Samples were collected from the EFB-01 (Total Suspended Solids sampling point) NPDES sampling point and the EFD-01 NPDES sampling point for Outfall D-001 by Jason Cohen, Peter Wenner, Michele Duggan and Jennifer Molé (FDEP Southwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/bars/sas/sop/index.htm.

See Appendix A for the completed chain of custody form.

The chronic definitive toxicity tests and algal growth potential (AGP) test were performed following internal DEP SOPs TA07_09, TA07_15, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

The bioassay samples were salinity-adjusted per permit requirements from apparent salinities of approximately 0.82 (sample 1), 0.73 (sample 2) and 0.80 (sample 3) parts per thousand (ppth) to salinities of approximately 20 ppth for the bioassay tests. Crystal Sea Marine Mix® artificial sea salts was used for the salinity adjustments. The salt control used for each test was prepared by diluting 20 ppth salinity artificial seawater (ASW) with well water to the original salinity of each sample then salting this solution with artificial sea salts to match the salinity of the test solutions. Due to a laboratory error, the salt control was prepared with sodium chloride on test Day 6. This error resulted in 100% mortality in the *Americamysis bahia* salt control and 45% mortality in the *Menidia beryllina* salt control as noted on test day 7. The 100% sample was salted with sea salts on test day 6.

An aliquot of the AGP sample was salinity adjusted with artificial sea salts from an apparent salinity of 0.70 ppth to a salinity of 7.4 ppth to meet the salinity requirement of the marine AGP test.

Results and Discussion

- **Toxicity Test Results**
  Tests were performed February 22 – March 1, 2011.

  Americamysis bahia 7-day chronic definitive bioassay – $IC_{25} > 100\%$

  Menidia beryllina 7-day chronic definitive bioassay – $IC_{25} > 100\%$

  The bioassay samples were not chronically toxic to the test organisms based on the requirement that the 25% inhibition concentration (IC_{25}) shall not exceed a concentration of less than 100% effluent in any test. Additionally, the effluent was not acutely toxic to the test organisms. (See Appendix F for toxicity requirements).

  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.

*The concurrent *Americamysis bahia* SRT was invalidated due to not meeting the minimum required mean organism dried wt for the control (0.2 mg dry wt/organism required; SRT control dried wt/organism was 0.197 mg). The follow-up SRT was initiated on March 15, 2011.

- **Algal Growth Potential**
  The effluent Algal Growth Potential (AGP) was 1.6 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 phosphorus limited. The predicted AGP based on inorganic phosphorus concentrations was 3.9 (±20%) mg dry wt/L (Table 1a; Miller et al. 1978).

  The salinity adjusted effluent Algal Growth Potential (AGP) was 3.0 U (U - Material was analyzed for but not detected; the value reported is the minimum detection limit) mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L represent a "problem" threshold for marine receiving waters, implying nutrient enrichment (personal communication, Marshall Faircloth, et. al. FDEP, with Ron Raschke USEPA Region 4 1987).

  See Table 1a and Table 1b for AGP results.

- **Chemistry Results**
  Total residual chlorine (TRC) (0.08 mg/L) was detected in the bioassay sample collected on February 21, 2011, in the bioassay laboratory but was not detected in the effluent in the field (0.02 U). TRC was not measured in the field and was not detected in the bioassay samples collected on February 23 and 25, 2011, in the bioassay laboratory. Total ammonia was not detected in any of the three bioassay samples in the laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis on February 21, 2011, was 0.044 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg N/L.

  Aluminum, bromodichloromethane, bromoform, chloroform, dibromochloromethane, chloride, copper, fluoride, nickel, total nitrogen, total phosphorus and zinc were detected in the effluent at levels that comply with Class III marine water quality criteria (62-302.530, F.A.C.) and/or permitted limits (NPDES# FL0040436). Sulfate was also detected in the effluent. Arsenic, chromium-III, cyanide, iron, and total suspended solids (EFD-01 sampling point) were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Total suspended solids were not detected in the sample collected from the EFB-01 NPDES total suspended solids sampling point. Chlorophyll *a* and fecal coliforms were not detected in the effluent.

  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 samples collected from the EFD-01 NPDES sampling point for Outfall D-001 for this facility on February 21, 23 and 25, 2011, were not chronically toxic to either test species during the 7-day chronic definitive bioassays. The effluent AGP results were less than the "problem" threshold for both fresh and marine receiving waters. Effluent water quality samples collected on February 21, 2011, from the EFD-01 and EFB-01 NPDES sampling points did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

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

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

Table 1a. Measured and predicted algal growth potential (AGP; mg dry weight/L) for orthophosphate (OP) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the South Cross Bayou AWWTF on February 21, 2011.

South Cross Bayou AWWTF					
Location	AGP (measured)	Predicted AGP (OP) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
EFD-01	1.6	3.9 ± 0.8	16.8 ± 3.4	43.8	37.2

Table 1b. Measured growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus for samples collected from the South Cross Bayou AWWTF on February 21, 2011.

South Cross Bayou AWWTF			
Location	AGP* (measured)	Inorganic N:P ratio	Total N:P ratio
EFD-01	3.0 U	43.8	37.2

* - sample salinity adjusted to 7ppt

Table 2. Effluent limits, Class III Criteria for predominantly marine waters and chemical and microbiological data for samples collected from the South Cross Bayou AWWTF on February 21, 2011.

South Cross Bayou AWWTF NPDES# FL0040436	Class III Criteria	Effluent Limits	EFD-01	
Organic Constituents (µg/L)				
Bromodichloromethane	≤ 22 a	≤ 50 a*	32.2	
Bromoform	≤ 360 a	-	7.2	J
Chloroform	≤ 470.8 a	-	26.6	
Dibromochloromethane	≤ 34 a	≤ 90 a*	33.9	
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1500	-	120	
Arsenic	≤ 50	-	0.39	I
Cadmium	≤ 8.8	-	0.05	U
Calcium (mg/L)	-	-	91.3	
Chromium-III	-	-	0.42	I
Copper	≤ 3.7	5.5 s	1.52	
Iron	≤ 300	-	30	I
Lead	≤ 8.5	-	0.2	U
Magnesium (mg/L)	-	-	28	
Nickel	≤ 8.3	-	2.88	
Selenium	≤ 71	-	0.2	U
Silver	≤ 2.3	-	0.025	U
Zinc	≤ 86	-	25	
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.009	I
Total Phosphorus	-	≤ 3.0 p	0.039	
Total Ammonia	-	-	0.044	
Un-ionized Ammonia	-	-	≤ 0.02	c
Nitrate and Nitrite	-	-	0.35	
Total Kjeldahl Nitrogen	-	-	1.1	
Organic Nitrogen	-	-	1.056	c
Total Nitrogen	-	≤ 6.0 p	1.45	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 5.0 s	7.8	
pH (SU)	6.5 - 8.5	6.5 - 8.5 s	7.5	
Conductivity (µmhos/cm)	-	-	1464	
Temperature (°C)	-	-	24.3	
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01 s	0.02	U
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55	U
Phaeophytin (µg/L)	-	-	0.4	U
Total Suspended Solids (mg/L)	-	-	4	I
Total Suspended Solids (mg/L) EFB-01	-	≤ 5.0 p	4	U
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 p	3	J
Oils and Greases (mg/L)	≤ 5.0	≤ 5.0 s	1.4	U
Chloride (mg/L)	-	-	270	
Cyanide (µg/L)	≤ 1.0	report	0.008	I
Fluoride (mg/L)	≤ 5.0	-	0.57	
Sulfate (mg/L)	-	-	150	
Flow (MGD) Outfall D-001 January -December 2010	-	20.0 a	9.2	a
Flow (MGD) to reuse January -December 2010	-	-	12.33	a
Hardness (mg $CaCO_3$)	-	-	343.28	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400 s #	25 s	1	U

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
p - limit based on 24 hour flow proportioned composite
s - Single sample
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
U - Material analyzed for but not detected; value reported is the method detection limit
* - Single sample is report only.
¥ - Fecal coliform analysis performed by Advanced Environmental Laboratories Tampa
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-02-21-20
South Cross Bayou FYI3

Requester: Cari Butler
Field Report Prepared By:

Customer: SW-DIST
Project ID: FYI5
PMAS: 1143

Collected By: P Wellner, J Cohen, J. Molé
Send Final Report To: Joe Squiteri/ Michele Duggan
Sampling Agency: FDEP SWD

Lab ID *	Location	Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	Comments	Bottle Group(s)**
38252	EFD-01		FRESH	24.27	7.49	dd / dms	dd / dms	Grab	2/21/11 1015 Eastern		0.02U	7.83		0.2 ft	0.73 / 1464 Salinity / Sp Conductance		DO% 93.8	A
38253	EFD-01		FRESH			dd / dms	dd / dms	Comp	2/20/11 930 Eastern	2/21/11 830 Eastern				m / ft	Salinity / Sp Conductance		SAMPLED @ 1000	A
38254	EFB-01		FRESH			dd / dms	dd / dms	Grab	2/21/11 1040 Eastern					m / ft	Salinity / Sp Conductance			B
38255	BLANK		LAB DI H_2O			dd / dms	dd / dms	Grab	2/21/11 1010 Eastern					m / ft	Salinity / Sp Conductance			C

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	2/21/11	FED Ex	AFD	2-22-11 0930	4. Biossay	2.22.11 10:16	B. Alexander	

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-02-21-20
South Cross Bayou FYI3

Customer: SW-DIST
Project ID: FYI5
PMAS: 1143

Requester: Cari Butler
Collected By: M. DUGGAN
Sampling Agency: FDEP SWD

Field Report Prepared By:
Send Final Report To: ~~Joe Squiteri~~/ Michele Duggan

38256

Lab ID *	Location EFD-01			☑ Comp ☐ Grab	Collection (begin) Date 2/22/11 Time 930 Eastern Central	Collection (end) Date 2/23/11 Time 930 Eastern Central	Bottle Group(s)** A
	Field ID				Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) FRESH	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments				
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Field ID				Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments				
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Field ID				Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments				
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Field ID				Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments				

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Michele Duggan	02/23/11 0940	Fed Ex					CNC	2/24/11 915A

Took 4 BIOASSAY Jugs 1009 - 2/24/11

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-02-21-20
South Cross Bayou FYI3

Requester: Cari Butler
Field Report Prepared By:

Customer: SW-DIST
Project ID: FYI5
PMAS: 1143

Collected By: P. WENNER
Send Final Report To: Joe Squiteri/ Michele Duggan

Sampling Agency: FDEP SWD

38257

Lab ID *	Location / Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	Bottle Group(s)**	Comments
	EFD-01	FRESH			☐ dd ☐ dms	☐ dd ☐ dms	☑ Comp ☐ Grab	2/24/11 Time 930	2/25/11 Time 930							A	SAMPLE WAS BOTTLED @ 1010 ON ~~SAME~~ (PW) FRIDAY, 2/25/11
					☐ dd ☐ dms	☐ dd ☐ dms	☐ Comp ☐ Grab	Date Time	Date Time								
					☐ dd ☐ dms	☐ dd ☐ dms	☐ Comp ☐ Grab	Date Time	Date Time								
					☐ dd ☐ dms	☐ dd ☐ dms	☐ Comp ☐ Grab	Date Time	Date Time								

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	2/25/11 1200	Relinquished at Fed Express	McFarlath	9:40 2/26/11			ABB	3-3-11 0840

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Temps 1.8, 1.0, 2.0
Blue Blue Red

PC Review only.

Appendix B. Bench Sheets

FDEP Biology Laboratory - Chronic ~~Definitive~~ MF Bioassay Bench Sheet

Americamysis bahia

SOP#: TA07_15 EPA-821-R-02-014 Method 1007.0

Facility: South Cross Bayou
Address: 1701 54th Avenue N., St. Petersburg, FL 33709
County: Pinellas
NPDES Permit #: FL DO40436
Contact/District: PCER Nennee / Michele Duggan/Southwest

Start Date: 2.22.11 Time: 1300
End Date: 3.1.11 Time: 1300

Organism age : 1 days
Feeding Prior to Test and Daily
Artemia Lot # : 23613
Chamber size : 400 ml
Test volume : 250 ml

Artemia Batch # 23613	
Day 0 34-11	Day 3 37-11
Day 1 35-11	Day 4 38-11
Day 2 36-11	Day 5 39-11
	Day 6 40-11

Diluent/ Batch:
ASW / 2.21.11 Test Days Used: D-1
ASW / 2.23 Test Days Used: 2-3
ASW / 2.25 Used: 4-6

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2011-02-2276	1331942	2.21.11 / 0830	2.22.11 / 0930
Test Day 2	2	TLH-2011-02-24-81	1333289	2.23.11 / 0830	2.24.11 / 0915
Test Day 4	3	TLH-2011-0303-64	1334686	2.25.11 / 0830	2.26.11 / 0940

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3	1	2	3
Sample:	0.02	not measured	Not measured	0.08	<0.03	<0.03	207	215	209	(A)(B)	389	359
Diluent/Control:				<0.03	<0.03	<0.03	171	171	171	—	—	—
Method:	in / au	—	—	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	P. Werner	—	—	KC	KC	MF	KC	KC	KC	KC	KC	KC
Verified by:	KC	KC	MF	KC	KC	KC	KC	KC	KC	KC	KC	KC
	Conductivity (circle one) (µmhos-cm / mmhos-cm)			Ammonia (mg/L)			Salinity (original sample) (ppth)			Salinity (adjusted sample) (ppth)		
Lab Sample#:	1	2	3	1	2	3	1 KC	2 (A)	(C) 3	1	2	3
Sample:	31.7	31.7	30.5	<0.017	<0.017	<0.017	~~19.9~~	~~21.1~~	~~18.8~~	19.9	21.1	18.8
Diluent/Control:	~~31.7~~ (A)	32.1	31.9	<0.034	<0.034	<0.034	~~20.0~~	~~20.5~~	~~20.0~~	20.0	20.5	20.0
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler	Mettler	Mettler	Mettler
Measured by:	JD	KC	KC	BA	BA	MF	JD	KC	KC	JD	KC	KC
Verified by:	KC	KC	KC	KC	KC	KC	KC	KC	KC	KC	KC	KC

Parameters are for original sample except as noted.

Temperature Shipped ≤ 6° C (all samples) (yes) no
Holding Time ≤ 36 hours (all samples) (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 3 min. 23.9 max. 28.8 mean____
Water bath # ____ min.____ max.____ mean____
Room B246 min. 21.3 max. 25.6 mean____

Lims: Entry — 3-8-11 MF
Verification — 3-8-11 BA

Results	
Growth NOEC:	50%
Growth LOEC:	100%
Growth IC_{20}:	>100%
Growth IC_{25}:	>100%
Ctrl % CV:	11.3
Dunnetts PMSD:	11.8%
Survival NOEC:	100 %
Survival LOEC:	>100%

Investigators' signatures	Initials
James Daniels	JD
Kara Cole	KC
Maybell Faircloth	MF
Bree Abelson	BA
Liz Miller	

REVIEWER

Comments:
(A) 32.1
(B) not measured -KC-
(C) Salinity original sample: 1 = 0.82ppt, 2 = 0.73ppt, 3 = 0.8ppt

Test Page 1 of 8 PAGE 1 revised 2/201/11 MF

Appendix B. continued

Chronic Survival Benchsheet

A. bahia SOP TA07_15

Loaded by (0 hour): JD Verified by (0 hour): KU LIMS Sample #: 133942 D = dead M = missing

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
Control	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
6.25%	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
12.5%	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	4 D
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	4 D
25%	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
Checked by:		JD	JD	JD	JD	BA	JD	JD	

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
50%	A	5	5	5	5	4 D	4	4	4
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	4 D	4	4	4	4
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
100%	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	4 D
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
5x lt control	A	5	5	5	5	5	5	5	0 SD
	B	5	5	5	5	5	5	5	0 SD
	C	5	5	5	5	5	5	5	0 SD
	D	5	5	5	5	5	5	5	0 SD
	E	5	5	4 D	4	4	4	4	0 4D
	F	5	5	5	5	5	5	5	0 SD
	G	5	5	5	5	5	5	5	0 SD
	H	5	5	5	5	5	5	5	0 SD
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
Checked by:		JD	JD	JD	JD	BA	JD	JD/MA	

Comments: * Laboratory error. Dilution water. 100% mortality MF 3/7/11

revised 2/20/11 MF

Appendix B. continued

A. bahia Chronic Parameters Benchsheet
SOP TA07_15

LIMS #: 1331942 Organism: *A. bahia*

Test Day		Before Renewal						Test Start and After Renewal					
	Conc	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)
Day 0	Control							A	8.2	24.3	6.6	32.1	20.0
	6.25%							A	8.2	24.8	6.8	32.3	20.1
	12.5%							A	8.2	25.0	6.8	32.2	20.1
	25%							A	8.2	25.0	6.9	32.1	20.0
	50%							A	8.2	25.0	6.9	32.0	20.0
	100%							A	8.2	25.4	7.0	31.7	19.9
	Salt Ctrl							A	8.4	24.9	6.9	32.1	20.0
	Measured by:								JD	JD	JD	JD	JD
	Recorded by:								JD	JD	JD	JD	JD
		Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 1	Control	B	8.2	24.5	7.0	32.9	20.5	B	8.2	24.0	6.6	32.5	20.4
	6.25%	B	8.3	25.1	7.3	32.4	20.2 JD	B	8.2	24.1	6.8	32.7	20.4
	12.5%	B	8.3	24.4	7.2	32.4	20.2	B	8.2	24.1	6.7	32.7	20.4
	25%	B	8.3	24.1	7.4	32.4	20.2	B	8.2	24.2	6.9	32.8	20.5
	50%	B	8.3	24.1	7.5	32.3	20.2	B	8.2	24.1	6.8	33.1	20.7
	100%	B	8.3	24.4	7.4	32.3	20.2	B	8.3	24.0	6.4	33.8	21.1
	Salt Control	B	8.4	25.3	7.3	33.2	20.6	B	8.3	24.1	6.8	31.9	20.0
	Measured by:		JD	JD	JD	JD	JD		KC	KC	KC	KC	KC
	Recorded by:		JD	JD	JD	JD	JD		KC	KC	KC	KC	KC
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 2	Control	C	8.1	24.4	6.6	32.7	20.5	C	8.1	24.2	6.5	32.7	20.5
	6.25 %	C	8.0	24.5	5.9	32.7	20.4	C	8.2	24.0	6.5	32.7	20.4
	12.5 %	C	8.1	25.0	6.3	33.5	20.9	C	8.2	24.0	6.6	32.9	20.5
	25 %	C	8.1	24.5	5.4	32.9	20.5	C	8.2	24.0	6.5	32.4	20.2
	50 %	C	8.1	25.5	5.9	33.7	21.2	C	8.2	24.0	6.5	32.6	20.3
	100 %	C	8.2	25.5	6.3	33.6	21.0	C	8.3	24.0	7.2	31.7	19.7
	Salt Ctrl.	C	8.2	25.4	7.2	32.3	20.2	C	8.3	24.0	6.7	31.4	19.6
	Measured by:		KC	JD	KC	KC	KC		KC	JD	KC	KC	KC
	Recorded by:		KC	JD	KC	KC	KC		KC	JD	KC	KC	KC
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 3	Control	D	8.1	24.0	6.3	33.4	20.9	D	8.2	23.8	6.8	32.5	20.4
	6.25 %	D	8.1	24.6	6.1	33.1	20.7	D	8.2	24.0	6.6	33.0	20.5
	12.5 %	D	8.1	24.0	5.9	32.9	20.5	D	8.2	24.0	6.4	32.5	20.4
	25 %	D	8.1	24.0	5.9	32.6	20.4	D	8.2	24.0	6.5	31.6	19.6
	50 %	D	8.2	24.0	6.0	32.3	20.2	D	8.2	24.0	6.5	31.4	19.6
	100 %	D	8.2	24.4	6.1	32.0	20.0	D	8.3	24.5	6.7	30.5	18.9
	Salt Ctrl	D	8.2	24.4	6.4	32.3	20.2	D	8.3	24.0	7.0	31.3	19.4
	Measured by:		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by:		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD

conc = concentration rep = replicate cond = conductivity Sal = salinity

Comments:

revised 2/20/11 MF

Test Page 3 of 8 PAGE 3

Appendix B. continued

A. bahia Chronic Parameters Benchsheet
SOP TA07_15

LIMS #: 1331942 Organism: *A. bahia*

Test Day		Before Renewal						Test Start and After Renewal					
	Conc	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)
Day 4	Control	E	8.1	24.2	6.5	33.1	20.7	E	8.2	24.0	10.5	31.9	20.0
	6.25	E	8.1	24.0	6.4	33.3	20.8	E	8.2	24.0	10.6	32.7	20.4
	12.5	E	8.1	24.0	6.2	33.5	20.8	E	8.2	24.0	10.5	32.6	20.3
	25	E	8.1	24.6	6.2	32.4	20.0	E	8.2	24.1	10.6	32.1	20.0
	50	E	8.1	24.8	6.1	32.1	20.0	E	8.2	24.1	10.6	31.6	19.6
	100	E	8.2	24.1	6.1	31.4	19.5	E	8.3	24.1	6.9	30.5	18.8
	Solt Control	E	8.2	24.5	6.4	32.4	20.0	E	8.3	24.2	7.2	33.2	20.7
	Measured by:		JJ	JJ	JJ	JJ	JJ		KC	MF	KC	KC	KC
	Recorded by:		JJ	JJ	JJ	JJ	JJ		KC	KC	KC	KC	KC
		Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 5	Control	F	8.0	24.5	5.2	33.2	20.8	F	8.1	24.0	5.8	33.2	20.7
	6.25	F	8.1	24.8	5.2	33.8	21.0	F	8.2	24.0	6.1	33.2	20.7
	12.5	F	8.1	24.7	5.2	33.5	20.9	F	8.2	24.0	5.9	33.1	20.7
	25	F	8.1	24.7	5.4	32.9	20.3	F	8.2	24.0	6.0	32.8	20.4
	50	F	8.2	24.5	5.4	32.3	20.0	F	8.2	24.0	6.2	32.1	20.0
	100	F	8.2	24.7	5.5	30.9	18.9	F	8.2	24.0	6.2	30.7	19.0
	Solt Ctrl	F	8.2	24.6	5.7	34.1	21.3	F	8.2	24.0	6.1	33.4	20.8
	Measured by:		JJ	JJ	JJ	JJ	JJ		BA	BA	BA	BA	BA
	Recorded by:		JJ	JJ	JJ	JJ	JJ		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 6	Control	G	8.1	24.1	6.3	33.3	20.9	G	8.1	24.6	6.2	330	20.7
	6.25	G	8.2	24.7	6.3	33.6	20.7 KC	G	8.2	24.0	6.1	332	20.6
	12.5	G	8.1	24.3	6.1	33.5	20.9	G	8.2	24.0	6.2	33.0	20.5
	25	G	8.2	24.2	6.2	33.2	20.7	G	8.3	24.0	6.3	32.9	20.6
	50	G	8.2	24.2	6.3	32.3	20.1	G	8.3	24.0	6.3	32.6	20.3
	100	G	8.3	24.2	6.3	31.4	19.5	G	8.3	24.1	6.4	32.3	20.1
	Solt Control	G	8.1	24.1	6.0	33.0	20.8	G	8.0	25.2	6.0	23.3	20.2
	Measured by:		KC	JJ	KC	KC	KC		BA	BA	BA	BA	BA
	Recorded by:		KC	JJ	KC	KC	KC		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 7	Control	H	8.0	24.6	5.7	33.9	21.1						
	6.25	H	8.0	25.0	5.5	34.0	21.2						
	12.5	H	8.0	24.9	5.2	33.5	20.9						
	25	H	8.2	24.7	6.2	33.3	20.7						
	50	H	8.1	24.6	5.4	34.6	21.7						
	100%	H	8.2	24.9	5.1	33.3	20.7						
		H											
	Measured by:		JJ	JJ	JJ	JJ	JJ						
	Recorded by:		JJ	JJ	JJ	JJ	JJ						

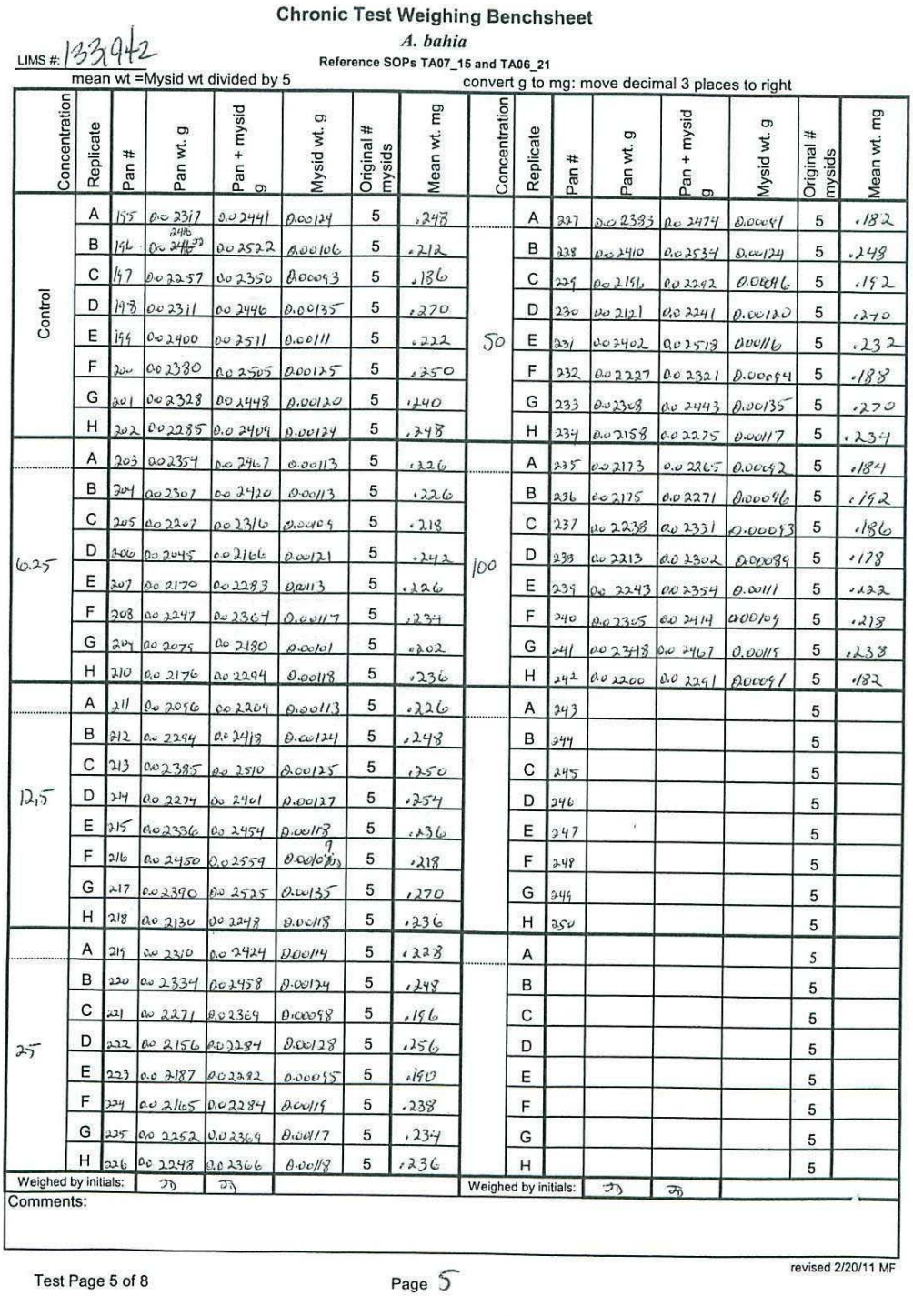
conc = concentration rep = replicate cond = conductivity Sal = salinity

Comments:
(A) 21.0

revised 2/20/11 MF

Test Page 4 of 8 PAGE 4

Appendix B. continued



Chronic Test Weighing Benchsheet

A. bahia

LIMS #: 133942

Reference SOPs TA07_15 and TA06_21

mean wt =Mysid wt divided by 5 — convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. g	Pan + mysid g	Mysid wt. g	Original # mysids	Mean wt. mg	Concentration	Replicate	Pan #	Pan wt. g	Pan + mysid g	Mysid wt. g	Original # mysids	Mean wt. mg
Control	A	195	0.0 2317	0.0 2441	0.00124	5	.248		A	227	0.0 2383	0.0 2474	0.00091	5	.182
	B	196	0.0 2416 2418	0.0 2522	0.00106	5	.212		B	228	0.0 2410	0.0 2534	0.00124	5	.248
	C	197	0.0 2257	0.0 2350	0.00093	5	.186		C	229	0.0 2196	0.0 2292	0.00096	5	.192
	D	198	0.0 2311	0.0 2446	0.00135	5	.270		D	230	0.0 2121	0.0 2241	0.00120	5	.240
	E	199	0.0 2400	0.0 2511	0.00111	5	.222	50	E	231	0.0 2402	0.0 2518	0.00116	5	.232
	F	200	0.0 2380	0.0 2505	0.00125	5	.250		F	232	0.0 2227	0.0 2321	0.00094	5	.188
	G	201	0.0 2328	0.0 2448	0.00120	5	.240		G	233	0.0 2368	0.0 2443	0.00135	5	.270
	H	202	0.0 2285	0.0 2409	0.00124	5	.248		H	234	0.0 2158	0.0 2275	0.00117	5	.234
	A	203	0.0 2354	0.0 2467	0.00113	5	.226		A	235	0.0 2173	0.0 2265	0.00092	5	.184
	B	204	0.0 2307	0.0 2420	0.00113	5	.226		B	236	0.0 2175	0.0 2271	0.00096	5	.192
	C	205	0.0 2207	0.0 2316	0.00109	5	.218		C	237	0.0 2238	0.0 2331	0.00093	5	.186
	D	206	0.0 2048	0.0 2166	0.00121	5	.242		D	238	0.0 2213	0.0 2302	0.00089	5	.178
6.25	E	207	0.0 2170	0.0 2283	0.00113	5	.226	100	E	239	0.0 2243	0.0 2354	0.00111	5	.222
	F	208	0.0 2247	0.0 2364	0.00117	5	.234		F	240	0.0 2305	0.0 2414	0.00109	5	.218
	G	209	0.0 2075	0.0 2180	0.00101	5	.202		G	241	0.0 2718	0.0 2967	0.00115	5	.238
	H	210	0.0 2176	0.0 2294	0.00118	5	.236		H	242	0.0 2200	0.0 2291	0.00091	5	.182
	A	211	0.0 2056	0.0 2269	0.00113	5	.226		A	243				5	
	B	212	0.0 2254	0.0 2378	0.00124	5	.248		B	244				5	
	C	213	0.0 2385	0.0 2510	0.00125	5	.250		C	245				5	
12.5	D	214	0.0 2274	0.0 2401	0.00127	5	.254		D	246				5	
	E	215	0.0 2336	0.0 2454	0.00118	5	.236		E	247				5	
	F	216	0.0 2450	0.0 2559	0.00109 9	5	.218		F	248				5	
	G	217	0.0 2390	0.0 2525	0.00135	5	.270		G	249				5	
	H	218	0.0 2130	0.0 2248	0.00118	5	.236		H	250				5	
	A	219	0.0 2310	0.0 2424	0.00114	5	.228		A					5	
	B	220	0.0 2334	0.0 2458	0.00124	5	.248		B					5	
	C	221	0.0 2271	0.0 2369	0.00098	5	.196		C					5	
25	D	222	0.0 2156	0.0 2284	0.00128	5	.256		D					5	
	E	223	0.0 2187	0.0 2282	0.00095	5	.190		E					5	
	F	224	0.0 2165	0.0 2284	0.00119	5	.238		F					5	
	G	225	0.0 2252	0.0 2369	0.00117	5	.234		G					5	
	H	226	0.0 2248	0.0 2366	0.00118	5	.236		H					5	
Weighed by initials:			JD	JD				Weighed by initials:			JD	JD			

Comments:

revised 2/20/11 MF

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Appendix B. continued

Chronic Test Weighing Benchsheet
Quality Control

A. bahia

SOPs TA07_15 and TA06_21

LIMS: 133194-2

Empty Pan Weights Date: 2.28.11 By: JD

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02316	@ 0.02317
after Pan 10	0.02318	@ 0.02317
after Pan 15	0.02318	@ 0.02317
after Pan 20	0.02315	@ 0.02317
after Pan 25	0.02317	@ 0.02317
after Pan 30	0.02317	@ 0.02317
after Pan 35	0.02316	@ 0.02317
after Pan 40	0.02315	@ 0.02317
after Pan 45	0.02316	@ 0.02317
after Pan 48	0.02316	@ 0.02317

	Measured Value (g)	S-weight Value (g)
S-weights	0.0001	@ 0.01
	0.0303	@ 0.03

S-Weights: BIO-S-WEIGHTS-01
Balance: Ohaus 250D
Ser# 1125481084

Salt Controls < 0.02317 / 0.02316 — 0.02317 / 0.02317

Fish + Pan Weights Date: 3.4.11 By: JD

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02441 JD	@ 0.02441
after Pan 10	0.02442	@ 0.02441
after Pan 15	0.02441	@ 0.02441
after Pan 20	0.02442	@ 0.02441
after Pan 25	0.02441	@ 0.02441
after Pan 30	0.02441	@ 0.02441
after Pan 35	0.02441	@ 0.02441
after Pan 40	0.02442	@ 0.02441
after Pan 45	0.02442	@ 0.02441
after Pan 48	0.02442	@ 0.02441

	Measured Value (g)	S-weight Value (g)
S-weights	0.0001	@ 0.01
	0.0500	@ 0.05

Drying Oven ID: WJD VWR 2
Temperature °C: 95
Drying Hours: 8

Note: Pan number (5, 10, etc.) refers to sequence of weighing as actual Pan #s may differ.

Comments:

revised 2/20/11 MF

Test Page 6 of 8

PAGE 6

Appendix B. continued

A. bahia Chronic Fecundity Bench Sheet

LIMS #: _____ *Americamysis bahia* SOP TA07_15

Concentration	Replicate	Total Mysids	Females: Eggs	Females: No Eggs	Males	Immature	Concentration	Replicate	Total Mysids	Females: Eggs	Females: No Eggs	Males	Immature
Control	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
Checked by:							Checked by:						

Comments:

Pass Adj. Rep F 3/16/11 (USED)

revised 2/20/11 MF

Test Page 7 of 8 PAGE 7

Appendix B. continued

Test ID: South cross CD A. bahia Dates: 2.22.11 – 3.1.11

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5 SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ HS
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

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

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

Entered By: BA

V 1.2 2/20/11 MF/jd

Teat Page 8 of 8 PAGE 8

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: South Cross
Address: 7401 54th Avenue N., St. Petersburg, FL 33709
County: Pinellas
NPDES Permit #: FL0040436
Contact/District: Peter Wenner & Michele Duggan/Southwest

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

Start Date: 2.22.11 Time: 1330
End Date: 3.1.11 Time: 1230

Diluent/ Batch:

MHW /_____	Test Days Used:	
MHW /_____	Test Days Used:	
ASW / 2.21.11	Test Days Used:	D-1
ASW / 2.23.11	Test Days Used:	2-3
ASW / 2.25.11 (B)		4-6

Organism Batch # : 2.22.11
Feeding Prior to Test and Daily
Artemia Lot # : 23613
Chamber size : 1000 ml
Test volume : 400 ml

Organism age : 10 days

Artemia Batch #	Day 3 34 KC 37-11		
Day 0 34-11	Day 4 38-11		
Day 1 35-11	Day 5 39-11		
Day 2 36-11	Day 6 40-11		

LIMS:	Date	Initials
Entry:	3-8-11	MF
Verification:	3-8-11	BA

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2011-02-22-72	1331942	2.21.11 / 0830	2.22.11 / 0930
Test Day 2	2	TLH-2011-02-24-81	1332289	2.23.11 / 0830	2.24.11 / 0915
Test Day 4	3	TLH-2011-03-03-64	1334686	2.25.11 / 0830	2.26.11 / 0940

Water Quality Parameters	Batch #	2.21.11 ☐ MHW ☑ ASW	2.23.11 ☐ MHW ☑ ASW	Sample 1 NA	Sample 2 NA	Sample 3 NA	Other:	Measured by:	Verified by:
Field Total Residual Cl_2 (mg/L):		NA	NA	0.02	not measured	not measured		(C)	KC
Lab Total Residual Cl_2 (mg/L):		<0.03		0.08	<0.03	<0.03		KC	KC
Alkalinity (mg/L as $CaCO_3$):		171	not measured	207	215	209		KC	KC
Hardness (mg/L as $CaCO_3$):		—		—	339	359		— KC	KC/KC
Total Ammonia (mg/L as N):		<0.034	<0.034	<0.034	<0.034	<0.034		BA/MF	KC
Conductivity: µmhos ~~mmhos~~:		32.1	32.2	<0.034	<0.034	<0.034	K(A)	JD/KC	KC
Salinity (ppth):		20.0	20.2	19.9	19.5	18.7		JD/KC	KC

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

Temperature Range °C: (if used)
Incubator # 5 min. 23.1 max 26.0 mean
Water bath # ___ min. ___ max. ___ mean
Room B246 min. 24.3 max. 25.6 mean

Test Incubated in: ☐ Incubator #:_____ ☐ Waterbath #:____

Investigators' signatures
Kara Cox
Marshall Faircloth
Bree Albritton
Jessica Daniels

REVIEWER Liz Miller

Statistics	
Control %cv:	9.8%
Dunnetts PMSD:	22.6%
Survival NOEC:	100%
Survival LOEC:	>100%
Growth NOEC:	100%
Growth LOEC:	>100%

IC_{20} = >100%
IC_{25} = >100%

Comments: ASW #2.25.11
(B) Lab TRC = <0.03
AIK = 173
Ammonia = <0.034
Cond. = 32.2
Salinity = 20.1

(A) Conductivities
Sample 1: 31.8 mmhos
" 2: 31.5 "
" 3: 30.4 "

(C) Field data did not say who measured. -KC-

*the measured by/verified by initials for ASW #2.25.11 are the same as for those above. -KC-

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revised 7/15/08 MF

Appendix B. continued

Chronic Bioassay Survival Benchsheet

Facility: South Cross

LIMS Sample Number: 133947
(for Lab Sample # 1)

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

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

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	9 10	9	9	9	9	9	9
	B	10	10	10	10	8 7D	8	8	8
	C	10	10	9 10	10	10	10	10	10
	D	10	10	9 10	9	9	9	9	9
Sample 6.25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	9 10	9	9	9	9
	C	10	9 10	9	8 10	8	8	8	8
	D	10	10	10	10	10	10	10	10
Sample 12.5%	A	10	10	9 10	9	9	9	9	8 10
	B	10	10	10	10	10	10	10	10
	C	10	8 20	7 10	7	7	7	7	7
	D	10	8 20	8	8	8	8	8	8
Sample 25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	9 10	8 10	8	8	8	8	7 10
	D	10	10	10	10	10	10	10	10
Sample 50 %	A	10	10	10	10	10	10	10	10
	B	10	8 20	8	8	8	8	8	8
	C	10	10	10	9 10	9	9	9	9
	D	10	9 10	8 10	8	8	8	8	8
Sample 100 %	A	10	10	10	10	9 10	9	9	9
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample Salt % Ctrl JD *	A	10	10	10	10	10	10	10	8 20
	B	10	9 10	9	9	9	8 10	8 JD	6 20
	C	10	9 10	9	9	9	8 10	8 JD	5 30
	D	10	10	10	10	10	10	10	3 70
Loaded by: JD	Checked by:		JD	JD	JD	JD	BA	JD	BA
Verified by: BA									

Comments: * Salt control incorrectly prepared on Day 6, mf 3/7/11

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Appendix B. continued

Chronic Bioassay Parameters Benchsheet

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

Sample Source: South Cross Start Date: 2.22.11 End Date: 3.1.11

LIMS Sample #: 1331942 (for Lab sample #1) Start Time: 3:11 End Time: 12:30

conc = concentration rep = replicate circle umhos or mmhos

Test Day			New Sample							Old Sample						
↓		Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth		Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	
Day 0	sample:	Control	A	8.2	24.7	6.7	32.1	20.0								
	1	6.25	A	8.2	24.5	6.7	32.4	20.1								
	1	12.5	A	8.2	24.5	6.5	32.2	20.1								
	1	25	A	8.2	24.5	6.5	32.2	20.1								
	1	50	A	8.2	24.5	6.7	31.8	19.9								
	1	100	A	8.2	24.5	6.7	31.8	19.9								
	1	Salt Ctrl	A	8.4	25.0	6.6	32.1	20.0								
	Measured by:			JD	JD	JD	JD	JD								
	Recorded by:			JD	JD	JD	JD	JD								
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 1	sample:	Control	B	8.2	24.0	6.6	32.2	20.1		B	8.2	24.6	6.5	32.2	20.1	
	1	6.25%	B	8.2	24.1	6.7	32.5	20.2		B	8.2	24.4	6.5	32.3	20.1	
	1	12.5%	B	8.2	24.1	6.7	32.6	20.3		B	8.2	24.3	6.6	32.2	20.1	
	1	25%	B	8.2	24.0	6.8	32.7	20.3		B	8.2	24.3	6.8	31.9	20.0	
	1	50%	B	8.2	24.0	6.7	32.8	20.4		B	8.2	24.2	6.9	31.7	19.9	
	1	100%	B	8.3	24.1	6.6	33.3	20.8		B	8.3	24.4	6.8	31.5	19.8	
	1	Salt Ctrl	B	8.3	24.0	6.7	31.5	19.7		B	8.3	24.4	7.0	32.4	20.1	
	Measured by:			KC	KC	KC	KC	KC			JD	JD	JD	JD	JD	
	Recorded by:			KC	KC	KC	KC	KC			JD	JD	JD	JD	JD	
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 2	sample:	Control	C	8.2	24.0	6.5	32.2	20.2		C	8.2	25.0	6.4	32.6	19.9	
	2	6.25%	C	8.2	24.0	6.7	32.5	20.3		C	8.2	25.5	6.4	32.4	20.2	
	2	12.5%	C	8.2	24.0	6.5	32.5	20.2		C	8.2	25.8	6.4	32.6	20.3	
	2	25%	C	8.2	24.0	6.6	32.3	20.1		C	8.3	25.8	6.5	32.5	20.2	
	2	50%	C	8.3	24.0	6.7	31.9	19.8		C	8.3	25.8	6.4	32.6	20.3	
	2	100%	C	8.3	24.0	7.1	31.5	19.5		C	8.4	25.6	6.3	32.7	20.5	
	2	Salt Ctrl	C	8.3	24.0	6.8	30.9	19.3		C	8.3	25.6	6.3	31.7	19.6	
	Measured by:			KC	JD	KC	KC	KC			KC	JD	KC	KC	KC	
	Recorded by:			KC	JD	KC	KC	KC			KC	JD	KC	KC	KC	
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 3	sample:	Control	D	8.2	25.0	6.3	32.7	20.3		D	8.2	24.0	6.7	32.4	20.2	
	2	6.25%	D	8.2	25.1	6.2	32.3	20.1		D	8.2	24.0	7.0	32.4	20.2	
	2	12.5%	D	8.2	25.1	6.3	32.3	20.1		D	8.2	24.0	6.5	32.5	20.4	
	2	25%	D	8.2	25.0	6.3	32.2	20.1		D	8.2	24.0	6.9	31.8	20.0	
	2	50%	D	8.2	25.1	6.3	31.9	20.0		D	8.3	24.0	6.9	31.4	19.6	
	2	100%	D	8.3	25.1	6.3	31.3	19.4		D	8.3	24.0	7.0	30.2	18.5	
	2	Salt Ctrl	D	8.3	25.5	6.5	31.6	19.6		D	8.3	24.3	7.0	31.3	19.4	
	Measured by:			JD	JD	JD	JD	JD			JD	JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD	JD			JD	JD	JD	JD	JD	

Comments:

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

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Appendix B. continued

Chronic Bioassay Parameters Benchsheet

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

Sample Source: South Cross
LIMS Sample #: 1231942 (for Lab sample #1)
Start Date: 2.22.11 End Date: 3.1.11
Start Time: 1330 End Time: 1230

conc = concentration rep = replicate

Test Day ↓		Conc.	New Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth	Old Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth
Day 4	sample:	Control	A	8.2	24.1	6.6	32.2	20.1	A	8.1	24.8	6.1	32.5	20.5
	3	6.25	A	8.2	24.1	6.8	32.5	20.2	A	8.2	25.2	6.1	32.9	20.5
	3	12.5	A	8.2	24.1	6.7	32.3	20.1	A	8.2	25.1	6.3	32.7	20.3
	3	25	A	8.2	24.0	6.6	32.0	19.9	A	8.2	25.1	6.5	32.4	20.1
	3	50	A	8.2	24.1	6.5	31.3	19.4	A	8.2	25.0	6.6	32.0	19.0
	3	100	A	8.3	24.0	6.7	30.4	18.7	A	8.3	25.0	6.6	30.4	18.5
	3	Salt Ctrl.	A	8.3	24.1	7.2	33.2	20.6	A	8.2	24.5	6.6	31.7	19.8
	Measured by:			KC	MF	KC	KC	KC		JD	JD	JD	JD	JD
	Recorded by:			KC	KC	KC	KC	KC		JD	JD	JD	JD	JD
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	sample:	Control	B	8.2	24.0	6.5	33.1	20.7	B	8.1	25.1	5.9	32.8	20.4
	3	6.25	B	8.2	24.0	6.5	32.8	20.5	B	8.1	25.3	5.8	32.5	20.2
	3	12.5	B	8.2	24.0	6.4	32.8	20.4	B	8.1	25.0	5.7	32.6	20.2
	3	25	B	8.2	24.0	6.4	32.4	20.2	B	8.2	24.9	5.6	32.2	20.0
	3	50	B	8.2	24.0	6.4	31.8	19.8	B	8.2	24.8	5.8	31.8	18.9
	3	100	B	8.2	24.2	6.4	30.8	19.1	B	8.2	24.7	5.7	30.9	18.8
	3	Salt Ctrl.	B	8.2	24.0	6.4	32.6	20.3	B	8.2	24.8	5.7	32.7	20.3
	Measured by:			BA	BA	BA	BA	BA		JD	JD	JD	JD	JD
	Recorded by:			BA	BA	BA	BA	BA		JD	JD	JD	JD	JD
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	sample:	Control	C	8.1	24.0	5.5	33.0	20.6	C	8.1	24.4	6.2	32.8	20.6
	3	6.25	C	8.2	24.0	6.2	33.0	20.7	C	8.2	24.6	6.4	33.5	21.0
	3	12.5	C	8.2	24.0	6.5	33.0	20.6	C	8.2	24.2	6.2	33.6	21.0
	3	25	C	8.3	24.0	6.6	32.9	20.5	C	8.2	24.7	6.2	32.6	20.3
	3	50	C	8.3	24.0	6.5	32.5	20.3	C	8.2	25.0	6.2	32.2	20.1
	3	100	C	8.3	24.0	6.6	32.0	19.9	C	8.3	24.7	6.2	30.8	19.0
	3	Salt Ctrl.	C	8.0	25.1	5.4	32.3	20.2	C	8.1	24.7	6.4	32.1	20.1
	Measured by:			BA	BA	BA	BA	BA		KC		KC	KC	KC
	Recorded by:			BA	KC	BA	BA	BA		KC		KC	KC	KC
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	sample:	Control							D	8.0	24.9	5.2	32.8	20.5
	3	6.25							D	8.0	24.9	5.4	32.8	20.5
	3	12.5							D	8.1	24.9	5.4	32.7	20.4
	3	25							D	8.1	25.1	5.0	32.5	20.2
	3	50							D	8.1	24.6	5.3	32.0	19.9
	3	100							D	8.2	24.7	5.0	31.8	19.8
	3	Salt control							D	8.0	24.5	5.2	31.8	19.8
	Measured by:									BA	BA	BA	BA	BA
	Recorded by:									BA	BA	BA	BA	BA

Comments:

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

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Appendix B. continued

Chronic Definitive Bioassay Weighing Benchsheet

Facility: South Cross

LIMS Sample Number: 1331942
(for Lab Sample # 1)

***P. promelas* and *M. beryllina* Bench Sheet**
SOP TA06_21

Concentration	Replicate	Pan #	Pan wt. g (mean wt = fish wt divided by 10; convert g to mg: move decimal 3 places to right)	Pan + Fish g	Fish wt. g	Original # Fish	Mean wt. mg
Control	A	134	0.02327	0.03344	0.01017	10	1.017
	B	135	0.02222	0.03087	0.00865	10	.865
	C	136	0.02257	0.03349	0.01092	10	1.092
	D	137	0.02257	0.03305	0.01048	10	1.048
sample 6.25 %	A	138	0.02274	0.03669	0.01395	10	1.395
	B	139	0.02449	0.03438	0.00989	10	.989
	C	140	0.02214	0.03461	0.01247	10	1.247
	D	141	0.02339	0.03577	0.01238	10	1.238
sample 12.5 %	A	142	0.02356	0.03052	0.00696	10	.696
	B	143	0.02270	0.03320	0.01050	10	1.050
	C	144	0.02221	0.03143	0.00922	10	.922
	D	145	0.02274	0.03309 JD	0.01035	10	1.035
sample 25 %	A	146	0.02318	0.03329	0.01011	10	1.011
	B	147	0.02331	0.03420	0.01039	10	1.039
	C	148	0.01877	0.02635	0.00758	10	.758
	D	149	0.02316	0.03257	0.00941	10	.941
sample 50 %	A	150	0.02163	0.03174	0.01006	10	1.006
	B	151	0.02297	0.03250	0.00953	10	.953
	C	152	0.02269	0.03232	0.00963	10	.963
	D	153	0.02274	0.03243	0.00969	10	.969
sample 100 %	A	154	0.02353	0.03202	0.00849	10	.849
	B	155	0.02236	0.03209	0.00973	10	.973
	C	156	0.02324	0.03389 JD	0.01065	10	1.065
	D	157	0.02253	0.03495	0.01242	10	1.242
sample Stock % Ctrl	A	158	0.02270	0.03096	0.00826	10	.826
	B	159	0.02292	0.03075	0.00780	10	.780
	C	160	0.02345	0.02878	0.00533	10	.533
	D	161	0.02195	0.02604	0.00409	10	.409
	Weighed by initials:		JD	JD	revised 7/16/08 mf		

Comments:

Balance: Ohaus 250D Ser# 1125481084
S-Weights: BIO-S-Weights-01

Note: Pan number (#) refers to actual Pan number.

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Appendix B. continued

Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: South Cross

LIMS Sample Number: 1331942 (for Lab Sample # 1)

***P. promelas and M. beryllina* Bench sheet**

SOPs TA07_09, TA07_14 and TA06_21

Drying Oven ID:	VWR2	Tare weighed by:	JD
Temperature °C:	95	Final weighed by:	JD
Hours:	8		
Tare Weighing Date: 2.28.11		Final Weighing Date:	

				Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.02326	@	0.02327	S-weights	0.0100 1	@ 0.01
Tare Pan 1 after Pan 10 (g)	0.02326	@	0.02327	at tare	0.03003	@ 0.03
Tare Pan 1 after Pan 15 (g)	0.02329	@	0.02327	S-weights	0.00 1	@ 0.001
Tare Pan 1 after Pan 20 (g)	0.02325	@	0.02327	at final	0.05004	@ 0.05
Tare Pan 1 after Pan 25 (g)	0.02327	@	0.02327			
Tare Pan 1 after Pan 30 (g)	0.02326	@	0.02327	Balance: Ohaus 250D Ser# 1125481084		
Tare Pan 1 after Pan 35 (g)		@		S-Weights: BIO-S-Weights-01		
Tare Pan 1 after Pan 40 (g)		@				
Tare Pan 1 after Pan 45 (g)		@				
Tare Pan 1 after Pan 48 (g)		@				
Final Pan 1 after Pan 5 (g)	0.03343	@	0.03344			
Final Pan 1 after Pan 10 (g)	0.03342	@	0.03344			
Final Pan 1 after Pan 15 (g)	0.03345	@	0.03344			
Final Pan 1 after Pan 20 (g)	0.03345	@	0.03344			
Final Pan 1 after Pan 25 (g)	0.03344	@	0.03344			
Final Pan 1 after Pan 30 (g)	0.03345	@	0.03344			
Final Pan 1 after Pan 35 (g)		@				
Final Pan 1 after Pan 40 (g)		@				
Final Pan 1 after Pan 45 (g)		@				
Final Pan 1 after Pan 48 (g)		@				

Note: Pan numbers (5, 10, etc.) for Tare and Final refers to sequence of weighing as actual Pan #s may differ.

Comments:

revised 7/16/08 MF

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Appendix B. continued

Test ID: South cross CD Mixing Dates: 2.22-3.1-2011

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

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

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

BA

V 1.1 9/21/10 MF/jd

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Appendix C. SRT Charts and Bench Sheets

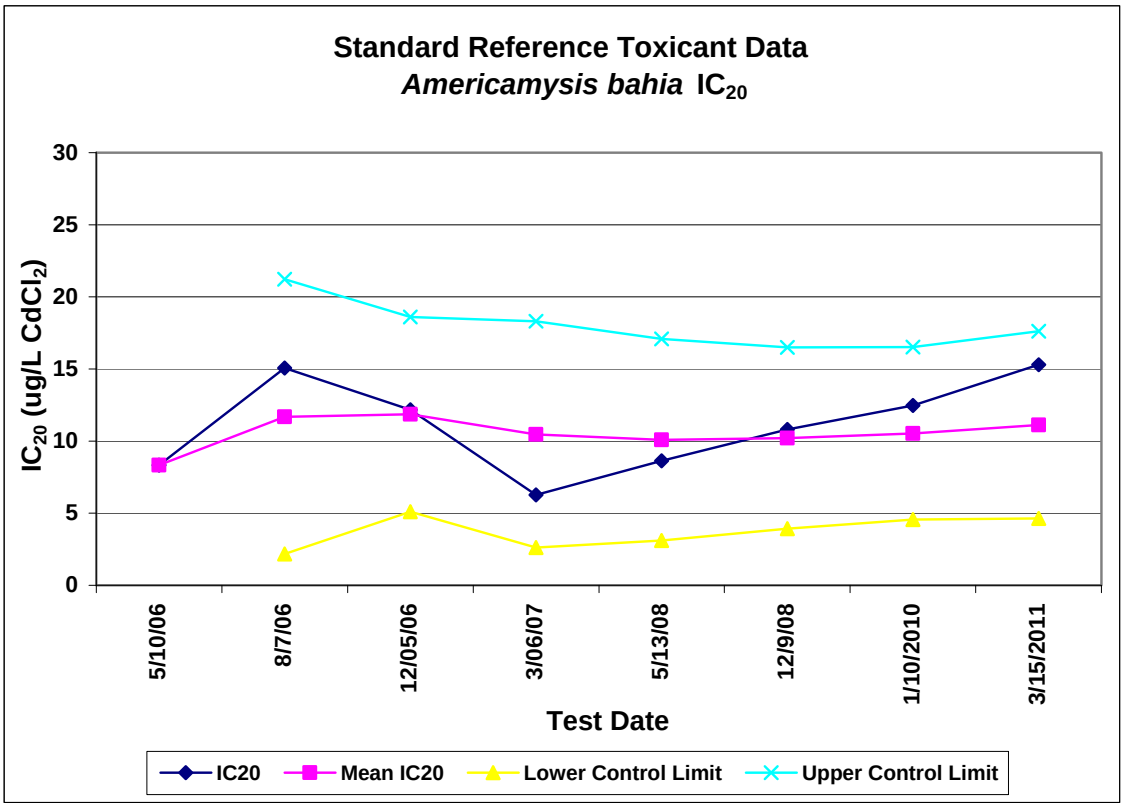
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity

Americamysis bahia (mysid shrimp) - Cadmium Chloride ($CdCl_2$)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
5/10/06	8.3284	8.33			
8/7/06	15.064	11.70	4.76	2.17	21.22
12/05/06	12.168	11.85	3.38	5.10	18.61
3/06/07	6.27	10.46	3.92	2.61	18.31
5/13/08	8.63	10.09	3.50	3.10	17.08
12/9/08	10.8	10.21	3.14	3.93	16.49
1/10/2010	12.46	10.53	2.99	4.55	16.51
3/15/2011	15.3	11.13	3.24	4.65	17.61

Fewer than 20 chronic SRTs (cadmium) have been performed for this species.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev
EPA %CV 75th percentile = 32%
Lab %CV = 29.1%



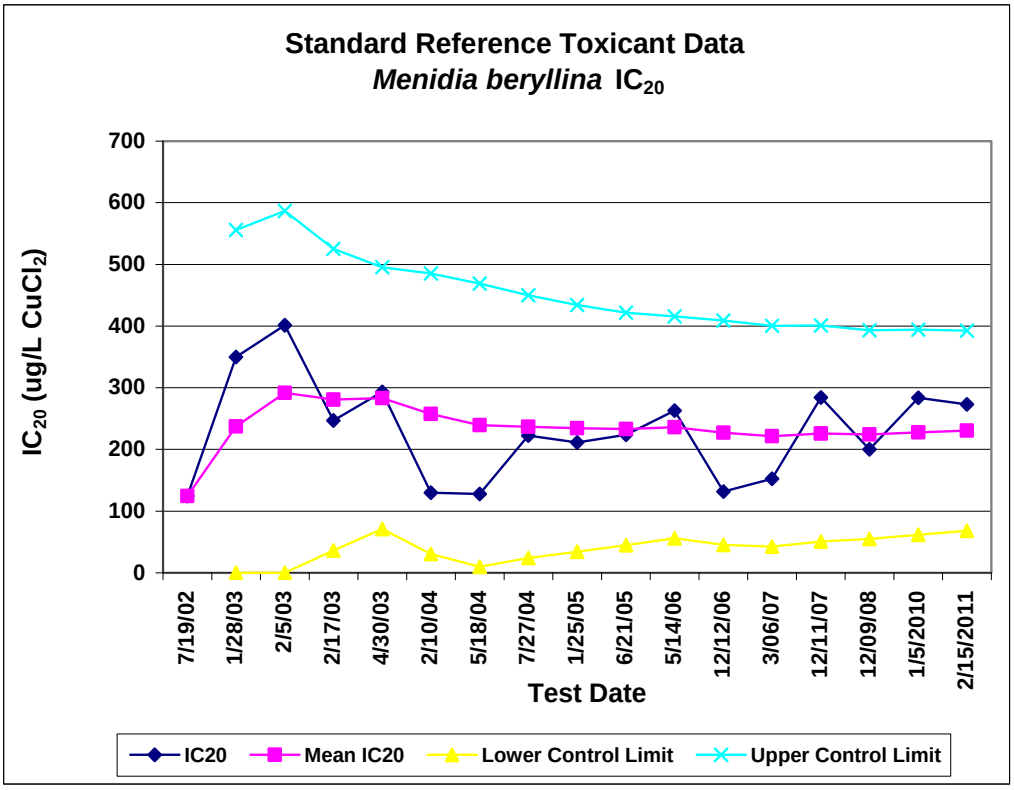
Appendix C. continued

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Menidia beryllina (inland silverside) - Copper Chloride ($CuCl_2$)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
7/19/02	124.6	124.6			
1/28/03	349.9	237.2	159.3	0.0	555.9
2/5/03	401.6	292.0	147.3	0.0	586.6
2/17/03	246.8	280.7	122.4	36.0	525.5
4/30/03	293.2	283.2	106.1	71.0	495.5
2/10/04	129.8	257.6	113.7	30.2	485.1
5/18/04	128.0	239.1	114.8	9.5	468.7
7/27/04	222.6	237.1	106.4	24.2	449.9
1/25/05	211.5	234.2	99.9	34.4	434.1
6/21/05	223.7	233.2	94.3	44.6	421.7
5/14/06	262.9	235.9	89.9	56.1	415.6
12/12/06	131.5	227.2	90.8	45.5	408.9
3/06/07	152.6	221.4	89.4	42.6	400.2
12/11/07	284.0	225.9	87.5	50.9	400.9
12/09/08	200.0	224.2	84.6	55.0	393.4
1/5/2010	283.9	227.9	83.1	61.8	394.1
2/15/2011	273.0	230.6	81.2	68.2	392.9

Fewer than 20 chronic SRTs have been performed for this species.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev
EPA CV 75th percentile - 43%
Lab %CV = 35.2



Appendix C. continued

FDEP Biology Laboratory - Chronic SRT Benchsheet
Americamysis bahia

SOP#: TA07_15 EPA 821-R-02-014 Method 1007.0

Diluent/ Batch: ASW #3.14.11 Test Days Used: 0-7 KC Test Duration: 7 days
Diluent/ Batch: ASW #3.11.11 Test Days Used: 7 KC Organism Batch # : 3.15.11
Toxicant/ Batch # : CdCl2 / #3.14.11 3 Organism Age: 7 days
Artemia Lot # : 23613

Artemia Batch #	Day 2 47-11
Day 0 45-11	Day 3 48-11
Day 1 46-11	Day 4 49-11
Feeding: 2 X Daily	Day 5 50-11
150 artemia/mysid (total)	Day 6 51-11

Start Date: 3.15.11 Time: 1340
End Date: 3.22.11 Time: 0800

Chamber size : 400 mL (400 recommended)
Sample volume : 350 mL (minimum 150 ml)

Water Quality Parameters	Diluent 3.14.11	Diluent 3.11.11 (or other)	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03	<0.03	KC	KC
Alkalinity (mg/L as $CaCO_3$):	160	175	KC	KC
Hardness (mg/L as $CaCO_3$):	—	—	—	KC
Total Ammonia (mg/L as N):	<0.034	<0.034	MF	KC
Conductivity mmhos-cm:	~~20.0325~~	31.8	JD	KC
Salinity ppth:	20.0	20.0	JD	KC

√ one ☐ Waterbath: #___
Test incubated in: ☒ Incubator: # 3

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
(if used) Incubator # ~~3~~ JD 3 min. 25.6 max. 26.7 mean —
(if used) Water bath # ___ min. ___ max. ___ mean ___
Room B246 min. 23.7 max. 24.5 mean —

Results	
Growth NOEC:	10 mg/L
Growth LOEC:	20 mg/L
Growth IC_{20}:	15.3 mg/L
Growth IC_{25}:	16.8 mg/L
Ctrl % CV	11.8 %
Dunnetts PMSD:	13.5 %
Survival NOEC:	10 mg/L
Survival LOEC:	20 mg/L

PMSD Bounds for Growth
Lower: 11
Upper: 37

Comments:

Investigators' signatures	Initials
Kara Coy	KC
Brad Albrecht	BA
James Davis	JD
Marshall Faircloth	MF
Liz Mattson	LM

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Appendix C. continued

Chronic SRT Survival Benchsheet

A. bahia SOP TA07_15

Loaded by (0 hour): JD Verified by (0 hour): KC Concentration: µg/L D = dead M = missing

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
Control	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
5	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	4 1D	4	3 1D	3
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	4 1D	4	4	4	4
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	4 1D	4
10	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
20	A	5	5	5	5	5	5	5	4 1D
	B	5	5	5	5	5	5	3 2D	3
	C	5	5	5	5	5	4 1D	2 2D	2
	D	5	5	5	5	5	5	3 2D	2 1D
	E	5	5	5	5	5	5	4 1D	3 1D
	F	5	5	5	5	5	4 1D	3 1D	3
	G	5	4 1D	4	4	4	4	4	2 2D
	H	5	5	5	5	5	5	5	4 1D
	Checked by:		KC	JD	JD	JD	BA	JD	JD

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
40	A	5	5	5	2 3D	1 1D	0 1D	—	
	B	5	5	4 1D	3 1D	0 3D	—	—	
	C	5	5	5	4 1D	3 1D	0 3D	—	
	D	5	5	5	3 2D	1 2D	0 1D	—	
	E	5	5	5	1 4D	0 1D	—	—	
	F	5	5	5	4 1D	3 1D	1 2D	0 1D	
	G	5	5	5	4 1D	2 2D	0 2D	—	
	H	5	5	4 1D	2 2D	0 2D	—	—	
80	A	5	5	2 3D	0 3D	—			
	B	5	5	1 4D	0 1D	—			
	C	5	5	2 3D	0 3D	—			
	D	5	5	1 4D	0 1D	—			
	E	5	5	1 4D	0 1D	—			
	F	5	5	3 2D	0 3D	—			
	G	5	5	1 4D	0 1D	—			
	H	5	5	4 1D	1 3D 3D	0 1D			
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
	Checked by:		KC	JD	JD	JD	BA	JD	

Comments:

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Appendix C. continued

A. bahia Chronic SRT Parameters Benchsheet

SOP TA07_15

Start Date: 3.15.11 Time: 1340

End Date: 3.22.11 Time: 0800

Organism: *A. bahia*

Concentration: µg/L

Test Day		Before Renewal						Test Start and After Renewal					
↓	Conc	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)
Day 0	Control							A	8.1	25.4	5.9	32.5	20.0
	JD ~~6.25~~ 5							A	8.1	24.2	6.6	31.8	19.6
	10							A	8.1	24.3	6.8	31.8	19.6
	20							A	8.1	24.4	6.9	31.9	19.7
	40							A	8.1	24.7	7.1	32.0	19.8
	80							A	8.2	25.9	6.9	33.0	~~15~~ JD 20.4
								A					
	Measured by:								JD	JD	JD	JD	JD
	Recorded by:								JD	JD	JD	JD	JD
		Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 1	Control	B	8.1	24.0	6.8	31.8	20.1	B	8.1	24.0	7.0	30.3	19.1
	JD ~~6.5~~ 5	B	8.1	24.0	6.2	32.3	20.1	B	8.1	24.0	7.0	30.9	19.7
	10	B	8.1	24.0	6.7	32.8	20.5	B	8.1	24.1	7.1	31.1	19.8
	20	B	8.1	24.0	6.9	32.5	20.3	B	8.1	24.1	7.1	31.1	19.8
	40	B	8.1	24.0	7.0	32.1	20.1	B	8.1	24.3	7.0	31.2	19.7
	80	B	8.1	24.0	6.9	32.1	20.1	B	8.1	24.7	6.9	31.5	19.9
		B						B					
	Measured by:		JD	JD	JD	JD	JD		KC	JD	KC	KC	KC
	Recorded by:		JD	JD	JD	JD	JD		KC	KC	KC	KC	KC
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 2	Control	C	8.1	24.6	6.3	32.0	20.1	C	8.1	24.0	6.3	31.6	19.9
	5	C	8.1	24.6	6.7	31.9	20.3	C	8.2	24.0	6.4	31.9	20.1
	10	C	8.0	25.2	6.3	32.0	~~30203~~	C	8.1	24.0	6.4	32.0	20.2
	20	C	8.0	24.9	6.4	32.5	20.6	C	8.1	24.0	6.5	32.1	20.3
	40	C	8.0	24.7	6.4	32.9	20.9	C	8.1	24.0	6.3	32.5	20.5
	80	C	8.0	24.8	6.4	33.2	21.1	C	8.1	24.0	6.6	33.6	21.2
		C						C					
	Measured by:		KC	JD	KC	KC	KC		JD	KC	JD	JD	JD
	Recorded by:		KC	JD	KC	KC	KC		JD	KC	JD	JD	JD
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 3	Control	D	8.0	24.6	5.7	32.6	20.3	D	8.1	24.0	6.2	31.8	20.0
	5	D	8.1	24.8	5.9	33.1	20.8	D	8.1	24.0	6.3	32.8	20.7
	10	D	8.0	25.0	6.1	32.6	20.3	D	8.1	24.5	6.3	33.0	20.7
	20	D	8.0	25.0	6.0	33.1	20.8	D	8.1	24.0	6.2	32.5	20.3
	40	D	8.1	25.3	6.0	32.4	20.2	D	8.2	24.0	6.5	32.4	20.3
	80	D	8.1	24.7	6.1	32.3	20.1	pH	8.3	25.0	6.8	33.2	20.7
		D						D					
	Measured by:		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by:		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD

conc = concentration rep = replicate cond = conductivity Sal = salinity

Comments:

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Appendix C. continued

A. bahia Chronic SRT Parameters Benchsheet
SOP TA07_15

Start Date: 3.15.11 Time: 1340
End Date: 3.22.11 Time: 0800

Organism: *A. bahia*
Concentration: µg/L

Test Day		Before Renewal						Test Start and After Renewal					
	Conc	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)
Day 4	Control	E	8.0	~~24.6~~ (B)	6.0	33.2	~~20.3~~ (A)	E	8.1	25.4	6.4	32.5	20.0
	5	E	8.0	25.0	5.6	33.2	20.3	E	8.1	25.7	6.3	32.9	20.2
	10	E	8.0	24.5	5.6	33.2	20.3	E	8.1	25.6	6.1	32.7	20.1
	20	E	8.0	24.6	6.6	32.7	20.0	E	8.1	25.6	6.1	32.5	19.9
	40	E	8.1	24.8	6.5	33.4	20.5	E	8.1	25.6	6.3	33.0	20.3
	80	50 pH	8.2	24.9	6.6	33.3	20.4	E					
		E						E					
	Measured by:		KC	JD	KC	KC	KC		KC	KC	KC	KC	KC
	Recorded by:		KC	JD	KC	KC	KC		KC	KC	KC	KC	KC
		Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 5	Control	F	7.9	25.0	5.1	34.5	21.8	F	8.1	25.3	5.7	33.3	20.7
	5	F	8.0	24.9	5.4	34.5	21.6	F	8.2	25.1	6.0	32.8	20.5
	10	F	8.0	25.0	5.0	34.7	21.8	F	8.2	25.2	6.2	32.9	20.5
	20	F	8.0	24.9	5.3	34.9	21.9	F	8.2	25.2	6.1	33.0	20.6
	40	F	8.1	25.0	5.6	34.9	21.9	F	8.2	25.4	6.3	33.3	20.8
		F						F					
		F						F					
	Measured by:		BA	MF	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 6	Control	G	8.0	24.0	6.2	35.7	22.8	G	8.1	25.0	6.4	34.1	21.5
	5	G	8.1	24.2	6.3	33.8	22.2	G	8.1	24.4	6.2	33.3	21.0
	10	G	8.1	24.5	6.4	33.8	22.2	G	8.1	24.7	6.3	33.2	20.9
	20	G	8.1	24.8	6.4	33.9	21.2	G	8.1	24.4	6.2	33.0	20.8
	40	F8	8.1	24.8	6.4	33.9	21.2	G					
		G						G					
		G						G					
	Measured by:		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by:		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Conc	Rep	pH	Temp	DO	Cond	Sal						
Day 7	Control	H	7.9	24.2	4.4	35.7	22.5						
	5	H	8.0	24.4	4.6	35.5	22.4						
	10	H	8.0	25.1	4.4	35.4	22.2						
	20	H	8.0	25.4	4.7	34.4	21.6						
	~~40~~	H											
		H											
		H											
	Measured by:		BA	BA	BA	BA	BA						
	Recorded by:		BA	BA	BA	BA	BA						

conc = concentration rep = replicate cond = conductivity Sal = salinity

Comments: (A) 20.3 - KC - (B) - 24.6, Day 4 ctrl Temp - JD.

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Appendix C. continued

Chronic SRT Test Weighing Benchsheet

A. bahia

Reference SOPs TA07_15 and TA06_21

mean wt =Mysid wt divided by 5 — convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. g	Pan + mysid g	Mysid wt. g	Original # mysids	Mean wt. mg	Concentration	Replicate	Pan #	Pan wt. g	Pan + mysid g	Mysid wt. g	Original # mysids	Mean wt. mg
Control	A	58	0.02365	0.02503	0.00138	5	.276		A					5	
	B	59	0.02169	0.02274	0.00105	5	.210		B					5	
	C	60	0.02314	0.02446	0.00132	5	.264		C					5	
	D	61	0.02333	0.02464	0.00131	5	.262		D					5	
	E	62	0.02198	0.02325	0.00127	5	.254		E					5	
	F	63	0.02405	0.02542	0.00137	5	.274		F					5	
	G	64	0.02235	0.02366	0.00131	5	.262		G					5	
	H	65	0.02157	0.02319	0.00162	5	.324		H					5	
	A	66	0.02129	0.02283	0.00154	5	.308		A					5	
5	B	67	0.02237	0.02372	0.00135	5	.270		B					5	
	C	68	JD 0.02279 ~~0.02366~~	0.02361	0.00082	5	.164		C					5	
	D	69	0.02268	0.02400	0.00132	5	.264		D					5	
	E	70	0.02264	0.02402	0.00138	5	.276		E					5	
	F	71	0.02311	0.02430	0.00119	5	.238		F					5	
	G	72	0.02357	0.02472	0.00115	5	.230		G					5	
	H	73	0.02312	0.02428	0.00116	5	.232		H					5	
	A	74	0.02404	0.02535	0.00131	5	.262		A					5	
10	B	75	0.02333	0.02465	0.00132	5	.264		B					5	
	C	76	0.02322	0.02467	0.00145	5	.290		C					5	
	D	77	0.02247	0.02391	0.00144	5	.288		D					5	
	E	78	0.02339	0.02417	0.00078	5	.156		E					5	
	F	79	0.02236	0.02378	0.00142	5	.284		F					5	
	G	80	0.02392	0.02532	0.00140	5	.280		G					5	
	H	81	0.02239	0.02361	0.00122	5	.244		H					5	
	A	82	0.02356	0.02466	0.00110	5	.220		A					5	
20	B	83	0.02319	0.02408	0.00089	5	.178		B					5	
	C	84	0.02221	0.02287	0.00066	5	.132		C					5	
	D	85	0.02339	0.02404	0.00065	5	.130		D					5	
	E	86	0.02202	0.02288	0.00086	5	.172		E					5	
	F	87	0.02395	0.02484	0.00089	5	.178		F					5	
	G	88	0.02224	0.02290	0.00066	5	.132		G					5	
	H	89	0.02347	0.02456	0.00109	5	.218		H					5	
Weighed by initials:			JD	JD				Weighed by initials:							

Comments:

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Appendix C. continued

Chronic SRT Test Weighing Benchsheet
Quality Control
A. bahia
SOPs TA07_15 and TA06_21

Empty Pan Weights Date: 3.21.11 By: JD

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02363	@ 0.02365
after Pan 10	0.02366	@ 0.02365
after Pan 15	0.02365	@ 0.02365
after Pan 20	0.02364	@ 0.02365
after Pan 25	0.02364	@ 0.02365
after Pan 30	0.02366	@ 0.02365
after Pan 35	0.02370	@ 0.02365
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value (g)		S-weight Value (g)
S-weights	0.0100 1	@	0.01
	0.03004	@	0.03

S-Weights: BIO-S-WEIGHTS-01
Balance: Ohaus 250D
Ser# 1125481084

Fish + Pan Weights Date: 3.24.11 By: JD

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02501	@ 0.02503
after Pan 10	0.02500	@ 0.02503
after Pan 15	0.02500	@ 0.02503
after Pan 20	0.02500	@ 0.02503
after Pan 25	0.02505	@ 0.02503
after Pan 30	0.02501	@ 0.02503
after Pan 35	0.02500	@ 0.02503
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value (g)		S-weight Value (g)
S-weights	0.01	@	0.01
	0.05007	@	0.05

Drying Oven ID: ER03400
Temperature °C: 100
Drying Hours: 8

Note: Pan number (5, 10, etc.) refers to sequence of weighing as actual Pan #s may differ.

Comments:

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Appendix C. continued

A. bahia Chronic SRT Fecundity Bench Sheet

Americamysis bahia SOP TA07_15

Concentration	Replicate	Total Mysids	Females: Eggs	Females: No Eggs	Males	Immature	Concentration	Replicate	Total Mysids	Females: Eggs	Females: No Eggs	Males	Immature
Control	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
Checked by:							Checked by:						

PAGE NOT USED JKC

Comments:

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Appendix C. continued

Test ID: A.bahia Chronic SRT Dates: 3.15.11 – 3.22.11

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #5
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓
					✓

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

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

Entered By: Kara Cox

V 1.2 2/20/11 MF/jd

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Appendix C. continued

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina*

Test Species (circle one)

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

Diluent/ Batch: ASW/2.21.11 Test Days Used: 0-1
Diluent/ Batch: ASW/2.23.11 Test Days Used: 2-3(A)
Toxicant/ Batch # : CuCl2 / 2.21.11
Artemia Lot # : 23613

Start Date: 2.22.11 Time: 1310
End Date: 3.1.11 Time: 13:30
Organism Batch #/ Age: #2.22.11/10 days

Artemia Batch #	Day 2 36-11	Day 5 39-11
Day 0 34-11	Day 3 37-11	Day 6 40-11
Day1 35-11	Day 4 38-11	

Chamber size : 1000 ml
Test volume : 500 ml

Feeding: *P. promelas* 0.15 g wet wt. 2X day 6 hour interval
M. beryllina 0.10 g wet wt days 0-2 0.15g wet wt. days 3-7

Water Quality Parameters	Diluent 2.21.11	Diluent 2.23.11 (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03	~~<0.03~~ KC not measured	HACH	KC	KC
Alkalinity (mg/L as $CaCO_3$):	~~KC 200 171~~	not measured	HACH	KC	KC
Hardness (mg/L as $CaCO_3$):	—	—	HACH	—	—
Total Ammonia (mg/L as N):	<0.034	<0.034	DENVER	BAc	KC
Conductivity µmhos-cm ~~mmhos-cm~~:	32.0	32.1	METTLER	JD	KC

Statistics	
Growth NOEC:	250 mg/L
Growth LOEC:	500 mg/L
Growth IC_{20}:	275 mg/L
Growth IC_{25}:	287 mg/L
Ctrl % CV:	11.8%
Dunnetts PMSD:	19.4%
Survival NOEC:	~~125~~ ~~675~~ mM
Survival LOEC:	~~250~~ ~~675~~ mM

Test incubated in : ☒ Incubator # 5
☐ Waterbath #_____

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:
Incubator # 5 min. 23.7 max. 26.0 mean_____
Water bath # ____ min._____ max._____ mean_____
Room B246 min. 21.3 max. 25.6 mean_____

P. promelas PMSD Bounds for Growth: Lower 12 Upper 30
M. beryllina PMSD Bounds for Growth: Lower 11 Upper 28

Investigators' signatures

James Daniel
Kovacik
Marshall Faircloth
Bree Adkins
Liz Miller
REVIEWER

Comments: (A) ASW #2.25.11 was used days 4-6. -KC-
TRC = <0.03 mg/L
Alk = 173 mg/L as CaCO3
Ammonia = <0.034 mg/L as N
Cond. = 33.4 mmhos-cm
*All of the above measured by & verified by are the same as Diluent #2.21.11 & #2.23.11 - except ammonia, which was measured by MF.
*TRC & alkalinity for Diluent #2.23.11 was not measured due to lab ERROR. -KC.

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Appendix C. continued

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or Menidia beryllina Survival

Organism: *P. promelas* (*M.beryllina*) (circle one) D = dead M = missing

Concentration: ug/L g/L (circle one)

			TEST DAY							
Concentration	Replicate	Chamber	0	1	2	3	4	5	6	7
Control	A	c1	10	10	10	10	10	10	10	10
	B	c2	10	10	10	10	10	10	10	10
	C	c3	10	10	10	10	10	10	10	10
	D	c4	10	10	10	10	10	10	10	10
67.5	A	c5	10	9 1D	9	9	9	9	9	9
	B	c6	10	10	10	10	10	9 1D	9	9
	C	c7	10	8 2D	8	8	8	8	8	8
	D	c8	10	10	9 1D	9	8 1D	8	8	7 1D
125	A	c9	10	9 1D	9	9	9	9	9	9
	B	c10	10	9 1D	8 1D	8	7 1D	7	7	7
	C	c11	10	10	10	10	10	10	10	10
	D	c12	10	9 1D	9	8 1D	8	8	8	6 2D
250	A	c13	10	10	9 1D	9	9	9	9	9
	B	c14	10	7 3D	7	7	7	6 1D	6	6
	C	c15	10	7 3D 3D 3D	7	6 1D	6	6	6	6
	D	c16	10	8 2D	7 1D	7	7	7	7	7
500	A	c17	10	4 6D	0 4D	—	—	—	—	—
	B	c18	10	3 7D	0 3D	—	—	—	—	—
	C	c19	10	4 4D	0 4D	—	—	—	—	—
	D	c20	10	5 5D	2 3D	2	1 1D	1	1	1
1000	A	c21	10	0 10D						
	B	c22	10	0 10D						
	C	c23	10	0 10D						
	D	c24	10	0 10D						
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): JB Checked by:				JB	JB	JB	JB	JB	JB	BA
Verified by (0 hr): KC										
Concentrations prepared by:				JB	JB	JB	JB	JB	JB	—

Comments:

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Appendix C. continued

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Parameters

Start Date: 2.22.11 Time: 1310

End Date: 3.1.11 Time: 1330

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

Concentration: (µg/L) g/L (circle one)

circle µmhos or mmhos

Test Day		Before Renewal					Test Start and After Renewal					
	Concentration	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos mmhos	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos mmhos	Sc /
Day 0	Control						A	8.2	~~32.2~~ 24.2	5.7	32.2	20.0
	67.5						A	8.2	24.7	6.6	32.4	20.2
	125						A	8.2	24.8	7.0	32.5	20.3
	250						A	8.2	24.9	7.0	32.6	20.4
	500						A	8.2	25.1	7.1	32.6	20.4
	1000						A	8.2	25.2	7.1	33.3	20.2
							A					
	Measured by:							JD	AF	JD	JD	JD
	Recorded by:							JO	JD	JO	JO	JD
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity	
Day 1	Control	B	8.2	25.8	6.3	32.7 / 20.4	B	8.2	24.1	6.4	32.0 / 20.0	
	67.5 ~~67.5~~ JD	B	8.2	25.4	6.5	32.7 / 20.4	B	8.2	24.1	6.6	32.3 / 20.1	
	125	B	8.2	25.4	6.6	32.8 / 20.5	B	8.2	24.2	6.6	32.4 / 20.2	
	250	B	8.2	25.6	6.7	33.2 / 20.1	B	8.2	24.2	6.7	32.8 / 20.4	
	500	B	8.2	25.7	6.8	33.3 / 20.2	B	8.2	24.2	6.7	32.8 / 20.5	
	1000	B	8.2	25.6	6.8	33.5 / 20.3	B					
		B					B					
	Measured by:		JD	JD	JD	JD / JD		KC	KC	KC	KC / KC	
	Recorded by:		JD	JD	JD	JD / JD		KC	KC	KC	KC / KC	
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity	
Day 2	Control	C	8.0	24.8	5.5	32.2 / 19.8	C	8.1	24.0	6.6	32.1 / 20.1	
	67.5	C	8.2	24.4	6.0	32.2 / 19.8	C	8.1	24.0	6.7	32.3 / 20.1	
	125	C	8.2	24.6	6.3	32.6 / 20.3	C	8.1	24.1	6.4	32.7 / 20.3	
	250	C	8.2	24.3	6.3	32.5 / 20.3	C	8.1	24.1	6.6	32.5 / 20.4	
	500	C	8.2	24.4	6.4	32.4 / 20.1	C	8.2	24.0	6.7	32.8 / 20.4	
		C					C					
		C					C					
	Measured by:		KC		KC	KC / KC		JD	JD	JD	JD / JD	
	Recorded by:		KC		KC	KC / KC		JD	JD	JD	JD / JD	
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity	
Day 3	Control	D	8.1	25.2	6.9	32.7 / 20.4	D	8.2	24.0	6.6	32.3 / 20.0	
	67.5	D	8.2	25.4	6.4	32.7 / 20.4	D	8.2	24.0	6.6	32.6 / 20.3	
	125	D	8.2	25.3	6.4	32.6 / 20.3	D	8.2	24.0	6.6	32.3 / 20.2	
	250	D	8.2	25.6	6.6	32.4 / 20.1	D	8.2	24.2	6.7	32.2 / 20.1	
	500	D	8.2	25.4	6.7	32.7 / 20.4	D	8.2	24.0	6.7	32.2 / 20.1	
		D					D					
		D					D					
	Measured by:		JD	JD	JD	JD / JD		KC	JD	KC	KC / KC	
	Recorded by:		JD	JD	JD	JD / JD		KC	JD	KC	KC / KC	

Comments:

Test Page 3 of 6 PAGE 000038 revised 8/24/06 MF/SP

Appendix C. continued

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Parameters

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

Concentration: (µg/L) g/L (circle one)

circle µmhos or (mmhos)

Test Day		Before Renewal					After Renewal					
↓	Concentration	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos (mmhos)	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos (mmhos)
Day 4	Control	A	8.1	24.6	6.6	33.0 / 20.6	A	8.2	24.8	6.9	33.4 / 20.7
	67.5	A	8.1	25.5	6.4	33.1 / 20.7	A	8.2	24.4	6.6	32.9 / 20.4
	125	A	8.2	24.8	6.3	33.1 / 20.7	A	8.2	24.0	6.7	32.9 / 20.4
	250	A	8.2	25.3	6.4	32.6 / 20.3	A	8.2	24.0	6.5	32.8 / 20.4
	500	~~A~~ D	8.1	25.2	6.5	33.0 / 20.6	A	8.2	24.0	6.5	32.3 / 20.0
		A					A				
		A					A				
	Measured by:		JD	JD	JD	JD / JD		JD	JD	JD	JD / JD
	Recorded by:		JD	JD	JD	JD / JD		JD	JD	JD	JD / JD
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 5	Control	B	8.1	24.9	5.9	33.3 / 20.6	B	8.2	24.3	6.8	32.8 / 20.4
	67.5	B	8.1	25.5	5.9	33.2 / 20.6	B	8.2	24.2	6.5	33.1 / 20.6
	125	B	8.1	25.1	5.9	32.8 / 20.4	B	8.2	24.2	6.4	33.0 / 20.5
	250	B	8.1	24.5	5.7	32.9 / 20.4	B	8.2	24.4	6.5	32.6 / 20.1
	500	~~B~~ D	8.1	25.6	5.8	33.1 / 20.5	B	8.2	24.0	6.9	32.5 / 20.0
		B					B				
		B					B				
	Measured by:		JD	JD	JD	JD / JD		JD	JD	JD	JD / JD
	Recorded by:		JD	JD	JD	JD / JD		JD	JD	JD	JD / JD
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 6	Control	C	8.1	25.7	6.1	33.1 / 20.5	C	8.2	25.2	6.5	33.0 / 20.6
	67.5	C	8.1	25.1	6.2	33.1 / 20.7	C	8.2	24.8	6.0	33.0 / 20.6
	125	C	8.1	25.9	6.2	33.3 / 20.8	C	8.2	24.8	6.0	33.1 / 20.7
	250	C	8.1	25.5	6.3	32.7 / 20.4	C	8.2	24.7	6.1	32.9 / 20.2
	500	~~C~~ D	8.2	25.8	6.3	33.2 / 20.8	D	8.2	24.0	6.2	32.2 / 20.1
		C					C				
		C					C				
	Measured by:		KC	JD	KC	KC / KC		JD	JD	JD	JD / JD
	Recorded by:		KC	JD	KC	KC / KC		JD	JD	JD	JD / JD
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 7	Control	D	8.1	25.6	5.5	32.4 / 20.3	D				
	67.5	D	8.1	25.2	5.7	32.8 / 20.4	D				
	125	D	8.1	25.0	6.1	32.9 / 20.5	D				
	250	D	8.1	24.9	6.2	32.7 / 20.4	D				
	500	D	8.2	25.4	6.3	32.8 / 20.5	D				
		D					D				
		D					D				
	Measured by:		BA	BA	BA	BA					
	Recorded by:		BA	BA	BA	BA					

Comments:

Test Page 4 of 6

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Appendix C. continued

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

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

Concentration: µg/L g/L (circle one)

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)	
Control	A	117	0.0 2192	0.0 3063	0.00871	10	.871	
	B	118	0.0 2236	0.0 3143	0.00907	10	.907	
	C	119	0.0 2225	0.0 3355	0.0113	10	1.13	
	D	120	0.0 2308	0.0 3290	0.00982	10	.982	0.9725
675	A	121	0.0 2264	0.0 3093	0.00829	10	.829	
	B	122	0.0 2146	0.0 3035	0.00889	10	.889	
	C	123	0.0 2270	0.0 3140	0.00870	10	.870	
	D	124	0.0 2335	0.0 3058	0.00723	10	.723	0.8278
125	A	125	0.0 2179	0.0 3124	0.00945	10	.945	
	B	126	0.0 2248	0.0 3029	0.00781	10	.781	
	C	127	0.0 2273	0.0 3314	0.01041	10	1.041	
	D	128	0.0 2225	0.0 2910	0.00685	10	.685	0.8693 MF
250	A	129	0.0 2244	0.0 3174	0.00930	10	.930	
	B	130	0.0 2214	0.0 2960	0.00741	10	.741	
	C	131	0.0 2201	0.0 2982	0.00781	10	.781	
	D	132	0.0 2258	0.0 3283	0.01025	10	1.025	0.8693
500	D AMF	133	0.0 2547	0.0 2691	0.00054	10	.094	0.0235
	B	134	0.0	0.0		10		
	C	135	0.0	0.0		10		
	D	136	0.0	0.0		10		
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
		Weighed by:	JD	JD				

Comments:

Note: Pan number (#) refers to actual Pan number.

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Appendix C. continued

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* QC

SOPs TA07_09, TA07_14 and TA06_21

all weights in grams

Empty Pan Weights Date: 2.28.11 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02190	@ 0.02192
after Pan 10	0.02190	@ 0.02192
after Pan 15	0.02190	@ 0.02192
after Pan 20	0.02191	@ 0.02192
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.01001	@ 0.01
	0.03003	@ 0.03

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 3.4.11 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.03066	@ 0.03063
after Pan 10	0.03065	@ 0.03063
after Pan 15	0.03067	@ 0.03063
after Pan 20	0.03067	@ 0.03063
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.01001	@ 0.01
	0.05004	@ 0.05

Drying Oven ID: VWR 2

Temperature °C: 95

Drying Hours: 8

Note: Pan number (5, 10, etc.) refers to sequence of weighing as actual Pan #s may differ.

Comments:

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Appendix C. continued

Test ID: M. beryllium Chronic SRT Dates: 2.22.11 – 3.1.11

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

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

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

J.D. 3.4.11

V 1.1 9/21/10 MF/jd

000042

Appendix D. Organism receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 2/21/11

Ship to: FDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	100 ac	4 DAYS	MS 110217	25	8.0	20
	750 ch	6 DAYS	MS 110215	25	8.0	20
Menidia beryllina	100 ac	12 DAYS	SS 110209	25	8.0	20
	750 ch	9 DAYS	SS 110212	25	8.0	20
						Hardness mg/L
Cyprinella leedsi	100 ac	12 DAYS	CL 110209	25	7.8	80
Pimephales promelas						
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: Pack the chronic mysids + menidia into two bags each (375/b

Thank you for your order.

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

Appendix D. continued

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 3/14/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	~~400~~ 500 CH 400	6 DAYS	MS110308	25	8.0	20
Menidia beryllina	~~500~~ CH	9 DAYS	SS110305	25	8.0	20
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	250	<24 HRS	FM1103113-1650	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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

Appendix E. Chemical Analyses performed on the effluent from the South Cross Bayou AWWTF Outfall D-001, sampled on February 21, 2011.

Date Sampled	Field ID	Analysis	Component	Result	Qualifier	Units	MDL	PQL
2/21/2011 10:15	EFD-01	AGP/LN	Algal Growth Potential-Salinity Adjusted	3	U	mg DryWt/L	3	3
2/21/2011 10:15	EFD-01	AGP/LN	Algal Growth Potential	1.6		mg DryWt/L	0.3	0.9
2/21/2011 10:15	EFD-01	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
2/21/2011 10:15	EFD-01	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
2/21/2011 10:15	EFD-01	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	3	J	mg/L	0.2	2
2/21/2011 10:15	EFD-01	Overflow	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL	1	
2/21/2011 10:15	EFD-01	Metals	Calcium	91.3		mg/L	0.075	0.3
2/21/2011 10:15	EFD-01	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/21/2011 10:15	EFD-01	Metals	Sodium	170		mg/L	0.5	2
2/21/2011 10:15	EFD-01	Metals	Magnesium	28		mg/L	0.04	0.16
2/21/2011 10:15	EFD-01	Metals	Zinc	25		ug/L	5	20
2/21/2011 10:15	EFD-01	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
2/21/2011 10:15	EFD-01	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/21/2011 10:15	EFD-01	Metals	Copper	1.52		ug/L	0.5	1
2/21/2011 10:15	EFD-01	Metals	Aluminum	120		ug/L	5	20
2/21/2011 10:15	EFD-01	Metals	Chromium	0.42	I	ug/L	0.3	1.2
2/21/2011 10:15	EFD-01	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/21/2011 10:15	EFD-01	Metals	Arsenic	0.39	I	ug/L	0.25	1
2/21/2011 10:15	EFD-01	Metals	Iron	30	I	ug/L	30	120
2/21/2011 10:15	EFD-01	Metals	Nickel	2.88		ug/L	0.25	1
2/21/2011 10:15	EFD-01	Nutrients	Chloride	270		mg Cl/L	2	5
2/21/2011 10:15	EFD-01	Nutrients	Total-P	0.039		mg P/L	0.004	0.01
2/21/2011 10:15	EFD-01	Nutrients	Kjeldahl Nitrogen	1.1		mg N/L	0.08	0.2
2/21/2011 10:15	EFD-01	Nutrients	Organic Carbon	8.4		mg C/L	1	5
2/21/2011 10:15	EFD-01	Nutrients	Color (true)	8.4	A	PCU	2	6
2/21/2011 10:15	EFD-01	Nutrients	Fluoride	0.57		mg F/L	0.035	0.1
2/21/2011 10:15	EFD-01	Nutrients	Ammonia-N	0.044		mg N/L	0.01	0.02
2/21/2011 10:15	EFD-01	Nutrients	TSS	4	I	mg/L	4	16
2/21/2011 10:15	EFD-01	Nutrients	O-Phosphate-P	0.009	I	mg P/L	0.004	0.01
2/21/2011 10:15	EFD-01	Nutrients	Alkalinity	203		mg CaCO3/L	0.65	2.5
2/21/2011 10:15	EFD-01	Nutrients	Sulfate	150		mg SO4/L	2	5
2/21/2011 10:15	EFD-01	Nutrients	NO2NO3-N	0.35		mg N/L	0.004	0.01
2/21/2011 10:15	EFD-01	Nutrients	Cyanide	0.008	I	mg CN/L	0.005	0.02

Appendix E. continued

Date Sampled	Field ID	Analysis	Component	Result	Qualifier	Units	MDL	PQL
2/21/2011 10:15	EFD-01	Overflow	Oil and Grease	1.4	U	mg/L	1.4	5
2/21/2011 10:15	EFD-01	Pesticides	Methoxychlor	0.048	U	ug/L	0.048	0.19
2/21/2011 10:15	EFD-01	Pesticides	Toxaphene	0.72	U	ug/L	0.72	2.9
2/21/2011 10:15	EFD-01	Pesticides	Atrazine	0.079	U	ug/L	0.079	0.31
2/21/2011 10:15	EFD-01	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
2/21/2011 10:15	EFD-01	Pesticides	Metribuzin	0.096	U	ug/L	0.096	0.38
2/21/2011 10:15	EFD-01	Pesticides	Beta-BHC	0.0096	U	ug/L	0.0096	0.038
2/21/2011 10:15	EFD-01	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
2/21/2011 10:15	EFD-01	Pesticides	Alachlor	0.58	U	ug/L	0.58	2.3
2/21/2011 10:15	EFD-01	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
2/21/2011 10:15	EFD-01	Pesticides	Hexazinone	0.096	U	ug/L	0.096	0.38
2/21/2011 10:15	EFD-01	Pesticides	Naled	0.77	U	ug/L	0.77	3.1
2/21/2011 10:15	EFD-01	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
2/21/2011 10:15	EFD-01	Pesticides	Endrin	0.048	U	ug/L	0.048	0.19
2/21/2011 10:15	EFD-01	Pesticides	Heptachlor	0.0096	U	ug/L	0.0096	0.038
2/21/2011 10:15	EFD-01	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
2/21/2011 10:15	EFD-01	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
2/21/2011 10:15	EFD-01	Pesticides	Chlorpyrifos Methyl	0.096	U	ug/L	0.096	0.38
2/21/2011 10:15	EFD-01	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
2/21/2011 10:15	EFD-01	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
2/21/2011 10:15	EFD-01	Pesticides	Fonofos	0.096	U	ug/L	0.096	0.38
2/21/2011 10:15	EFD-01	Pesticides	Aldrin	0.015	U	ug/L	0.015	0.059
2/21/2011 10:15	EFD-01	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076
2/21/2011 10:15	EFD-01	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
2/21/2011 10:15	EFD-01	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
2/21/2011 10:15	EFD-01	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
2/21/2011 10:15	EFD-01	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
2/21/2011 10:15	EFD-01	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
2/21/2011 10:15	EFD-01	Pesticides	Parathion Methyl	0.096	U	ug/L	0.096	0.38
2/21/2011 10:15	EFD-01	Pesticides	Delta-BHC	0.0096	U	ug/L	0.0096	0.038
2/21/2011 10:15	EFD-01	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
2/21/2011 10:15	EFD-01	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
2/21/2011 10:15	EFD-01	Pesticides	Gamma-BHC	0.0096	U	ug/L	0.0096	0.038
2/21/2011 10:15	EFD-01	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76

Appendix E. continued

Date Sampled	Field ID	Analysis	Component	Result	Qualifier	Units	MDL	PQL
2/21/2011 10:15	EFD-01	Pesticides	Ethoprop	0.096	U	ug/L	0.096	0.38
2/21/2011 10:15	EFD-01	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
2/21/2011 10:15	EFD-01	Pesticides	Alpha-BHC	0.0096	U	ug/L	0.0096	0.038
2/21/2011 10:15	EFD-01	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
2/21/2011 10:15	EFD-01	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076
2/21/2011 10:15	EFD-01	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
2/21/2011 10:15	EFD-01	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
2/21/2011 10:15	EFD-01	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
2/21/2011 10:15	EFD-01	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
2/21/2011 10:15	EFD-01	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
2/21/2011 10:15	EFD-01	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
2/21/2011 10:15	EFD-01	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Di-n-octyl phthalate	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2,6-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2-Chloronaphthalene	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	59
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Chrysene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	7.8
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Bromodichloromethane	32.2		ug/L	0.2	1
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2,4-Dichlorophenol	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2,4-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Acenaphthylene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Benzo(a)pyrene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Naphthalene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	59
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	20

Appendix E. continued

Date Sampled	Field ID	Analysis	Component	Result	Qualifier	Units	MDL	PQL
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Dimethyl phthalate	9.8	U	ug/L	9.8	39
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	7.8
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2,4-Dimethylphenol	9.8	U	ug/L	9.8	39
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2-Chlorophenol	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Fluoranthene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Fluorene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Phenanthrene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Benzo(b)fluoranthene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Diethyl phthalate	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Hexachlorobenzene	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Bromoform	7.2	J	ug/L	0.5	2
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Dibromochloromethane	33.9		ug/L	0.2	1
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	160
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Anthracene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Benzidine	98	U	ug/L	98	390
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Benzo(a)anthracene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	20
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Phenol	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Chloroform	26.6		ug/L	0.2	1
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	59
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	2-Nitrophenol	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	7.8
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Acenaphthene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Benzo(k)fluoranthene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Isophorone	0.98	U	ug/L	0.98	3.9
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	7.8
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12

Appendix E. continued

Date Sampled	Field ID	Analysis	Component	Result	Qualifier	Units	MDL	PQL
2/21/2011 10:15	EFD-01	Priority Organic Pollutants	Pyrene	0.2	U	ug/L	0.2	0.78
2/21/2011 10:15	EFD-01	Field Parameter	Total Residual Chlorine	0.02		mg/L		
2/21/2011 10:15	EFD-01	Field Parameter	Temperature	24.27		C		
2/21/2011 10:15	EFD-01	Field Parameter	pH	7.49				
2/21/2011 10:15	EFD-01	Field Parameter	Specific Conductance	1464		umhos/cm		
2/21/2011 10:15	EFD-01	Field Parameter	Sample Depth	0.2		m		
2/21/2011 10:15	EFD-01	Field Parameter	Dissolved Oxygen	7.83		mg/L		
2/21/2011 8:30	EFD-01	Toxicology	Bioassay-Chron-Def-SW-Mysid, NOEC	50		NOEC		
2/21/2011 8:30	EFD-01	Toxicology	Bioassay-Chron-Def-SW-Fish, IC25	100	L	IC25		
2/21/2011 8:30	EFD-01	Toxicology	Bioassay-Chron-Def-SW-Fish, NOEC	100		NOEC		
2/21/2011 8:30	EFD-01	Toxicology	Bioassay-Chron-Def-SW-Mysid, IC25	100	L	IC25		
2/21/2011 10:40	EFB-01	Nutrients	TSS	4	U	mg/L	4	16
2/21/2011 10:10	BLANK	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
2/21/2011 10:10	BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
2/21/2011 10:10	BLANK	Overflow	Oil and Grease	1.4	U	mg/L	1.4	5
2/21/2011 10:10	BLANK	Pesticides	Ethoprop	0.097	U	ug/L	0.097	0.39
2/21/2011 10:10	BLANK	Pesticides	Naled	0.77	U	ug/L	0.77	3.1
2/21/2011 10:10	BLANK	Pesticides	Parathion Methyl	0.097	U	ug/L	0.097	0.39
2/21/2011 10:10	BLANK	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
2/21/2011 10:10	BLANK	Pesticides	Aldrin	0.0097	U	ug/L	0.0097	0.039
2/21/2011 10:10	BLANK	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
2/21/2011 10:10	BLANK	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076
2/21/2011 10:10	BLANK	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
2/21/2011 10:10	BLANK	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
2/21/2011 10:10	BLANK	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
2/21/2011 10:10	BLANK	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
2/21/2011 10:10	BLANK	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
2/21/2011 10:10	BLANK	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
2/21/2011 10:10	BLANK	Pesticides	Endrin	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
2/21/2011 10:10	BLANK	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6

Appendix E. continued

Date Sampled	Field ID	Analysis	Component	Result	Qualifier	Units	MDL	PQL
2/21/2011 10:10	BLANK	Pesticides	Alachlor	0.58	U	ug/L	0.58	2.3
2/21/2011 10:10	BLANK	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
2/21/2011 10:10	BLANK	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
2/21/2011 10:10	BLANK	Pesticides	Hexazinone	0.097	U	ug/L	0.097	0.39
2/21/2011 10:10	BLANK	Pesticides	Metribuzin	0.097	U	ug/L	0.097	0.39
2/21/2011 10:10	BLANK	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Pesticides	Alpha-BHC	0.0097	U	ug/L	0.0097	0.039
2/21/2011 10:10	BLANK	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
2/21/2011 10:10	BLANK	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
2/21/2011 10:10	BLANK	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076
2/21/2011 10:10	BLANK	Pesticides	Gamma-BHC	0.0097	U	ug/L	0.0097	0.039
2/21/2011 10:10	BLANK	Pesticides	Methoxychlor	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Pesticides	Toxaphene	0.73	U	ug/L	0.73	2.9
2/21/2011 10:10	BLANK	Pesticides	Heptachlor	0.0097	U	ug/L	0.0097	0.039
2/21/2011 10:10	BLANK	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
2/21/2011 10:10	BLANK	Pesticides	Beta-BHC	0.0097	U	ug/L	0.0097	0.039
2/21/2011 10:10	BLANK	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
2/21/2011 10:10	BLANK	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
2/21/2011 10:10	BLANK	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
2/21/2011 10:10	BLANK	Pesticides	Delta-BHC	0.0097	U	ug/L	0.0097	0.039
2/21/2011 10:10	BLANK	Pesticides	Fonofos	0.097	U	ug/L	0.097	0.39
2/21/2011 10:10	BLANK	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
2/21/2011 10:10	BLANK	Pesticides	Chlorpyrifos Methyl	0.097	U	ug/L	0.097	0.39
2/21/2011 10:10	BLANK	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	160

Appendix E. continued

Date Sampled	Field ID	Analysis	Component	Result	Qualifier	Units	MDL	PQL
2/21/2011 10:10	BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Dibromochloromethane	0.2	U	ug/L	0.2	1
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
2/21/2011 10:10	BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
2/21/2011 10:10	BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Bromoform	0.5	UJ	ug/L	0.5	2
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.78

Appendix E. continued

Date Sampled	Field ID	Analysis	Component	Result	Qualifier	Units	MDL	PQL
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Bromodichloromethane	0.2	U	ug/L	0.2	1
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.78
2/21/2011 10:10	BLANK	Priority Organic Pollutants	Chloroform	0.2	U	ug/L	0.2	1
2/21/2011 10:15	TRIP BLANK	Priority Organic Pollutants	Bromodichloromethane	0.2	U	ug/L	0.2	1
2/21/2011 10:15	TRIP BLANK	Priority Organic Pollutants	Dibromochloromethane	0.2	U	ug/L	0.2	1
2/21/2011 10:15	TRIP BLANK	Priority Organic Pollutants	Bromoform	0.5	UJ	ug/L	0.5	2
2/21/2011 10:15	TRIP BLANK	Priority Organic Pollutants	Chloroform	0.2	U	ug/L	0.2	1

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: Peter Wenner, Water Resource Assessment Team Michele Duggan, Domestic Wastewater Section	Contact Number: 813/632-7600, ext. 442 and 335, respectively
Facility Name (as it appears on permit): South Cross Bayou AWWTF	Former Names: none
NPDES Permit Number: FL0040436	Permit Expiration Date: March 11, 2012
Physical Address: 7401 54th Avenue North St. Petersburg, FL 33709	
District: Southwest	County: Pinellas
Function of Facility: Domestic wastewater treatment	
Facility Type: Domestic wastewater	Permitted Capacity (MGD): 33.0 MGD, based on an annual average daily flow.
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): January – December 2010: D001 = 9.20 MGD D002 = 0.00 D003 = 0.00	
If applicable, Mean Flow for previous 12 months for REUSE outfall (list date range including months): January – December 2010: R001 = 12.33 MGD	
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Description of Sampling Locations - actual permit designation of permitted sampling points: INF-01 = influent sampling point at the headworks prior to treatment and ahead of return process waters EFA-01 = effluent sampling point at end of the chlorine contact chamber EFB-01 = turbidity monitoring/TSS sampling point after filtration and prior to disinfection EFD-01 = effluent sampling point at outfall D001 after the reaeration structure STM-01 = stormwater discharge monitoring location at D002, Lake #1, Belleview Biltmore GC STM-02 = stormwater discharge monitoring location at D003, Lake #2, Belleair Country Club GC OTH-01 = rain gauge	
Description of Permitted Outfalls: D001 = existing 20.0 GMD discharge to Joe's Creek at the facility. D001 is a 310-foot long weir parallel to the east bank of Joe's Creek, overflowing through drainholes and over rip-rap along the creek bank. D002 = intermittently discharging golf course lake at the Belleview Biltmore GC. D003 = intermittently discharging golf course lake at the Belleair Country Club.	

Appendix F. continued

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

An existing 33.0 million gallons per day (mgd) annual average daily flow (AADF) permitted capacity Type I dual train advanced domestic wastewater treatment plant consisting of the following components: an influent array which includes a pumping station with grinders and coarse screens, a sideline equalization basin of 5,300,000 gallons, and a septage receiving station with four holding tanks of 13,500 gallons each, totaling 54,000 gallons, and two septage transfer pumps; a headworks with three mechanical bar screens, with bypasses, and a grit removal system consisting of fourteen free vortex grit removal units with two grit classifiers and associated de-watering equipment; and a flow splitter system which divides flow between the North and South trains.

The North train, rated at 18 mgd, consists of: five primary clarifiers of 3,000 ft^2 surface area each and a total volume of 1,687,500 gallons; two primary sludge pumps; two anoxic basins of 930,000 gallons each, providing a total capacity of 1,860,000 gallons, with four internal recycle pumps; six secondary aeration basins using fine bubble membrane diffusers, two of 1,800,000 gallons volume, and four of 1,500,000 gallons volume, providing a total capacity of 9,600,000 gallons and four final clarifiers with a total surface area of 45,216 ft^2 and a total volume of 5,086,800 gallons.

The South train, rated at 15 mgd, consists of: four primary clarifiers of 3,000 ft^2 surface area each, for a total of 12,000 ft^2, and a total volume of 1,350,000 gallons; two primary sludge pumps; three anoxic basins of 458,000 gallons each, providing a total capacity of 1,374,000 gallons, with four internal recycle pumps; six secondary aeration basins using fine bubble membrane diffusers, two of 1,338,500 gallons volume, and four of 1,330,000 gallons volume, providing a total capacity of 7,997,000 gallons and four final clarifiers with a total surface area of 45,216 ft^2 and a total volume of 5,086,800 gallons.

Effluent from both trains is directed to the filter feed pump station, wet well volume of 34,400 gallons, with seven vertical turbine pumps, thence through a static mixer basin to the de-nitrification filters. Excess effluent flow may be directed to the plant flow equalization basin from which it is returned to the headworks. The de-nitrification filter system consists of twelve automatically backwashed filter cells, with a total surface area of 9,863 ft^2 and a total volume of approximately 1,770,680 gallons. The denitrification filters system has a clearwell with a maximum volume of 392,000 gallons and a working volume of 98,000 gallons; and a mudwell with a working volume of 200,000 gallons. From the de-nitrification filter system, the effluent passes to the final automatically backwashable sand filters which consist of eight filter cells of 1,280 ft^2 each, providing a total filter surface area of 10,240 ft^2. Backwash from both filter systems is returned through the plant drainage system to the influent of the grit removal system.

Effluent from the filtration systems is directed through a dual channel chlorine contact chamber with a total volume of 1,350,000 gallons. Effluent to be discharged is directed to the effluent transfer pumping station, withdrawn from the reclaimed water line, de-chlorinated with sulfur dioxide, reaerated on a reaeration structure consisting of a dual channel aeration cascade, thence directed to the outfall described below. Reclaimed water is directed from the effluent transfer pumping station to three above ground storage tanks of 6,030,000 gallons each, providing a total on-site storage of 18,090,000 gallons. The reclaimed water is then re-chlorinated and directed from the reclaimed water high service pumping station to the reclaimed water distribution system and to on-site reclaimed water usage. This facility is designed to meet advanced wastewater treatment with high level disinfection.

Chemical feeds are available. Alum and polymer may be added to the final clarifiers. Methanol, alum, and polymer are available in the static mixer prior to the denitrification filters. Standby electrical power is provided by 10 autostart generators totaling 14,650 KW. There are also two standby diesel blower units available. A SCADA system is used for plant and pumping station monitor and control.

The biosolids treatment system consists of: two sludge thickening centrifuges, two anaerobic digesters of 800,000 gallons capacity each, with a methane gas storage system, consisting of a gas/sludge storage tank with floating cover and associated piping and appurtenances; three sludge de-watering centrifuges, and multiple sludge storage tanks, storing primary, waste activated, and thickened sludge, of 3,281,000 gallons total capacity. Supernatant/centrate is returned to the head of the South train through drainage lift station #1. De-watered unstabilized residuals may be transported to a permitted Residuals Management Facility for further treatment. Stabilized residuals may be land applied at an approved residuals land application site. The facility also consists of the operation of a residuals pelletizing facility with a permitted capacity of 11,000 dry tons per year (DTY). The system consists of: a cake unloading facility; a wet storage bin; a gas fueled furnace (using either natural or digester gas); a rotary drum dryer; a mixer; a recycle bin; a pre-separator and poly-cyclone; a sub cooler and venturi scrubber; a vibrating screen and crusher; an induced draft fan; a regenerative thermal oxidizer; a pellet cooler heat exchanger; two 60 ton product storage silos; a truck loading facility; a fugitive dust system baghouse, building odor control and a 750 KW backup generator for emergency power supply. Residuals processed in this facility may be disposed of by means of marketing and distribution. The pelletizing facility at the South Cross Bayou facility is designated as an 11,000 DTY Residuals Management Facility and may accept unstabilized sludges from other Pinellas County wastewater treatment facilities for treatment.

Appendix F. continued

PART I: Continued

List current Effluent Limits of Outfall 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 (D-001)	MGD	Maximum	20.0	Report	-	-	Continuous	Recording flow meters and totalizers	FLW-01	See Cond.I.A.5
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	7 Days/Week	24-hour flow proportioned composite	EFA-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	7 Days/Week	24-hour flow proportioned composite	EFA-01	
Nitrogen, Total (as N)	MG/L	Maximum	3.0	3.75	4.5	6.0	7 Days/Week	24-hour flow proportioned composite	EFA-01	
Phosphorus, Total (as P)	MG/L	Maximum	1.0	2.0	2.5	3.0	7 Days/Week	24-hour flow proportioned composite	EFA-01	Interim limit
Solids, Total Suspended	MG/L	Maximum	-	-	-	5.0	7 Days/Week	Grab	EFB-01	
pH	SU	Range	-	-	-	6.5 to 8.5	Continuous	Meter	EFD-01	See Cond.I.A.4
Coliform, Fecal, % less than detection	Percent	Minimum		75			Monthly	Calculation	EFA-01	See Cond.I.A.6
Coliform, Fecal	#/100ML	Maximum				25	7 Days/Week	Grab	EFA-01	See Cond.I.A.6
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	7 Days/Week	Grab	EFD-01	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	1.0	Continuous	Meter	EFA-01	See Cond.I.A.4, 7
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	7 Days/Week	Grab	EFD-01	
Copper, Total Recoverable	UG/L	Maximum	-	-	-	5.5	Monthly	Grab	EFD-01	Interim limit
Cyanide, Total (as CN)	UG/L	Maximum	-	-	-	Report	Monthly	Grab	EFD-01	
Phenolic Compounds, Total Recoverable	UG/L	Maximum	-	-	-	Report	Monthly	Grab	EFD-01	
Chlorodibromomethane	UG/L	Maximum	90.0	-	-	Report	Monthly	Grab	EFD-01	Interim limit
Dichlorobromomethane	UG/L	Maximum	50.0	-	-	Report	Monthly	Grab	EFD-01	Interim limit
Oil and Grease	MG/L	Maximum	-	-	-	5.0	Monthly	Grab	EFD-01	

Appendix F. continued

PART I: Continued

List current Effluent Limits of Outfall 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
Atrazine	UG/L	Maximum	-	-	-	Report	Monthly	Grab	EFD-01	
Acute Whole Effluent Toxicity	Percent	Minimum	-	-	-	100	Semi-annually	Grab	EFD-01	See Cond. I. A. 8.
Chronic Whole Effluent Toxicity	Percent	Minimum	-	-	-	100	Bi-monthly	24-hour flow proportioned composite	EFD-01	See Cond. I. A. 9.

Appendix F. continued

PART I: Continued	
Receiving Waters: Joe's Creek	Classification (indicate whether fresh or marine): Marine

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

Acute Whole Effluent Toxicity Testing

1. Mortality of less than or equal to 50% in a 100% effluent, or a calculated LC50 of greater than or equal to 100% effluent, in any "routine" test or in any additional follow-up test, shall constitute compliance
2. Mortality of greater than 50% in a 100% effluent in any "routine" test, or an LC50 of less than 100% effluent, in any additional test, shall constitute a failure of the test.
3. Monitoring frequency: The "routine" toxicity tests specified shall be conducted once every six months.
4. Routine Test Requirements: The permittee shall conduct 96-hour acute static renewal, multi-concentration toxicity tests using the daphnid, Ceriodaphnia dubia, and the fathead minnow, Pimephales promeles, concurrently. All "routine" tests shall be conducted using a control (0% effluent) and the following test concentrations: 100%, 50%, 25%, 12.5% and 6.25% final effluent.
5. Sampling Requirements: Routine tests will be conducted on four separate grab samples collected at evenly-spaced 6-hour intervals over a 24-hour period and used in four separate tests.
6. Additional, Follow-up Testing Requirements, if required: If acute toxicity (greater than 50% mortality of either test species in any grab sample test) is found in a routine test, the permittee shall conduct two valid additional tests on each species indicating greater than 50% mortality in any of the test concentrations. The two valid additional tests shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent.
7. Reporting Requirements: Results from routine tests shall be reported on the Discharge Monitoring Report (DMR) as the calculated LC50 value for each test species.

Chronic Whole Effluent Toxicity Testing

1. Whole effluent chronic toxicity shall not exceed a 25 percent inhibition concentration (IC25) of less than 100% effluent in any test. Additionally, the effluent cannot be acutely toxic.
2. Monitoring Frequency: Routine toxicity tests shall be conducted once every two months.
3. Sampling Requirements: A total of three 24-hr flow proportioned composite samples of final effluent shall be collected and used. The first sample shall be used to initiate the test. The remaining two samples shall be collected according to 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. Routine Test Requirements: 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 7-day survival and growth chronic toxicity tests with a mysid shrimp, *Americamysis (Mysidopsis) bahia*, Survival, Growth and Fecundity Test, and an inland silverside, *Menidia beryllina*, Larval Survival and Growth Test, concurrently.

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

Consent Order OGC File No. 92-0095 became effective April 20, 1994 and addressed unpermitted discharges of sewage and effluent from the facility and collection/transmission system, and the vertical migration of injectate into an underground source of drinking water. Case remains open.

Consent Order OGC File No. 09-3566 became effective May 25, 2010 and addressed effluent limit exceedances, operation/maintenance deficiencies and the failure to notify the Department of an intended bypass. The consent order provides interim limits for copper, total phosphorus, dibromo-chloromethane and dichloro-bromomethane, reflected in the Effluent Limits chart. Case remains open.

Appendix F. continued

Facility Mixing Zone Details (if applicable): NA			
List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year: See attached spreadsheet. Limit exceedances are bolded, with the number of exceedances per month in parentheses.			
Date	Parameter and Units	Limit	Result
Describe previous FYI and WQBEL study: NA, facility subject to Section 403.086, Florida Statutes.			
Describe previous or current Enforcement Actions (including WLs): See previous section regarding current consent orders.			

Appendix F. continued

Describe any violations or problems noted in previous inspection:

The June 9, 2010 inspection revealed the following deficiencies:

1. *There was excessive vegetation growing out from under the outfall cascade hoods, which should be removed.

2. *It was noted that the grit removal system, two primary clarifiers, two denitrification filters and all eight sand filters were out of service for repairs. Please indicate when the County plans to return them to service.

3. Currently, public access reuse reject is performed manually. The Department understands that Pinellas County plans to implement automatic reject. Please notify the Department prior to this occurrence. Please note that the operating protocol must be modified to address automatic reject.

4. *A review of the current Operating Protocol revealed a number of discrepancies between current facility operation and the protocol. Given that the current protocol is eight years old, it should be updated to address the current inline meter configuration, to review the alarm and reject setpoints and any other operational changes made since the current operating protocol was implemented.

5. *The Department received several recent odor complaints for lift station no. 69 on Commodore and 93rd Avenue in Seminole. The Department also received past odor complaints from residents around the station. From the continued complaints, it appears that current operational controls are not sufficient to control the odors produced. Please indicate how the County plans to address the odor emanating from lift station no. 69.

6 *A review of the DMRs for June 2009 through April 2010 indicated the following permit limit exceedances.
   a) The total phosphorus single sample maximum limit was exceeded seven times in July and once in August 2009.
   b) The total phosphorus weekly average limit was exceeded once in June and twice in July 2009.
   c) The total phosphorus monthly average limit was exceeded in June 2009.
   d) The total phosphorus annual average limit was exceeded in June 2009.
   e) The pH maximum limit for D001 was exceeded five times in October 2009.
   f) The copper single sample maximum limit was exceeded five times in October 2009.
   g) The minimum total chlorine residual, as a measure of disinfection, was not met seven times in June, twice in July, four times in August, five times in September and twice in October 2009, and eight times in February 2010.
   h) The dibromo-chloromethane annual average limit was exceeded June 2009 through April 2010.
   i) The dichloro-bromomethane annual average limit was exceeded June 2009 through April 2010.

7. *A review of the acute and chronic toxicity reports, submitted between June 2009 and May 2010 indicate the total residual chlorine maximum limit of 0.01 mg/L was exceeded in the final outfall effluent in the following 24-hour composite samples.

		TRC in mg/L			
Test Dates	Test Type	1st sample	2nd sample	3rd sample	4th sample
07/09-16/09	Chronic	0.06	-	0.09	-na-
10/01-08/09	Chronic	0.10	0.05	0.10	-na-
10/29-11/05/09	Chronic	0.11	0.08	0.07	-na-
11/04-08/09	Acute	0.03	0.03	0.02	0.02
01/19-26/10	Chronic	0.07	0.04	0.14	-na-
03/09-16/10	Chronic	0.12	0.07	0.03	-na-
05/04-11/10	Chronic	0.08	-	0.03	-na-
05/05-09/10	Acute	0.04	-	-	0.02

8. *A review of annual reclaimed water or effluent analysis, dated March 15, 2010, indicated that ground water standards for sodium, chloride, total trihalomethanes and total dissolved solids were exceeded.

9. *On November 23, 2009, the Department received the primary and secondary drinking water standard sampling results for two new wells. Page six of eight was missing from the Certification of Analysis (work order No. 2009-02672). The Department cannot complete review of the results until that page is received.

Appendix F. continued

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse): Approximately half of the treated effluent volume is beneficially reused for public access reuse.

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 Disinfection (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:

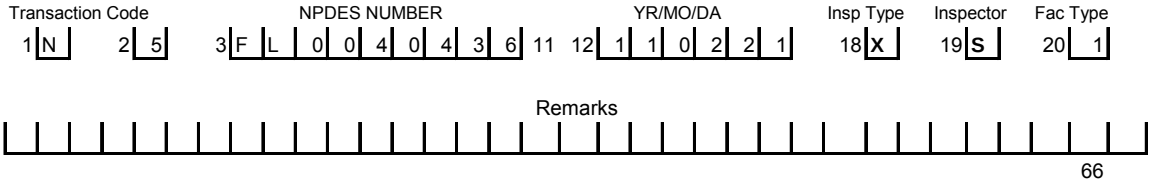
State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART II: Sampling Event Information	
Dates sample collected: 2/20 8:30 – 2/21 8:30 Composite Samples 2/21 10:15 Grab Samples 2/22 8:30 – 2/23 8:30 Renewal Tox Sample 2/24 8:30 – 2/25 8:30 Renewal Tox Sample	**Samplers:** Pete Wenner, Jason Cohen, Josephine Molé, Michele Duggan
Temperature (Deg C): 24.27	**pH (SU):** 7.49
Dissolved Oxygen (mg/L): 7.83	**Conductivity (umhos/cm):** 1464
Total Residual Chlorine (mg/L): 2.33	**Total Residual Chlorine - after Disinfection (mg/L):** 0.02U
Method of Chlorination: Chlorine gas	**Method of De-chlorination:** Sulfur dioxide gas
Flow During Sample Collection for each outfall(MGD): EFD-01 = 11.5 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): EFD-01 = 9.2 MGD	
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

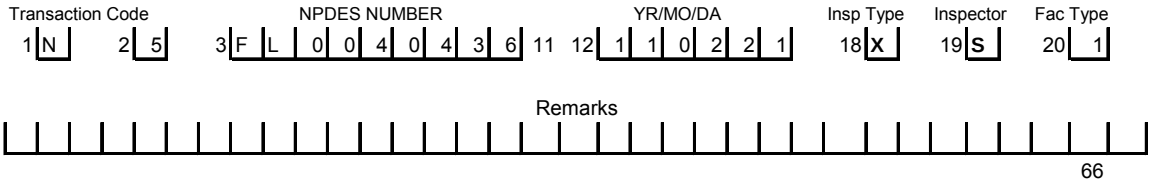
The Bioassay of the South Cross Bayou AWWTF effluent sampled on February 21, 23, and 25, 2011. NPDES# FL0040436.

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



The Priority Pollutants Analysis of the South Cross Bayou AWWTF effluent sampled on February 21, 2011. NPDES# FL0040436.

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



Biological Analyses of the South Cross Bayou AWWTF effluent sampled on February 21, 2011. NPDES# FL0040436.

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

