

Effluent Quality Assessment

City Of Tallahassee

Sam O. Purdom Generating Station

Wakulla County

NPDES #FL0025526

Sampled February 16, 2009

June 2009

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

City of Tallahassee (COT) Sam O. Purdom Generating Station, 667 Port Leon Drive, St. Marks, Wakulla County, Florida, 32355. NPDES #FL0025526. Effluent samples for this facility were collected on February 16, 2009.

Introduction

COT Sam O. Purdom Generating Station is a power generating station which treats its once-through non-contact cooling wastewater for discharge. Effluent discharge from the facility is continuous. The facility has a design capacity of 61.9 million gallons per day (MGD) annual average daily flow (AADF) from Outfall D-001, and 1.0 MGD from Outfall D-005. The AADF for Outfall D-001 from November 2007 to October 2008 was 52.89 MGD. No flow measurement is required for Outfall D-005.

The facility consists of four generating units:

- a steam electric generating unit (Unit 7);
- a combined cycle unit (Unit 8); and,
- two gas/ combustion turbine engines (GT-1 and GT-2) for peaking capacity.

The maximum nameplate generating capacities for these units are 44 megawatts (MW), 250 MW, and 12.3 MW each, respectively. Units 8, GT-1 and GT-2 are fired by # 2 fuel oil or natural gas. Unit 7 is fired by #6 fuel oil or natural gas. Unit 7 incorporates a once-through non-contact condenser cooling water (OTCW) system with intake water from the St. Marks River. Unit 8 operates as a zero discharge (ZD) system, except during ZD system maintenance downtime, at which point Unit 8 maintenance blowdown discharges into the Unit 7 OTCW discharge through an internal outfall. Unit 8 makeup water consists of reclaimed water from the City of St. Marks domestic wastewater treatment plant, industrial wastewater from the St. Marks Powder, Inc. facility, and surface water from the St. Marks River.
Wastewater consists of:

- once-through non-contact condenser cooling water from Unit 7;
- once-through, non-contact auxiliary equipment cooling water from Units GT – 1 and –2; and,
- maintenance blowdown from Unit 8, which consists of:
    - cooling water blowdown; and,
    - low volume waste, consisting of:
        - floor drains;
        - boiler blowdown;
        - demineralizer regeneration waste;
        - laboratory wastes; and,
        - miscellaneous equipment washes.

Unit 8 cooling tower water is treated by pH adjustment, mixing, sedimentation, disinfection with sodium hypochlorite, and by the addition of sulfuric acid, scale inhibitor, corrosion inhibitor, and copper corrosion inhibitor. Low volume waste is treated in an oil/water separator and then routed to the Unit 8 cooling tower for use as makeup water. Unit 8 discharges into the Unit 7 OTCW discharge through an internal outfall (I -002), Unit 7 discharges to the discharge canal D -001 (formerly I-017), then to the St. Marks River, a Class III Fresh water body. The point of discharge is located approximately at latitude 30° 09’ 00” N, longitude 84° 10’ 00” W.

Once-through cooling-tower water from units GT-1 and GT-2 discharges to the discharge canal D-005, and then to the St. Marks River (no limitations or monitoring required). The point of discharge is located approximately at latitude 30° 09’ 72.1” N, longitude 84° 12’ 00.4” W.

There are two existing stormwater outfalls to the St. Marks River, D-003, from the north diked petroleum storage area (latitude 30° 09’ 76” N, longitude 84° 11’ 91.4” W), and D-004, from the south diked petroleum storage area (latitude 30° 09’ 66.7” N, longitude 84° 11’ 94.4” W).

The facility has no Administrative Orders, Consent Orders or mixing zones. A review of Discharge Monitoring Report (DMR) data for the past year, revealed no permit violations. (Facility information provided by Kim Allen of FDEP Northwest District.)

Methods

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

See Appendix A for the completed chain of custody form.

The 48-hour acute screening toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

Prior to test initiation, the bioassay sample was aerated for 30 minutes at approximately 100 bubbles per minute, to decrease the dissolved oxygen concentration from 9.6 mg/L to 8.1 mg/L.

Toxicity Test Results

Tests were performed February 17 - 19, 2009.

Ceriodaphnia dubia 48-hour acute screening bioassay –	LC_{50} > 100%, 5% mortality* in 100% sample at 48 hours
Cyprinella leedsi 48-hour acute screening bioassay –	LC_{50} > 100%, 0% mortality* in 100% sample at 48 hours

The bioassay sample was not acutely toxic to the test organisms.

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

*NOTE: In a 48-hour acute screening test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule 62-302.500 (1)(a)4, F.A.C.). Mortality between 20-50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3)(a), F.A.C.).

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 87.0 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) found that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is phosphorus-limited. The predicted AGP based on orthophosphate concentrations was 21.5 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine and total ammonia were not detected in the bioassay sample in the laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.028 mg/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was ≤ 0.02 mg/L.

Copper and zinc were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Arsenic, chromium III, iron, lead, nickel, and zinc were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Aluminum, calcium and magnesium were also detected. Duplicate samples were collected and analyzed for chemical components.

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

Conclusion

The effluent sample collected from Outfall D-001 for this facility on February 16, 2008 was not acutely toxic to either test species during the 48-hour acute screening bioassays. The effluent AGP result exceeded the "problem" threshold for fresh receiving waters. Effluent water quality samples 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 1. 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* for samples collected from the City of Tallahassee Sam O. Purdom Power Plant on February 16, 2009.

City of Tallahassee Sam O. Purdom Power Plant NPDES# FL0025526					
Location	AGP (measured)	Predicted AGP (OP) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	87.0	21.5 ± 4.3	28.4 ± 5.7	96.6	83.3

Table 2. Effluent limits, Class III Freshwater Criteria and chemical data for samples collected from the City of Tallahassee Sam O. Purdom Generating Station on February 16, 2009.

City of Tallahassee Sam O. Purdom Power Station NPDES #FL0025526	Class III Criteria	Effluent Limits	Effluent		Effluent Duplicate	
Organic Constituents (µg/L)						
None Detected	-	-	None Detected			
Metals (µg/L unless otherwise noted)						
Aluminum	-	-	60	U	60	U
Arsenic	≤ 50	-	0.5	I	0.42	I
Cadmium	≤ 0.5 b	-	0.03	U	0.03	U
Calcium (mg/L)	-	-	51.6		51	
Chromium-III	≤ 155.2 b	≤ 155.2 bs	0.59	I	0.58	I
Copper	≤ 17.2 b	≤ 17.2 bs	3.15		3.15	
Iron	≤ 1,000	≤ 1,000 s	59	I	62	I
Lead	≤ 7.9 b	-	0.2	U	0.29	I
Magnesium (mg/L)	-	-	18.5		18.3	
Nickel	≤ 95.8 b	-	0.9	I	0.84	I
Selenium	≤ 5.0	-	0.2	U	0.2	U
Silver	≤ 0.07	-	0.025	U	0.025	U
Zinc	≤ 220.1 b	≤ 220.1 bs	8.6	I	126	
Nutrients (mg/L)						
Ortho-phosphate	-	-	0.05		0.05	
Total Phosphorus	-	-	0.066		0.062	
Total Ammonia	-	-	0.028		0.026	
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02	c	≤ 0.02	c
Nitrate and Nitrite	-	-	4.8		4.8	
Total Kjeldahl Nitrogen	-	-	0.7		0.66	
Organic Nitrogen	-	-	0.672	c	0.634	c
Total Nitrogen	-	-	5.5	c	5.46	c
General Physical and Chemical Parameters						
pH (SU)	6.0 - 8.5	-	7.7		7.7	
Conductivity (µmhos/cm)	≤ 1,275	-	784		784	
Temperature (°C)	-	≤ 35 s	18.3		18.3	
Salinity	-	-	< 0.44	c	< 0.44	c
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	≤ 0.03	U	≤ 0.03	U
Chlorophyll *a* (µg/L) - Corrected	-	-	0.65	I	-	
Phaeophytin (µg/L)	-	-	0.36	I	-	
Total Suspended Solids (mg/L)	-	-	4	U	-	
CBOD, 5 day (mg/L), N - inhibited	-	-	0.76	I	-	
Flow (MGD) (Outfall D-001)	-	61.9 a	52.89	a	52.89	a
Hardness (mg $CaCO_3$)	-	-	205.03	c	202.71	c

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average

b - Value is calculated based on hardness

c - Value is calculated

s - Single sample

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

U - Material analyzed for but not detected; value reported is the method detection limit

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-02-16-35
Sam O Purdom Generating Station

Requester: Jennifer Paris
Field Report Prepared By:

Customer: NW-DIST
Collected By: Danielle Melnick
Send Final Report To Greg Smith

Project ID: FYI3
Sampling Agency:

PMAS: 1143

Lab ID *	Location: Sam O. Purdom Generating Station			☐ Comp ☑ Grab	Collection (begin) Eastern Date 2/16/09 Time 9:45 Central	Collection (end) Eastern Date 2/16/09 Time 10:53 Central	Bottle Group(s)** A
	Field ID: E77-1				Tot Res Chlorine (mg/L): 0	Diss Oxygen (mg/L):	Storet Station Number:	
	Matrix (Include type e.g. Salt, Fresh, etc): fresh	Temp (C): 18.3	pH: 7.67	Sample Depth: 2 ☐ m ☑ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm): 784	NPDES Number:	
	Latitude o ' "	Longitude o ' "		Comments: Clear skies, windy, samples taken from 207t above water with sonde				
Lab ID *	Location: Sam O. Purdom Generating Station			☐ Comp ☑ Grab	Collection (begin) Eastern Date 2/16/09 Time 9:43 Central	Collection (end) Eastern Date 2/16/09 Time 10:55 Central	Bottle Group(s)** B
	Field ID: Duplicate				Tot Res Chlorine (mg/L): 0	Diss Oxygen (mg/L):	Storet Station Number:	
	Matrix (Include type e.g. Salt, Fresh, etc): fresh	Temp (C): 18.3	pH: 7.67	Sample Depth: 2 ☐ m ☑ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm): 784	NPDES Number:	
	Latitude o ' "	Longitude o ' "		Comments: Clear skies, windy, samples taken from 207t above water with sonde				
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Eastern Date Time Central	Collection (end) Eastern Date Time Central	Bottle Group(s)**
	Field ID				Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:	
	Matrix (Include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth: ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm):	NPDES Number:	
	Latitude o ' "	Longitude o ' "		Comments:				
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Eastern Date Time Central	Collection (end) Eastern Date Time Central	Bottle Group(s)**
	Field ID				Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:	
	Matrix (Include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth: ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm):	NPDES Number:	
	Latitude o ' "	Longitude o ' "		Comments:				

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Danielle Melnick	2/16/09 2:05	Hand	Tahmeera Ebrahim	02.16.09 14:04				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: SAM@ Purdom Generating Station

Address: 667 Port Leon Dr

City: St. Marks County: Wakulla

Contact/District: Danielle Melnick / Northwest Branch Tallahassee

NPDES Permit #: FL0002556

LIMS Job #: TLH-2009-02-16-09 LIMS Sample #: 1166204

Lims Data Entry: 3-2-09 MF Data Entry Verification: 3-2-09 BA

Sample Collection: Date: 2-16-09 Time: 9:45

Hold Time Start: Date: 2-16-09 Time: 9:45

Comments:

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

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

Test 1 validation: Test 1: SOP TA 07_01
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Test 2 validation: Test 2: SOP TA 07_02
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

(√one)
Test 1 incubated in: [√] Incubator #: 2 [ ] Waterbath #:_____
Test 2 incubated in: [ ] Incubator #:_____ [ ] Waterbath #:_____

Initial sample handling:

PH adjustment : yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____
Aeration : (yes) no Initial DO: 7.6 mg/L Final DO: 8.1 mg/L Duration: 30 minutes Rate: ~100 bubbles/min
Salinity adjusted (Test 1): yes (no) Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Salinity adjusted (Test 2): yes (no) Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Dechlorination: yes (no) ____ mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Light Intensity : 50 - 100 fL candles
Photoperiod : 16 light 8 dark
Temperature Range °C: (If used)
Incubator # 2 min. 25.8 max. 26.5 mean 26.2
Incubator # ____ min. ____ max. ____ mean ____
Waterbath # ____ min. ____ max. ____ mean ____
Room B246 min. 23.0 max. 24.9 mean 23.9

Sample Validation:

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

Investigators' Signatures
James Daniel
Marshall Fairleth
Brad Alexander
Kim M Spencer

Loretta C. Wolfe
REVIEWER

Water Quality Parameters	Batch #	1,3a-f	2.16.09	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Measured by	Verified by
		20% DMW	Well Water							
Field Total Residual Cl_2 (mg/L):		N/A	N/A	N/A	N/A	N/A		<0.03 (A)	D. Melnick	MF
Lab Total Residual Cl_2 (mg/L):		<.03	<0.03					<0.03	JB	MF
Alkalinity (mg/L as $CaCO_3$):		83	159					154	AK BA	MF
Hardness (mg/L as $CaCO_3$):		83	151					200	BA	MF
Total Ammonia (mg/L as N):		<0.017	<0.017					<0.017	MF	JB
Conductivity: µmhos mmhos		186	286					975	JB	MF
Salinity (ppth):		—	—					—	JB	—

(A) Field sheet value 0. Reported <0.03 based on Hach meter amounting Parameters MF 3-3-09

V1.6 7/8/08

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1166204 Test #: 1/2 SOP#:TA 07 01 Test Started: Date 2.17.09 Time: 12:00
Organism/Batch/Age: C.dubia / 6.09 / <24 hrs Test Ended: Date 2.19.09 Time: 12:20
Chamber/Test Volume: 30 / 20 ml Diluent/ Batch: Dny / 1.30.09 Test Duration: (48) hr 96 hr
Food/Batch: [✓] YCT 1.22.09 [✓] P.sub 2.13.09
[ ] Artemia Lot#____ Batch #: 0hr____ 24hr____ 48hr____ 72hr____
Feeding: [X] Prior to Test [ ] Prior to Renewal [✓] 0 hr [ ] 24 hr [ ] 48 hr [ ] 72 hr

Concentration	Replicate	Chamber #	0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	4 1D			
100%	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	4 1D			
Loaded/Verified by: BA / JB		Checked by:	JB	BA	BA			

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

Comments:

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 5% LC50: >100%
If Calculated: 95% CI____ Method____

V 2.3 7/15/2008

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

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1166204 Test #: 2/2 SOP#:TA 07 02 Test Started: Date 2.17.09 Time: 1230

Organism/Batch/Age: C. leedsi / 2.17.09 / 11days Test Ended: Date 2.19.09 Time: 1240

Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: Well / 2.16.09 Test Duration: (48) hr / 96 hr

Food/Batch: [ ] YCT____ [ ] P.sub____

[✓] Artemia Lot# 38433 Batch #: 0hr 20-09 24hr____ 48hr____ 72hr____

Feeding: [X] Prior to Test [ ] Prior to Renewal [✓] 0 hr [ ] 24 hr [ ] 48 hr [ ] 72 hr

Concentration	Replicate	Chamber #	Test Hour: 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
	A	A1	5	5	5			
Ctrl	B	A2	5	5	5			
	C	A3	5	5	5			
	D	A4	5	5	5			
	A	A5	5	5	5			
100%	B	A6	5	5	5			
	C	A7	5	5	5			
	D	A8	5	5	5			
Loaded/Verified by: [illegible] / BA	Checked by:		[illegible]	[illegible]	[illegible]			

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

Comments:

Test Results:

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

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

If Calculated: 95% CI________ Method________

V 2.3 7/15/2008

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

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FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 116204 Test #: 1 of 2

TEST SOP #: TA07_01 Test Species: ☒ *Ceriodaphnia dubia* ☐ *Cyprinella leedsi* ☐ *Pimephales promelas*

Test aerated: ~~yes~~ no (circle one) MF 2-23-09 aerated part of test setup not during test. Check 1: ☐ *Americamysis bahia* ☐ *Menidia beryllina* ☐ Other:_____

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A			
pH (S.U.)	7.8		7.9			
Temperature °C	24.0		24.0			
Dissolved Oxygen mg/L aerate if < 4	7.9		7.8			
Conductivity ~~µmhos~~ mmhos	186		215			
Salinity ppth	–		–			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A			
pH (S.U.)	7.7		8.4			
Temperature °C	24.1		24.0			
Dissolved Oxygen mg/L aerate if < 4	7.7		8.2			
Conductivity ~~µmhos~~ mmhos	975		1075			
Salinity ppth	–		–			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Salinity only needs measuring if saltwater.

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:	4					

Comments:

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 116204 **Test #:** 2 of 2

TEST SOP #: TA07 02 **Test Species:** ☐ *Ceriodaphnia dubia* ☒ *Cyprinella leedsi* ☐ *Pimephales promelas*

Test aerated: yes (A) no (circle one) Check 1: ☐ *Americamysis bahia* ☐ *Menidia beryllina* ☐ Other:_____

Concentration ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.7	8.1	8.3			
Temperature °C	24.0	24.2	24.4			
Dissolved Oxygen mg/L aerate if < 4	8.2	7.3	7.3			
Conductivity ~~μmhos~~ mmhos	286	295	293			
Salinity ppth	—	—	—			
(initials) Measured by:	[illegible]	[illegible]	[illegible]			
(initials) Recorded by:	[illegible]	[illegible]	[illegible]			

Comments: (A) aerated prior to test set up - not during test. MF 2-23-09

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.9	8.1	8.3			
Temperature °C	24.6	24.2	24.5			
Dissolved Oxygen mg/L aerate if < 4	8.1	7.5	8.1			
Conductivity ~~μmhos~~ mmhos	977	970	988			
Salinity ppth	—	—	—			
(initials) Measured by:	[illegible]	[illegible]	[illegible]			
(initials) Recorded by:	[illegible]	[illegible]	[illegible]			

Comments:

Salinity only needs measuring if saltwater.

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity μmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity μmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Appendix B. (continued)

Bioassay Instrument ID

Test ID: SAM O. Purdom Generating Station Dates: Feb 17-19, 2009

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	NA
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	NA

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 MF 2-23-09

V 1.1 6/12/08 MF

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Appendix C. SRT Bench Sheets and Statistical Analysis

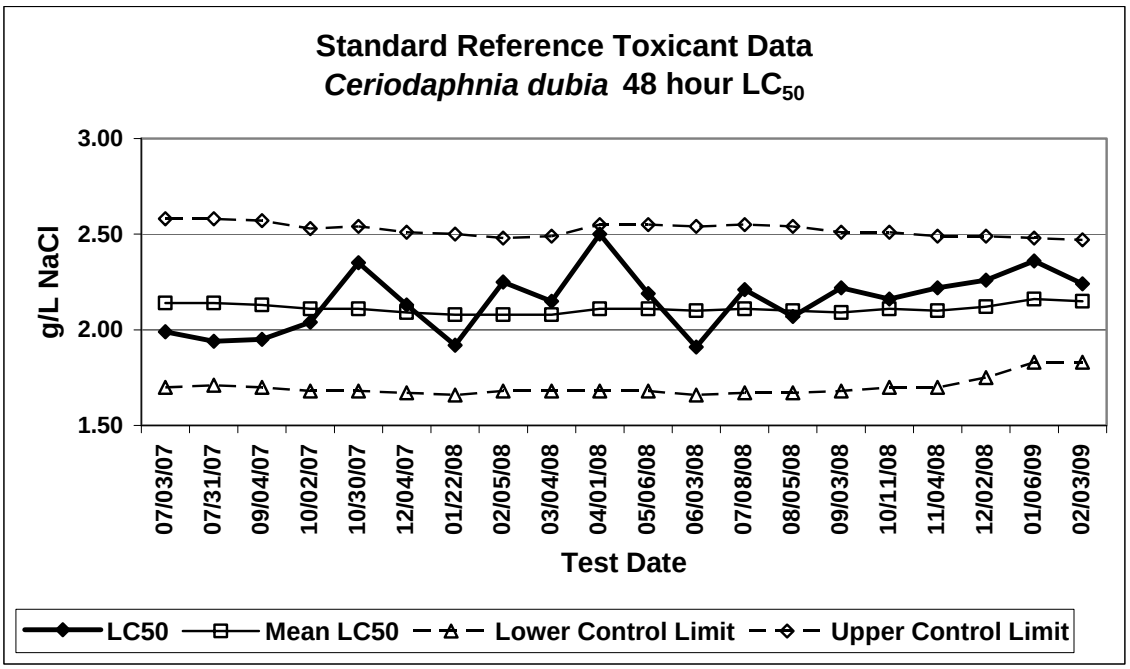
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
07/03/07	1.99	2.14	0.22	1.70	2.58
07/31/07	1.94	2.14	0.22	1.71	2.58
09/04/07	1.95	2.13	0.22	1.70	2.57
10/02/07	2.04	2.11	0.21	1.68	2.53
10/30/07	2.35	2.11	0.21	1.68	2.54
12/04/07	2.13	2.09	0.20	1.67	2.51
01/22/08	1.92	2.08	0.20	1.66	2.50
02/05/08	2.25	2.08	0.20	1.68	2.48
03/04/08	2.15	2.08	0.20	1.68	2.49
04/01/08	2.50	2.11	0.22	1.68	2.55
05/06/08	2.19	2.11	0.22	1.68	2.55
06/03/08	1.91	2.10	0.22	1.66	2.54
07/08/08	2.21	2.11	0.22	1.67	2.55
08/05/08	2.07	2.10	0.22	1.67	2.54
09/03/08	2.22	2.09	0.21	1.68	2.51
10/11/08	2.16	2.11	0.20	1.70	2.51
11/04/08	2.22	2.10	0.20	1.70	2.49
12/02/08	2.26	2.12	0.19	1.75	2.49
01/06/09	2.36	2.16	0.16	1.83	2.48
02/03/09	2.24	2.15	0.16	1.83	2.47

Means are of the last 20 SRT tests.
Lower Control Limit = mean - 2 * Std Dev
Upper Control Limit = mean + 2 * Std Dev

CV = 7.47
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

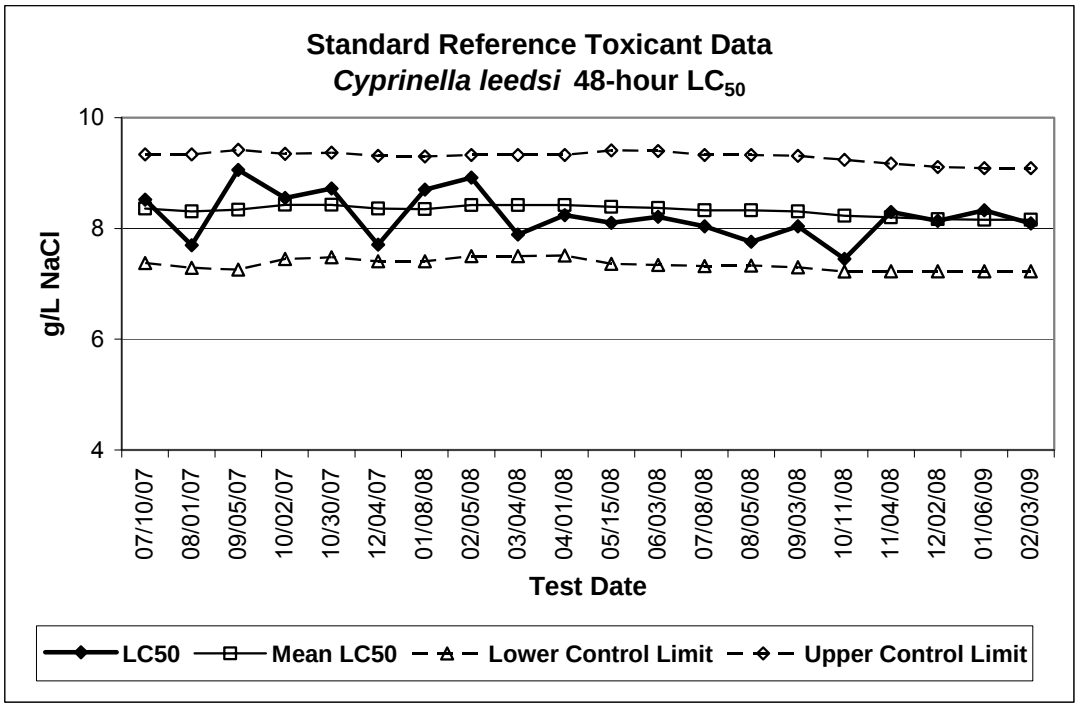
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Cyprinella leedsi (bannerfin shiner) - Sodium Chloride (NaCl)

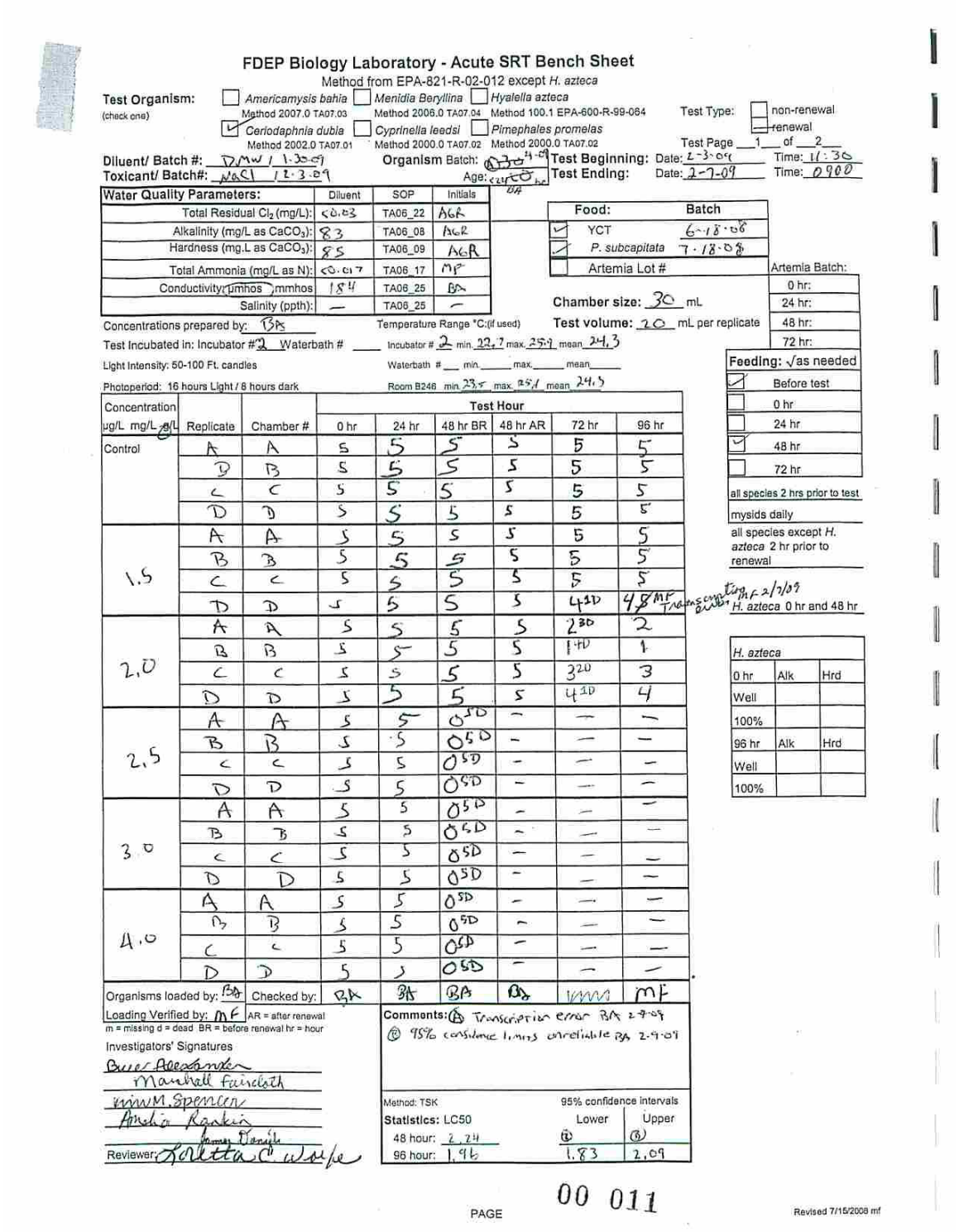
Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
07/10/07	8.52	8.36	0.49	7.38	9.34
08/01/07	7.7	8.31	0.51	7.29	9.34
09/05/07	9.06	8.34	0.54	7.26	9.42
10/02/07	8.55	8.43	0.47	7.45	9.35
10/30/07	8.72	8.43	0.47	7.48	9.37
12/04/07	7.71	8.36	0.47	7.41	9.31
01/08/08	8.7	8.35	0.47	7.41	9.30
02/05/08	8.92	8.42	0.46	7.50	9.33
03/04/08	7.89	8.42	0.46	7.50	9.33
04/01/08	8.24	8.42	0.45	7.51	9.33
05/15/08	8.1	8.39	0.51	7.36	9.41
06/03/08	8.21	8.37	0.51	7.34	9.40
07/08/08	8.04	8.33	0.50	7.32	9.33
08/05/08	7.76	8.33	0.50	7.33	9.33
09/03/08	8.04	8.31	0.50	7.30	9.31
10/11/08	7.45	8.23	0.51	7.22	9.24
11/04/08	8.3	8.20	0.48	7.23	9.17
12/02/08	8.14	8.17	0.47	7.23	9.11
01/06/09	8.33	8.16	0.47	7.23	9.09
02/03/09	8.09	8.16	0.47	7.23	9.09

Means are of the last 20 SRT tests.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

CV = 5.7
EPA reference 75th quartile CV = 19%



Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☐ renewal

Test Page 1 of 2

Diluent/ Batch #: DMW / 1-30-09
Toxicant/ Batch#: NaCl / 2-3-09
Organism Batch: 030409 **Age:** <24 hr
Test Beginning: Date: 2-3-09 Time: 11:30
Test Ending: Date: 2-7-09 Time: 0900

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AGR
Alkalinity (mg/L as $CaCO_3$):	83	TA06_08	AGR
Hardness (mg.L as $CaCO_3$):	85	TA06_09	AGR
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: ☐ µmhos ☐ mmhos	184	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	6-18-08
☑ *P. subcapitata*	7-18-08
☐ Artemia Lot #	

Artemia Batch:
0 hr:
24 hr:
48 hr:
72 hr:

Chamber size: 30 mL
Test volume: 20 mL per replicate

Concentrations prepared by: BA
Test Incubated in: Incubator #2 Waterbath # ____ Temperature Range °C:(if used)
Incubator # 2 min. 22.7 max. 25.9 mean 24.3
Light Intensity: 50-100 Ft. candles
Waterbath # ___ min. ____ max. ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark
Room B246 min. 23.5 max. 25.1 mean 24.3

Feeding: √as needed

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

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

Concentration µg/L mg/L ☐g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	4ⓓ	4ⓐ MF Transcription error BA 2/9/09
2.0	A	A	5	5	5	5	2ⓓ	2
	B	B	5	5	5	5	1ⓓ	1
	C	C	5	5	5	5	3ⓓ	3
	D	D	5	5	5	5	4ⓓ	4
2.5	A	A	5	5	0ⓢⓓ	—	—	—
	B	B	5	5	0ⓢⓓ	—	—	—
	C	C	5	5	0ⓢⓓ	—	—	—
	D	D	5	5	0ⓢⓓ	—	—	—
3.0	A	A	5	5	0ⓢⓓ	—	—	—
	B	B	5	5	0ⓢⓓ	—	—	—
	C	C	5	5	0ⓢⓓ	—	—	—
	D	D	5	5	0ⓢⓓ	—	—	—
4.0	A	A	5	5	0ⓢⓓ	—	—	—
	B	B	5	5	0ⓢⓓ	—	—	—
	C	C	5	5	0ⓢⓓ	—	—	—
	D	D	5	5	0ⓢⓓ	—	—	—
Organisms loaded by: BA		Checked by:	BA	BA	BA	BA	MM	MF

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

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

Investigators' Signatures
Bruce Alexander
Marshall Faircloth
Mindy M. Spencer
Amelia Rankin
Jimmy Daniels
Reviewer: Loretta C. Wolfe

Comments: ⓐ Transcription error BA 2-9-09
ⓒ 95% confidence limits unreliable BA 2-9-09

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 2.24	ⓑ	ⓒ
96 hour: 1.96	1.83	2.09

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Revised 7/15/2008 mf

Appendix C. (continued)

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

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

Test Page 2 of 2

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

Test Beginning: Date: 2-3-09 Time: 1130
Test Ending: Date: 2-7-09 Time: 0900

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L pH	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity (ppth)
Control	M	0 hr	7.9	24.0	8.3	184	—
		24 hr	—	—	—	~~2930~~ (A)	—
	A	48 hr BR	7.7	24.0	8.1	195	
	m	48 hr AR	7.9	24.0	8.0	178	
		72 hr	—	—	—	—	
	A	96 hr	8.1	24.1	7.6	210	
1.5	M	0 hr	7.9	24.0	8.3	2930	
		24 hr	—	—	—	~~3200~~ (A)	
	A	48 hr BR	7.8	24.0	8.0	3200	
	m	48 hr AR	8.0	24.0	8.1	2930	
		72 hr	—	—	—	—	
	A	96 hr	8.0	24.3	7.8	3150	
2.0	M	0 hr	7.9	24.0	8.3	3870	
		24 hr	—	—	—	—	
	A	48 hr BR	7.8	24.0	7.9	4400	
	m	48 hr AR	8.0	24.0	8.2	3760	
		72 hr	—	—	—	—	
	A	96 hr	8.1	24.3	7.7	4070	
2.5	M	0 hr	7.9	24.0	8.3	4760	
		24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	8.0	5430	
		48 hr AR					
		72 hr					
		96 hr					
3.0	M	0 hr	8.0	24.0	8.3	5610	
		24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	7.9	6300	
		48 hr AR					
		72 hr					
		96 hr					
4.0	M	0 hr	8.0	24.0	8.3	7290	
		24 hr	—	—	—	—	
	A	48 hr BR	8.0	24.0	7.7	8050	
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Brent Allen Johnson
Marshall Faircloth
Kim M. Spencer
James Daniel

Reviewed By: Loretta C Wolfe

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

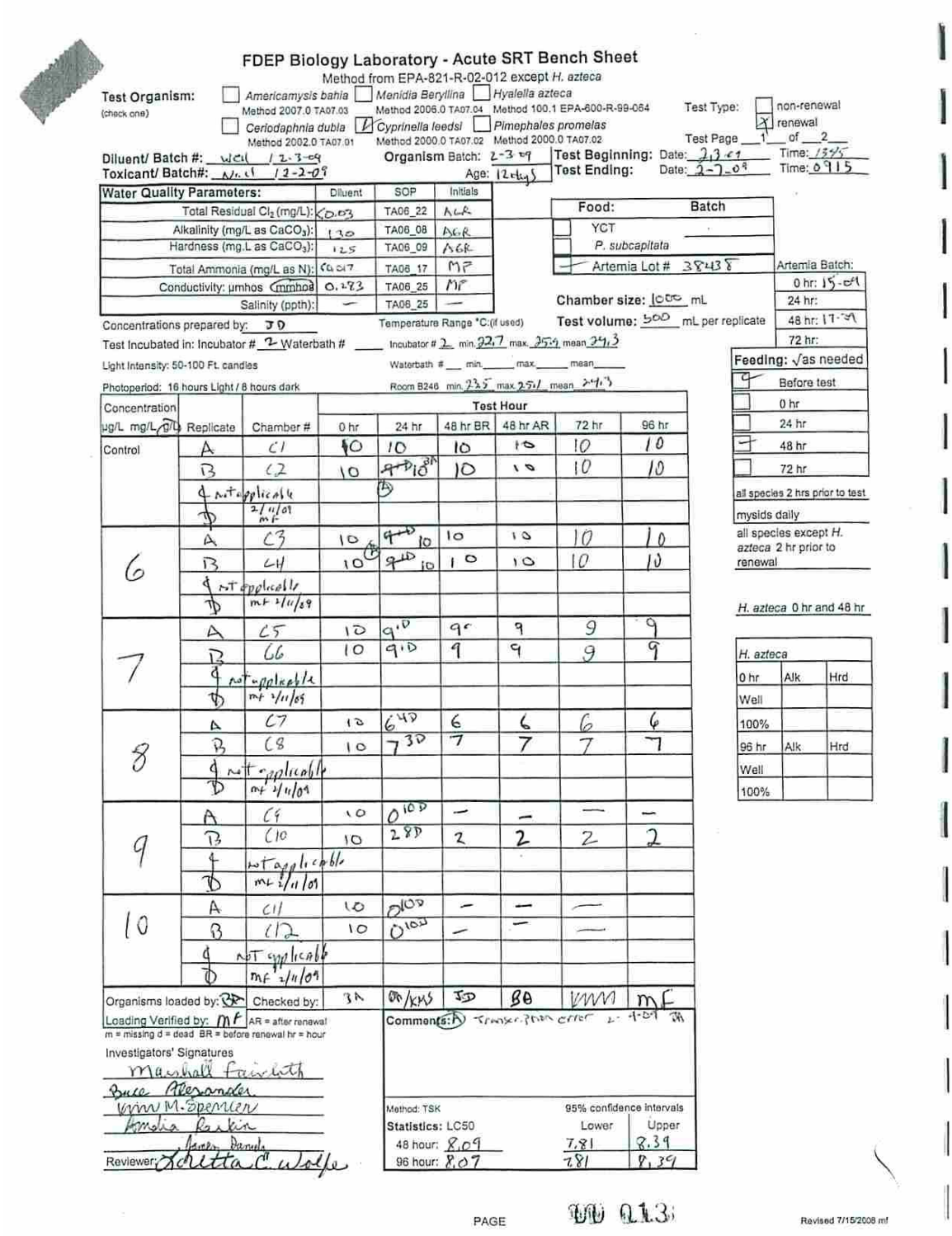
Measure/record salinity for marine tests

Comments: (A) Transcription error BA 2-3-09

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Revised 07/15/2008 MF

Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☒ renewal

Test Page 1 of 2

Diluent/ Batch #: WCH 12-3-09
Toxicant/ Batch#: NaCl 12-2-09

Organism Batch: 2-3 09
Age: 12 hrs

Test Beginning: Date: 2.3.09 Time: 1345
Test Ending: Date: 2-7-09 Time: 0915

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AGR
Alkalinity (mg/L as $CaCO_3$):	130	TA06_08	AGR
Hardness (mg.L as $CaCO_3$):	125	TA06_09	AGR
Total Ammonia (mg/L as N):	<0.07	TA06_17	MF
Conductivity: µmhos (mmhos)	0.283	TA06_25	MF
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☑ Artemia Lot # 38438	Artemia Batch:

Artemia Batch:
- 0 hr: 15-09
- 24 hr:
- 48 hr: 17-39
- 72 hr:

Chamber size: 1000 mL
Test volume: 500 mL per replicate

Concentrations prepared by: JD
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min. 22.7 max. 25.4 mean 24.3
Light Intensity: 50-100 Ft. candles Waterbath # ___ min. ____ max. ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 23.5 max. 25.1 mean 24.3

Feeding: √as needed
- ☑ Before test
- ☐ 0 hr
- ☐ 24 hr
- ☑ 48 hr
- ☐ 72 hr

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

Concentration µg/L mg/L (g/L)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	C1	10	10	10	10	10	10
	B	C2	10	~~9 D~~ 10 3A	10	10	10	10
	♀	not applicable		(A)				
	♂	mf 2/11/09						
6	A	C3	10	(A) ~~9 D~~ 10	10	10	10	10
	B	C4	10	~~9 D~~ 10	10	10	10	10
	♀	not applicable						
	♂	mf 2/11/09						
7	A	C5	10	9 1D	9	9	9	9
	B	C6	10	9 1D	9	9	9	9
	♀	not applicable						
	♂	mf 2/11/09						
8	A	C7	10	6 4D	6	6	6	6
	B	C8	10	7 3D	7	7	7	7
	♀	not applicable						
	♂	mf 2/11/09						
9	A	C9	10	0 10D	—	—	—	—
	B	C10	10	2 8D	2	2	2	2
	♀	not applicable						
	♂	mf 2/11/09						
10	A	C11	10	0 10D	—	—	—	
	B	C12	10	0 10D	—	—	—	
	♀	NOT applicable						
	♂	mf 2/11/09						
Organisms loaded by: BR		Checked by:	3A	BR/KMS	JD	BB	VMM	MF

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

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

Comments: A Transfer pipet error 2-4-09 JH

Investigators' Signatures
Marshall Faircloth
Bruce Alexander
VMM M. Spencer
Amelia Rankin
James Daniels
Reviewer: Loretta C. Wolfe

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.09	7.81	8.39
96 hour: 8.07	7.81	8.39

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Revised 7/15/2008 mf

Appendix C. (continued)

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

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

Test Page 2 of 2

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

Test Beginning: Date: 2/3/09 Time: 1350
Test Ending: Date: 2-7-09 Time: 0915

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L %	Replicate	Test Hour	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control	A	0 hr	7.9	24.0	7.9	0.283	
	B	24 hr	7.8	24.0	7.5	0.295	
	A ¢	48 hr BR	8.1	24.0	7.4	0.297	
	A ¢	48 hr AR	8.1	24.2	7.9	0.298	
	B	72 hr	7.8	23.1	7.0	0.309	
	A	96 hr	8.2	24.1	7.0	0.319	
6	A	0 hr	7.9	24.2	8.1	11.5	
	B	24 hr	7.9	24.0	7.3	11.6	
	A	48 hr BR	8.1	24.0	7.3	11.7	
	A	48 hr AR	8.1	24.2	7.4	11.4	
	B	72 hr	7.8	23.0	6.9	12.0	
	A	96 hr	8.1	24.1	7.0	12.4	
7	A	0 hr	7.9	24.1	8.2	12.5	
	B	24 hr	8.0	24.0	7.2	13.4	
	A	48 hr BR	8.1	24.0	6.8	13.4	
	A	48 hr AR	8.0	24.2	7.4	13.3	
	B	72 hr	7.8	23.2	6.5	13.9	
	A	96 hr	8.1	24.6	6.7	14.3	
8	A	0 hr	7.9	24.2	8.2	15.2	
	B	24 hr	7.9	24.0	6.8	15.3	
	A	48 hr BR	8.1	24.0	6.9	15.4	
	B	48 hr AR	8.0	24.1	7.4	15.0	
	B	72 hr	7.8	23.1	6.6	15.6	
	A	96 hr	8.1	24.0	6.6	16.2	
9	A	0 hr	7.9	24.2	8.1	16.9	
	B	24 hr	7.9	24.0	6.6	16.9	
	B	48 hr BR	8.1	24.0	7.0	16.9	
	B	48 hr AR	8.0	24.1	7.3	16.0	
	B	72 hr	7.8	22.7	6.7	16.9	
	B	96 hr	8.1	24.1	6.9	17.3	
10	A	0 hr	7.9	24.3	8.0	18.6	
	B	24 hr	7.9	24.0	6.2	18.6	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Marshall Faircloth
Kimm. Spencer
Bruce Alexander
Amelia Rankin
James Dysart
Reviewed By: Loretta C Wolfe

Measured by:
0 hr: MF
24 hr: BA
48 hr BR: KMS
48 hr AR: KMS
72 hr: BA
96 hr: MP

Measure/record salinity for marine tests

Comments:

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Revised 07/15/2008 MF

Appendix C. (continued)

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

DATE: 2-3-09 DURATION: 48 hr TOXICANT: NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
1.50	20	0
2.00	20	0
2.50	20	20
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.24
95% CONFIDENCE LIMITS ARE NOT RELIABLE.

***Cyprinella leedsi* Acute Standard Reference Toxicant Test**

DATE: 2-3-09 DURATION: 48 hr TOXICANT: NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
6.00	20	0
7.00	20	2
8.00	20	7
9.00	20	18
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 8.09
95% LOWER CONFIDENCE: 7.81
95% UPPER CONFIDENCE: 8.39

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 8/2/09

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia	150	4 DAYS	MS090129	25°C	7.9	20‰
Menidia beryllina	150	17 DAYS 11 DAYS STR	MS090122	25°C	7.9	20‰
						Hardness
Cyprinella leedsi	200	11 DAYS	CL090122	25°C	7.8	80mg/L
Pimephales promelas	150	9 DAY	FM090124	25°C	7.8	80mg/L

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Notes:

Thank you for your order.

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Appendix D. (continued)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 2/16/09

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia						
Menidia beryllina						
						Hardness
Cyprinella leedsi	150	10 DAYS	CL090216	25°C	7.8 s.u.	80 mg/L
Pimephales promelas						

Packed by: [signature]

Shipped Via: FedEx

Notes:

Thank you for your order.

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Appendix E. Chemical Analyses performed on the effluent from the City of Tallahassee Sam O. Purdom Generating Station Outfall D-001, sampled on February 16, 2009.

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
2/16/2009 9:45	EFFLUENT	AGP/LN	Algal Growth Potential	87		mg DryWt/L	0.3	0.9
2/16/2009 9:45	EFFLUENT	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.65	I	ug/L	0.55	1.7
2/16/2009 9:45	EFFLUENT	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.76	I	mg/L	0.2	2
2/16/2009 9:45	EFFLUENT	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.36	I	ug/L	0.24	0.71
2/16/2009 9:45	EFFLUENT	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
2/16/2009 9:45	EFFLUENT	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
2/16/2009 9:45	EFFLUENT	Metals	Magnesium	18.5		mg/L	0.04	0.16
2/16/2009 9:45	EFFLUENT	Metals	Nickel	0.9	I	ug/L	0.25	1
2/16/2009 9:45	EFFLUENT	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/16/2009 9:45	EFFLUENT	Metals	Chromium	0.59	I	ug/L	0.3	1.2
2/16/2009 9:45	EFFLUENT	Metals	Aluminum	60	U	ug/L	60	240
2/16/2009 9:45	EFFLUENT	Metals	Arsenic	0.5	I	ug/L	0.25	1
2/16/2009 9:45	EFFLUENT	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/16/2009 9:45	EFFLUENT	Metals	Calcium	51.6		mg/L	0.075	0.3
2/16/2009 9:45	EFFLUENT	Metals	Iron	59	I	ug/L	30	120
2/16/2009 9:45	EFFLUENT	Metals	Zinc	8.6	I	ug/L	5	20
2/16/2009 9:45	EFFLUENT	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/16/2009 9:45	EFFLUENT	Metals	Copper	3.15		ug/L	0.5	0.5
2/16/2009 9:45	EFFLUENT	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/16/2009 9:45	EFFLUENT	Nutrients	Kjeldahl Nitrogen	0.7		mg N/L	0.16	0.4
2/16/2009 9:45	EFFLUENT	Nutrients	NO2NO3-N	4.8		mg N/L	0.04	0.1
2/16/2009 9:45	EFFLUENT	Nutrients	TSS	4	U	mg/L	4	16
2/16/2009 9:45	EFFLUENT	Nutrients	Total-P	0.066		mg P/L	0.02	0.06
2/16/2009 9:45	EFFLUENT	Nutrients	O-Phosphate-P	0.05		mg P/L	0.004	0.01
2/16/2009 9:45	EFFLUENT	Nutrients	Ammonia-N	0.028		mg N/L	0.01	0.02
2/16/2009 9:45	EFFLUENT	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
2/16/2009 9:45	EFFLUENT	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
2/16/2009 9:45	EFFLUENT	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
2/16/2009 9:45	EFFLUENT	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
2/16/2009 9:45	EFFLUENT	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
2/16/2009 9:45	EFFLUENT	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
2/16/2009 9:45	EFFLUENT	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
2/16/2009 9:45	EFFLUENT	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
2/16/2009 9:45	EFFLUENT	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
2/16/2009 9:45	EFFLUENT	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
2/16/2009 9:45	EFFLUENT	Pesticides	Metolachlor	0.5	UJ	ug/L	0.5	2
2/16/2009 9:45	EFFLUENT	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
2/16/2009 9:45	EFFLUENT	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
2/16/2009 9:45	EFFLUENT	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
2/16/2009 9:45	EFFLUENT	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
2/16/2009 9:45	EFFLUENT	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
2/16/2009 9:45	EFFLUENT	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
2/16/2009 9:45	EFFLUENT	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
2/16/2009 9:45	EFFLUENT	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
2/16/2009 9:45	EFFLUENT	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
2/16/2009 9:45	EFFLUENT	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
2/16/2009 9:45	EFFLUENT	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
2/16/2009 9:45	EFFLUENT	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
2/16/2009 9:45	EFFLUENT	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
2/16/2009 9:45	EFFLUENT	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
2/16/2009 9:45	EFFLUENT	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
2/16/2009 9:45	EFFLUENT	Pesticides	Alachlor	0.6	UJ	ug/L	0.6	2.4
2/16/2009 9:45	EFFLUENT	Pesticides	Ethoprop	0.1	UJ	ug/L	0.1	0.4
2/16/2009 9:45	EFFLUENT	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
2/16/2009 9:45	EFFLUENT	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
2/16/2009 9:45	EFFLUENT	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
2/16/2009 9:45	EFFLUENT	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
2/16/2009 9:45	EFFLUENT	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
2/16/2009 9:45	EFFLUENT	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
2/16/2009 9:45	EFFLUENT	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
2/16/2009 9:45	EFFLUENT	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
2/16/2009 9:45	EFFLUENT	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
2/16/2009 9:45	EFFLUENT	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
2/16/2009 9:45	EFFLUENT	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
2/16/2009 9:45	EFFLUENT	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
2/16/2009 9:45	EFFLUENT	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
2/16/2009 9:45	EFFLUENT	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
2/16/2009 9:45	EFFLUENT	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
2/16/2009 9:45	EFFLUENT	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
2/16/2009 9:45	EFFLUENT	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	62
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.2
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	62
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	UJ	ug/L	3.1	12
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Pentachlorophenol	3.1	UJ	ug/L	3.1	12
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	U	ug/L	5.1	21
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.2
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Di-n-octyl phthalate	1	UJ	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.1

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	12
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.2
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	41
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	12
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Dimethyl phthalate	10	UJ	ug/L	10	41
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	12
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.2
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	12
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	U	ug/L	41	160
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	62
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	410
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	21
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.1
2/16/2009 9:45	EFFLUENT	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	12
2/16/2009 9:45	EFFLUENT	Field Parameter	Total Residual Chlorine	0		mg/L		
2/16/2009 9:45	EFFLUENT	Field Parameter	Temperature	18.3		C		
2/16/2009 9:45	EFFLUENT	Field Parameter	Specific Conductance	784		umhos/cm		
2/16/2009 9:45	EFFLUENT	Field Parameter	pH	7.67				
2/16/2009 9:45	EFFLUENT	Field Parameter	Sample Depth	2		ft		
2/16/2009 9:45	DUPLICATE	Metals	Magnesium	18.3		mg/L	0.04	0.16
2/16/2009 9:45	DUPLICATE	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/16/2009 9:45	DUPLICATE	Metals	Nickel	0.84	I	ug/L	0.25	1
2/16/2009 9:45	DUPLICATE	Metals	Calcium	51		mg/L	0.075	0.3
2/16/2009 9:45	DUPLICATE	Metals	Zinc	126		ug/L	5	20

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
2/16/2009 9:45	DUPLICATE	Metals	Chromium	0.58	I	ug/L	0.3	1.2
2/16/2009 9:45	DUPLICATE	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/16/2009 9:45	DUPLICATE	Metals	Copper	3.15		ug/L	0.5	0.5
2/16/2009 9:45	DUPLICATE	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/16/2009 9:45	DUPLICATE	Metals	Aluminum	60	U	ug/L	60	240
2/16/2009 9:45	DUPLICATE	Metals	Iron	62	I	ug/L	30	120
2/16/2009 9:45	DUPLICATE	Metals	Arsenic	0.42	I	ug/L	0.25	1
2/16/2009 9:45	DUPLICATE	Metals	Lead	0.29	I	ug/L	0.2	0.8
2/16/2009 9:45	DUPLICATE	Nutrients	O-Phosphate-P	0.05		mg P/L	0.004	0.01
2/16/2009 9:45	DUPLICATE	Nutrients	Total-P	0.062		mg P/L	0.02	0.06
2/16/2009 9:45	DUPLICATE	Nutrients	NO2NO3-N	4.8		mg N/L	0.04	0.1
2/16/2009 9:45	DUPLICATE	Nutrients	Kjeldahl Nitrogen	0.66		mg N/L	0.16	0.4
2/16/2009 9:45	DUPLICATE	Nutrients	Ammonia-N	0.026		mg N/L	0.01	0.02
2/16/2009 9:45	DUPLICATE	Pesticides	Gamma-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 9:45	DUPLICATE	Pesticides	Heptachlor Epoxide	0.022	U	ug/L	0.022	0.088
2/16/2009 9:45	DUPLICATE	Pesticides	Toxaphene	0.82	U	ug/L	0.82	3.3
2/16/2009 9:45	DUPLICATE	Pesticides	Alachlor	0.66	UJ	ug/L	0.66	2.6
2/16/2009 9:45	DUPLICATE	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.44
2/16/2009 9:45	DUPLICATE	Pesticides	Endosulfan Sulfate	0.022	U	ug/L	0.022	0.088
2/16/2009 9:45	DUPLICATE	Pesticides	Ethion	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	Ethoprop	0.11	UJ	ug/L	0.11	0.44
2/16/2009 9:45	DUPLICATE	Pesticides	Hexazinone	0.11	U	ug/L	0.11	0.44
2/16/2009 9:45	DUPLICATE	Pesticides	Norflurazon	0.16	U	ug/L	0.16	0.64
2/16/2009 9:45	DUPLICATE	Pesticides	Prometryn	0.16	U	ug/L	0.16	0.64
2/16/2009 9:45	DUPLICATE	Pesticides	Bromacil	0.22	U	ug/L	0.22	0.88
2/16/2009 9:45	DUPLICATE	Pesticides	Fonofos	0.11	U	ug/L	0.11	0.44
2/16/2009 9:45	DUPLICATE	Pesticides	Endrin	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	Azinphos Methyl	0.22	U	ug/L	0.22	0.88
2/16/2009 9:45	DUPLICATE	Pesticides	Naled	0.87	UJ	ug/L	0.87	3.5
2/16/2009 9:45	DUPLICATE	Pesticides	Aldrin	0.011	U	ug/L	0.011	0.044
2/16/2009 9:45	DUPLICATE	Pesticides	DDD-p,p'	0.022	U	ug/L	0.022	0.088
2/16/2009 9:45	DUPLICATE	Pesticides	Delta-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 9:45	DUPLICATE	Pesticides	Endosulfan I	0.022	U	ug/L	0.022	0.088
2/16/2009 9:45	DUPLICATE	Pesticides	Endosulfan II	0.022	U	ug/L	0.022	0.088

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
2/16/2009 9:45	DUPLICATE	Pesticides	Endrin Aldehyde	0.022	U	ug/L	0.022	0.088
2/16/2009 9:45	DUPLICATE	Pesticides	Methoxychlor	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	Ametryn	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	Atrazine	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	Diazinon	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	Malathion	0.16	U	ug/L	0.16	0.64
2/16/2009 9:45	DUPLICATE	Pesticides	Metalaxyl	0.27	U	ug/L	0.27	1.1
2/16/2009 9:45	DUPLICATE	Pesticides	Mevinphos	0.22	U	ug/L	0.22	0.88
2/16/2009 9:45	DUPLICATE	Pesticides	Parathion Ethyl	0.16	U	ug/L	0.16	0.64
2/16/2009 9:45	DUPLICATE	Pesticides	Simazine	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	DDE-p,p'	0.022	U	ug/L	0.022	0.088
2/16/2009 9:45	DUPLICATE	Pesticides	Butylate	0.22	UJ	ug/L	0.22	0.88
2/16/2009 9:45	DUPLICATE	Pesticides	Chlorpyrifos Ethyl	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	Chlorpyrifos Methyl	0.11	U	ug/L	0.11	0.44
2/16/2009 9:45	DUPLICATE	Pesticides	Fenamiphos	0.22	U	ug/L	0.22	0.88
2/16/2009 9:45	DUPLICATE	Pesticides	Parathion Methyl	0.11	U	ug/L	0.11	0.44
2/16/2009 9:45	DUPLICATE	Pesticides	Phorate	0.055	U	ug/L	0.055	0.22
2/16/2009 9:45	DUPLICATE	Pesticides	Beta-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 9:45	DUPLICATE	Pesticides	Metolachlor	0.55	UJ	ug/L	0.55	2.2
2/16/2009 9:45	DUPLICATE	Pesticides	Alpha-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 9:45	DUPLICATE	Pesticides	Chlordane	0.22	U	ug/L	0.22	0.88
2/16/2009 9:45	DUPLICATE	Pesticides	DDT-p,p'	0.033	U	ug/L	0.033	0.13
2/16/2009 9:45	DUPLICATE	Pesticides	Dieldrin	0.022	U	ug/L	0.022	0.088
2/16/2009 9:45	DUPLICATE	Pesticides	Heptachlor	0.011	U	ug/L	0.011	0.044
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	59
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Naphthalene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Anthracene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Benzo(a)anthracene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Benzo(a)pyrene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Diethyl phthalate	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Isophorone	0.99	U	ug/L	0.99	4

Appendix E. (continued)

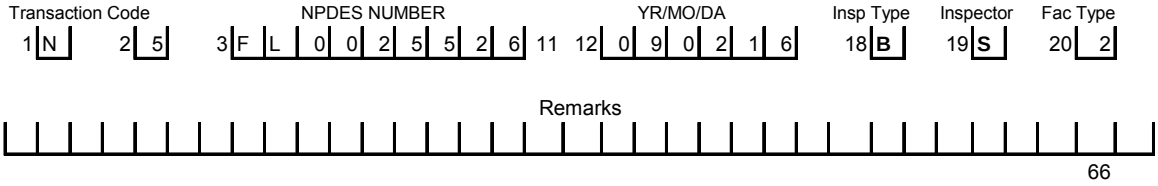
Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2,4-Dimethylphenol	9.9	U	ug/L	9.9	40
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Benzidine	99	U	ug/L	99	400
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	20
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Dimethyl phthalate	9.9	UJ	ug/L	9.9	40
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2,4-Dinitrotoluene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	7.9
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	UJ	ug/L	3	12
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Di-n-octyl phthalate	0.99	UJ	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	59
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	U	ug/L	40	160
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Chrysene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Phenanthrene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Phenol	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2,6-Dinitrotoluene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	7.9
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	59
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Fluoranthene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Fluorene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Hexachlorobenzene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	7.9
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2-Chlorophenol	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Acenaphthene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Benzo(b)fluoranthene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Benzo(k)fluoranthene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.99	U	ug/L	0.99	4

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Pyrene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2-Chloronaphthalene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2-Nitrophenol	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Acenaphthylene	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	20
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	7.9
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	Pentachlorophenol	3	UJ	ug/L	3	12
2/16/2009 9:45	DUPLICATE	Priority Organic Pollutants	2,4-Dichlorophenol	0.99	U	ug/L	0.99	4
2/16/2009 9:45	DUPLICATE	Field Parameter	Temperature	18.3		C		
2/16/2009 9:45	DUPLICATE	Field Parameter	Total Residual Chlorine	0		mg/L		
2/16/2009 9:45	DUPLICATE	Field Parameter	Sample Depth	2		ft		
2/16/2009 9:45	DUPLICATE	Field Parameter	pH	7.67				
2/16/2009 9:45	DUPLICATE	Field Parameter	Specific Conductance	784		umhos/cm		

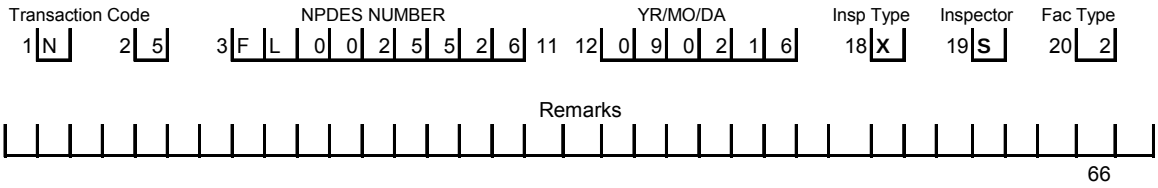
The Bioassay of City of Tallahassee Sam O. Purdom Generating Station effluent sampled on February 16, 2009. NPDES #FL0015526.

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



The Priority Pollutants Analysis of City of Tallahassee Sam O. Purdom Generating Station effluent sampled on February 16, 2009. NPDES #FL0015526.

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



Biological Analyses of City of Tallahassee Sam O. Purdom Generating Station effluent sampled on February 16, 2009. NPDES #FL0015526.

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

