

Effluent Quality Assessment

Reliant Energy Indian River Power Plant

Brevard County

NPDES #FL0000680

Sampled August 16, 2010

October 2010

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

CONTENTS

Introduction

Methods

Results and Discussion

Literature Cited

Tables

Table 1 Measured algal growth potential (AGP)

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

Appendices

Appendix A Chain of Custody

Appendix B Bioassay Bench Sheets

Appendix C SRT Bench Sheets and Statistical Analyses

Appendix D Organism Receipt

Appendix E Chemical Analyses of Effluent

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

Appendix G EPA End Sheet

Reliant Energy Indian River Power Plant, 7800 US Highway 1, Titusville, Brevard County, Florida. NPDES #FL0000680. Effluent grab samples for bioassay, microbiological and chemical analyses for this facility were collected on August 16, 2010.

Introduction

Reliant Energy Indian River Power Plant is an electric power generating facility consisting of three steam electric-power generating units having a total nameplate rating of 640 megawatts. The facility discharges once-through cooling water (OTCW), boiler blowdown and non-industrial stormwater runoff to the Indian River Lagoon. (See Appendix F for detailed facility information provided by William Hesser of FDEP Central District.)

Methods

Samples were collected from the EFF-1 NPDES sampling point for Outfall D-001 by Phil Kane, William Hesser, and Milton Andrade (FDEP Central District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/bars/sas/sop/index.htm.

See Appendix A for the completed chain of custody form.

The 96-hour acute definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_03, TA07_04, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

The bioassay sample was aerated for 30 minutes at a rate of approximately 100 bubbles per minute to increase the dissolved oxygen (DO) from 5.0 mg/L to 6.6 mg/L.

Results and Discussion

- **Toxicity Test Results**
  Tests were performed August 17 - 21, 2010.

Americamysis bahia 96-hour acute definitive bioassay –	LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours
Menidia beryllina 96-hour acute definitive bioassay –	LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours

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

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

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

- **Algal Growth Potential**
  The effluent Algal Growth Potential (AGP) was 11.2 AJ (A - Value reported is the mean of two or more determinations, J - Estimated value) 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). The ratio (22.7:1) of total nitrogen to total phosphorus suggests that the effluent is phosphorus limited. The ratio (18.0:1) of inorganic nitrogen to orthophosphate suggests that the effluent is co-limited by both phosphorus and nitrogen. (Maloney et al. 1978).

A lab duplicate was analyzed, and the results fell outside of the acceptable deviation range. See Non-Conformance Report (NCR) 3524 for more information.

See Table 1 for AGP results.

- **Chemistry Results**
  Total residual chlorine concentrations detected in the bioassay sample in the laboratory (0.05 mg/L) are most likely a false positive due to interference in the sample, as the facility does not use chlorine in their treatment process. Total ammonia was not detected in the bioassay sample in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.049 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was ≤ 0.02 mg/L.

  Aluminum was detected in the effluent at levels that comply with Class III marine water quality criteria (62-302.530, F.A.C.). Arsenic, chromium, iron, lead, nickel and vanadium were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Copper (5.9 F* µg/L; limit ≤ 3.7 µg/L, 62-302.500 (23), F.AC.), iron (330 I** µg/L; limit ≤300 µg/L, 62-302.500(38), F.A.C.) and dissolved oxygen (DO) (3.5 mg/L; limit ≥ 4.0 mg/L, 62-302.500 (30), F.A.C.) exceeded the Class III criteria for marine water. Copper and nickel were detected in the field blank.

  *F - Analyte was detected in both sample and field blank
  **I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

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

Conclusion

The effluent sample collected from the EFF-1 NPDES sample collection point for Outfall D-001 for this facility on August 16, 2010, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The effluent AGP result was slightly greater than the "problem” threshold for marine receiving waters suggesting that nutrient enrichment may be an issue. Effluent water quality samples collected on August 16, 2010, exceeded water quality standards for copper, iron, and dissolved oxygen.

Literature Cited

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

Table 1. Measured algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus for samples collected from the Reliant Energy Indian River Power Plant on August 16, 2010.

Reliant Energy Indian River Power Plant NPDES# FL0000680			
Location	**AGP (measured)**	**Inorganic N:P ratio**	**Total N:P ratio**
Effluent	11.2 AJ	18.0	22.7

A - Value reported is the mean of two or more determinations
J - Estimated value

Table 2. Effluent limits, Class III Criteria for predominantly marine waters and chemical and microbiological data for samples collected from the Reliant Energy Indian River Power Plant on August 16, 2010.

Reliant Energy Indian River Power Plant NPDES # FL0000680	Class III Criteria	Effluent Limits	Effluent	
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1,500	-	346	
Arsenic	≤ 50	-	2.3	I
Cadmium	≤ 8.8	-	0.09	U
Calcium (mg/L)	-	-	321	
Chromium-III	-	-	1.3	I
Copper	≤ 3.7	-	5.9	F
Iron	≤ 300	-	330	I
Lead	≤ 8.5	-	0.99	I
Magnesium (mg/L)	-	-	997	
Mercury	≤ 0.025	-	-	
Nickel	≤ 8.3	-	2.1	IF
Selenium	≤ 71	-	0.6	U
Silver	≤ 2.3	-	0.075	U
Sodium (mg/L)	-	-	8,330	
Vanadium	-	-	8.5	I
Zinc	≤ 86	-	15	U
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.004	I
Total Phosphorus	-	Report	0.076	A
Total Ammonia	-	-	0.049	
Un-ionized Ammonia	-	-	≤ 0.02	c
Nitrate and Nitrite	-	-	0.023	
Total Kjeldahl Nitrogen	-	-	1.7	
Organic Nitrogen	-	-	1.651	c
Total Nitrogen	-	-	1.723	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	-	3.5	
pH (SU)	6.5 - 8.5	Report	8.0	
Conductivity (µmhos/cm)	-	-	43,125	
Temperature (°C)	-	Report	31.1	
Salinity	-	-	26.8	c
Total Residual Chlorine (mg/L)	≤ 0.01	-	0.05	£
Chlorophyll *a* (µg/L) - Corrected	-	-	21	
Phaeophytin (µg/L)	-	-	6.1	
Total Suspended Solids (mg/L)	-	≤ 100.0 d	48	
CBOD, 5 day (mg/L), N - inhibited	-	-	2.7	J
Flow (MGD) (Outfall D-001)	-	≤ 820.0 d	534.58	a
Flow (MGD) (Outfall D-016)	-	Report	0.05	a
Hardness (mg $CaCO_3$)	-	-	4907.18	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	-	5	BQ

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
d - Daily average
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
F - Analyte was detected in both sample and field blank
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
Q - Sample held beyond normal holding time
T - Value reported is less than the criterion of detection
U - Material analyzed for but not detected; value reported is the method detection limit
¥ - Fecal coliform analysis performed by Central lab
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
£ - Measured in Central labs and entered into Tox Sheets

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-08-16-25
FYI3 for Reliant Energy

Requester: Cari Butler
Field Report Prepared By: KANE, MORRIS
Customer: CEN-DIST
Project ID: FYI3
PMAS: 1143
Collected By: KANE, HESSER, Andrade (Maney*)
Send Final Report To: ~~Gary Miller~~ Phil Kane
Sampling Agency: FDEP CENTRAL DISTRICT
* RRI present during sampling

Lab ID *	Location: RELIANT ENERGY 7800 S. US 1 TITUSVILLE, FL.			☐ Comp ☑ Grab	Collection (begin) Date 8/16/10 Time 09:36 (Eastern) Central	Collection (end) PK Date Time Eastern Central		Bottle Group(s)**
	Field ID: RELI			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 3.46	Storet Station Number		
	Matrix (include type e.g. Salt, Fresh, etc): EFFLUENT	Temp (C): 31.10	pH: 7.98	Sample Depth ☐ m ☐ ft N/A	43.125	☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	NPDES Number: FL0000680	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: pH<2 in acid preservative				
Lab ID *	Location: RELIANT ENERGY 7800 S. US1 TITUSVILLE, FL			☐ Comp ☑ Grab	Collection (begin) Date 8/16/10 Time 08:57 (Eastern) Central	Collection (end) PK Date Time Eastern Central		Bottle Group(s)**
	Field ID: RELI			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 3.46	Storet Station Number		
	Matrix (include type e.g. Salt, Fresh, etc): EFFLUENT	Temp (C): 31.0	pH: 7.98	Sample Depth ☐ m ☐ ft N/A	43.125	☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	NPDES Number: FL0000680	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: BIOASSAY				
Lab ID *	Location: RELIANT ENERGY 7800 S. US1 TITUSVILLE, FL			☐ Comp ☑ Grab	Collection (begin) Date 8/16/10 Time 09:34 (Eastern) Central	Collection (end) PK Date Time Eastern Central		Bottle Group(s)**
	Field ID: RELI			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number		
	Matrix (include type e.g. Salt, Fresh, etc): BLANK	Temp (C)	pH	Sample Depth ☐ m ☐ ft N/A	pH<2 MA	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number: FL0000680	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: pH<2 in acid preservative Oil & Grease blanks collected with other blanks.				
Lab ID *	Location: RELIANT ENERGY 7800 S. US1 TITUSVILLE, FL.			☐ Comp ☑ Grab	Collection (begin) Date 8/16/10 Time 10:12 (Eastern) Central	Collection (end) PK Date Time Eastern Central		Bottle Group(s)**
	Field ID: RELI			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number		
	Matrix (include type e.g. Salt, Fresh, etc): EFFLUENT	Temp (C)	pH	Sample Depth ☐ m LAB POINT ☐ PK		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number: FL0000680	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: O&G TSS + GREASE } EFF #2 UNIT 3 BOILER EFFLUENT IN LAB				

Relinquished By	Date/Time	Shipping Method	Received By	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
KANE	8/16/10	FEDEX	Tahmoures Ebrahimi	08-17-10 9:20				

* Shaded Areas for Lab use only

** Please see reverse side for Bottle Group information

last revised October 1, 2003

Page 1 of 3

4 Biotoxicity Rec'd in Tox 8/17/10 10:46 J.B.

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: Reliant Energy

Address: 7800 S. U.S. Hwy #1 and King's Highway

City: Titusville **County:** Brevard

Contact/District: Dr. Phil Kane / Central

NPDES Permit #: FL 0000680

LIMS Job #: TIH-2010-08-17-52 **LIMS Sample #:** 1292533

Lims Data Entry: 8-26-2010 MF Data Entry Verification: 8.26.10 JD

Sample Collection: Date: 8.16.10 Time: 08:57

Hold Time Start: Date: 8.16.10 Time: 08:57

Comments:

Initial sample handling:

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

PH adjustment: ☐ yes ☑ no Initial pH: ____ NaOH ____N HCl ____N ____Drops mL Final pH: ____

Aeration: ☒ yes ☐ no Initial DO: 5.0 mg/L Final DO: 6.6 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: ____

Sample Validation:

Instructions: Check yes or no. Fill in temperatures.

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

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

Investigators' Signatures:

	Initials:
Marshall Faircloth	MF
James Daniel	JD
Jackie Shum	JS
Brie Alexander	BA

REVIEWER: Liz Millan

Diluent/Control Batch#:				8.17.10	8.17.10				
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water (ASW) NSW Test 1	Salt Water (ASW) NSW Test 2	Other:	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A	NOT measured		MF
Lab Total Residual Cl_2 (mg/L):				<0.03	<0.03		0.05	JD	MF
Alkalinity (mg/L as $CaCO_3$):				200	200		163	BA	JS
Hardness (mg/L as $CaCO_3$):				—	—		—	—	—
Total Ammonia (mg/L as N):				<0.051	<0.051		<0.051	MF	JS
Conductivity: ☐ µmhos ☒ mmhos				40.3	40.6		41.7	JD	MF
Salinity (ppth):				25.6	25.7		26.8	JS	MF

V 1.8 1/13/10

Appendix B. (continued)



FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1292533 SOP#: TA 07 03 Test # 1 of 2

Test Species: Batch #: 8.17.10 Age: 5d 4.5
- ☐ *Ceriodaphnia dubia*
- ☐ *Cyprinella leedsi*
- ☐ *Pimephales promelas*
- ☐ *Menidia beryllina*
- ☒ *Americamysis bahia*
- ☐ Other:_____

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

Diluent (Batch # 8.17.10)
☒ ASW ☐ 20% DMW ☐ MHW ☐ Well

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

Test Duration: ☐ 48 hr ☒ 96 hr ☐ ___hr

Test Started: Date 8/17/10 Time 1400

Test Ended: Date 8-21-10 Time 0900

Chamber Size 400 ml
Test Volume: 300 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctl	A	Tox 1	5	5	5	5	5	5
	B	Tox 2	5	5	4D	4	4	4
	C	Tox 3	5	5	5	5	5	5
	D	Tox 4	5	5	5	5	5	5
6.25%	A	Tox 5	5	5	5	5	5	5
	B	Tox 6	5	5	5	5	5	5
	C	Tox 7	5	5	4D	4	4	4
	D	tox 8	5	5	5	5	5	5
12.5%	A	Tox 9	5	5	4D	4	4	4
	B	tox 10	5	5	5	5	5	5
	C	tox 11	5	5	5	5	5	5
	D	tox 12	5	5	5	5	5	5
25%	A	Tox 13	5	5	5	5	5	5
	B	Tox 14	5	5	5	5	5	5
	C	tox 15	5	5	5	5	5	5
	D	Tox 16	5	5	5	5	5	5
50%	A	tox 17	5	5	5	5	5	5
	B	tox 18	5	5	5	5	5	5
	C	tox 19	5	5	5	5	5	5
	D	Tox 20	5	5	5	5	5	5
100%	A	Tox 21	5	5	5	5	5	5
	B	Tox 22	5	5	5	5	5	5
	C	tox 23	5	5	5	5	5	5
	D	Tox 24	5	5	5	5	5	5
Checked or Verified by:			JS	JS	JS	MF	MF	MF

Food
- ☐ YCT Batch#_____
- ☐ P. subcapitata Batch#_____
- ☒ Artemia Lot# 23413

Feeding and Artemia Batch #
- ☒ 0 hr 117-10 ☒ Prior to Test
- ☑ 24 hr 118-10
- ☒ 48 hr 119-10 ☒ Prior to Renewal
- ☒ 72 hr 120-10

Temperature Range (°C)
Incubator # 2
min. 24.8 max. 25.4 mean —
Incubator #___
min._____max._____mean_____
Waterbath #___
min._____max._____mean_____
Room B246
min. 24.5 max. 26.6 mean —
Light intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

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

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

Comments:

V. 2.5 1-13-10

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

Page 80

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1292533 | SOP#: TA 07 04 | Test # 2 of 2

Test Species:
Batch #: 8.17.10 Age: 3 days
- ☐ *Ceriodaphnia dubia*
- ☐ *Cyprinella leedsi*
- ☐ *Pimephales promelas*
- ☒ *Menidia beryllina*
- ☐ *Americamysis bahia*
- ☐ Other:_____

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

Diluent (Batch # 8.17.10)
☒ ASW ☐ 20% DMW ☐ MHW ☐ Well

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

Test Duration: ☐ 48 hr ☒ 96 hr ☐ ___hr

Test Started: Date 8.17.10 Time 1330

Test Ended: Date 8.21.10 Time 0930

Chamber Size 1000 ml
Test Volume: 400 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctl	A	F 1	10	10	10	10	10	8 (A)
	B	F 2	10	10	10	10	10	8 (A)
6.25%	A	F 3	10	10	10	10	10	8
	B	F 4	10	10	10	10	10	8
12.5%	A	F 5	10	10	10	10	10	10
	B	F 6	10	10	10	10	10	10
25%	A	F 7	10	10	10	10	10	10
	B	F 8	10	10	10	10	10	10
50%	A	F 9	10	10	10	10	10	10
	B	F 10	10	10	10	10	10	10
100%	A	F 11	10	10	10	10	10	10
	B	F 12	10	10	10	10	10	10
Checked or Verified by:			~~JS~~	~~JS~~	~~JS~~	MF	98	MF

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

Feeding and Artemia Batch #
- ☒ 0 hr 8.11-10 ☒ Prior to Test
- ☐ 24 hr____
- ☒ 48 hr 8.19-10 ☒ Prior to Renewal
- ☐ 72 hr ~~8.20.10~~ JS

Temperature Range (°C)
Incubator # 2
min. 24.8 max. 25.4 mean ___

Incubator #___
min.____max.____mean____

Waterbath #___
min.____max.____mean____

Room B246
min. 24.5 max. 26.6 mean ___

Light Intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

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

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

Comments: (A) recorded myzid ct. in results spec MF 8-21-10

V. 2.5 1-13-10

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

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1212533 Test # 1 of 2

Test Species:

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

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

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity* (ppth)
	A	0 hr	8.4	24.9	6.6	40.3	25.6
	B	24 hr	8.3	25.3	6.6	42.0	26.8
6.1	A	48 hr BR	8.0	25.2	5.1	42.2	26.9
	A	48 hr AR	8.1	24.0	6.4	41.8	26.6
	D B MF	72 hr	8.0	24.8	6.1	41.6	27.0
	A	96 hr	7.8	24.9	4.2	43.6	28.1
	A	0 hr	8.4	25.0	6.7	41.8	26.8
	B	24 hr	8.3	25.0	6.6	42.4	27.4
6.25%	A	48 hr BR	8.0	25.2	4.5	43.0	27.6
	A	48 hr AR	8.1	24.0	6.3	42.3	27.2
	D B MF	72 hr	7.9	24.8	5.4	42.7	27.4
	A	96 hr	7.8	24.8	4.1	43.7	28.1
	A	0 hr	8.3	25.1	6.7	41.8	26.8
	B	24 hr	8.3	24.7	6.7	42.4	27.4
12.5%	A	48 hr BR	8.0	25.2	4.0	43.1	27.8
	A	48 hr AR	8.1	25.4	6.3	42.5	27.3
	D B MF	72 hr	8.0	24.9	5.4	42.5	27.3
	A	96 hr	7.9	25.0	4.3	43.7	28.2
	A	0 hr	8.3	25.1	6.8	42.0	27.0
	B	24 hr	8.3	24.7	6.7	42.9	27.6
25%	A	48 hr BR	8.1	24.7	4.5	43.4	27.9
	A	48 hr AR	8.1	25.4	6.6	42.6	27.5
	D B MF	72 hr	8.0	24.8	5.5	42.3	27.2
	A	96 hr	7.9	24.9	4.8	43.6	28.1
	A	0 hr	8.2	25.3	6.7	42.3	27.1
	B	24 hr	8.2	24.7	6.8	43.3	27.9
50%	A	48 hr BR	8.0	24.6	5.1	44.0	28.4
	A	48 hr AR	8.0	25.2	6.7	43.0	27.7
	D B MF	72 hr	8.0	24.8	5.7	43.1	27.7
	A	96 hr	7.8	25.2	4.3	43.7	28.2
	A	0 hr	7.9	25.7	6.6	43.1	27.3
	B	24 hr	8.1	24.6	6.8	43.2	27.7
100%	A	48 hr BR	8.0	24.9	5.9	44.2	28.6
	A	48 hr AR	7.9	25.1	5.9	43.7	28.0
	D B MF	72 hr	7.9	25.1	5.6	43.3	27.8
	A	96 hr	7.7	25.0	4.8	44.0	28.4
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

Measured By:
0 hr: JD
24 hr: JD
48 hr BR: JD
48 hr AR: JD
72 hr: MF
96 hr: MF

Page 82

V. 2.3 1-13-10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1292533 Test # 2 of 2

Test Species:

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

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity* (ppth)
	A	0 hr	8.4	25.1	6.6	40.6	25.7
	B	24 hr	8.3	24.9	6.3	41.7	26.5
Ctr	A	48 hr BR	8.2	25.6	5.9	42.1	26.7
	A	48 hr AR	8.1	25.0	6.60	42.1	26.7
	B	72 hr	8.1	25.6	5.7	42.0	27.3
	A	96 hr	8.0	25.3	6.0	43.6	28.1
	A	0 hr	8.4	25.0	6.7	41.8	26.8
	B	24 hr	8.3	25.1	6.2	42.5	27.3
6.25%	A	48 hr BR	8.1	25.8	5.8	43.0	27.7
	A	48 hr AR	8.1	24.9	6.7	42.4	26.9
	B	72 hr	8.0	25.7	5.8	42.8	27.5
	A	96 hr	8.0	25.2	6.1	43.7	28.1
	A	0 hr	8.4	25.1	6.8	41.9	26.9
	B	24 hr	8.3	25.1	6.2	42.3	27.2
12.5%	A	48 hr BR	8.1	25.6	5.9	42.8	27.6
	A	48 hr AR	8.1	24.9	6.7	42.5	27.3
	B	72 hr	8.0	25.9	5.7	42.5	27.3
	A	96 hr	~~8.0~~ ~~25.1~~	25.3	6.4	43.8	28.2
	A	0 hr	8.3	25.2	6.8	42.0	27.0
	B	24 hr	8.2	25.1	6.2	42.6	27.3
25%	A	48 hr BR	8.1	25.7	5.8	43.0	27.7
	A	48 hr AR	8.1	24.8	6.7	42.6	27.3
	B	72 hr	8.0	25.7	mtr 5.7	42.7	27.4
	A	96 hr	~~8.0~~ ~~25.3~~	25.5	6.4	43.8	28.2
	A	0 hr	8.2	25.4	6.6	42.3	27.1
	B	24 hr	8.2	25.4	6.2	43.0	27.6
50%	A	48 hr BR	8.1	25.7	6.1	43.5	28.0
	A	48 hr AR	8.0	24.8	6.8	42.9	27.7
	B	72 hr	8.0	25.8	5.9	42.9	27.5
	A	96 hr	8.0	25.5	6.5	43.9	28.3
	A	0 hr	7.9	25.8	6.5	43.0	27.3
	B	24 hr	8.0	25.3	6.2	43.3	27.9
100%	A	48 hr BR	8.0	25.5	6.6	44.1	28.5
	A	48 hr AR	8.0	24.7	6.0	43.2	28.0
	B	72 hr	~~8.0~~ 7.9	25.7	5.9	42.5	27.6
	A	96 hr	7.9	25.3	6.3	44.1	28.5
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

Measured By:
0 hr: JD
24 hr: JD
48 hr BR: JD
48 hr AR: JD
72 hr: MF
96 hr: MF

Page 83

V. 2.3 1-13-10

Bioassay Instrument ID

Test ID: Reliant Energy FL0000180 Dates: 8.17.10 – 8.21.10

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

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

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

8.17.10 – D.O.

V 1.1 6/12/08 MF

PAGE 8 4

Appendix C. SRT Bench Sheets and Statistical Analysis

Florida Department of Environmental Protection
Bureau of Laboratories

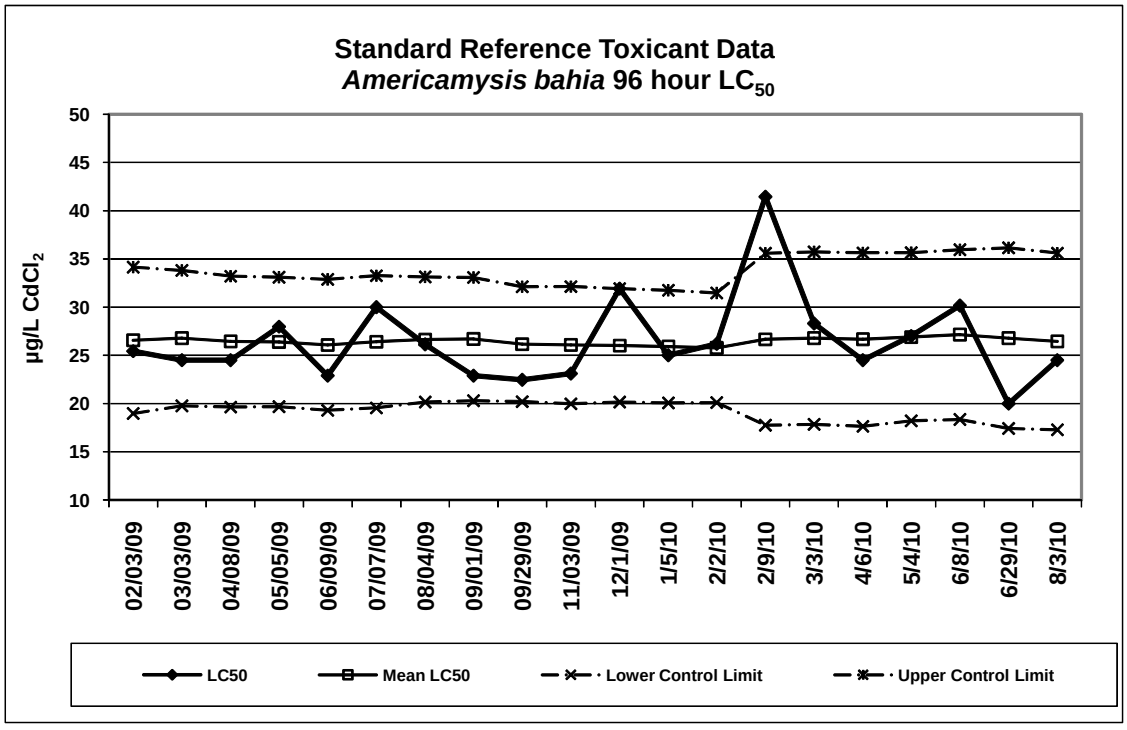
Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Americamysis bahia (mysid shrimp) - Cadmium Chloride ($CdCl_2$)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
02/03/09	25.44	26.56	3.79	18.97	34.15
03/03/09	24.49	26.78	3.52	19.75	33.81
04/08/09	24.49	26.45	3.39	19.66	33.23
05/05/09	27.98	26.39	3.36	19.68	33.10
06/09/09	22.89	26.09	3.39	19.32	32.87
07/07/09	30.00	26.43	3.43	19.57	33.28
08/04/09	26.14	26.65	3.24	20.16	33.13
09/01/09	22.89	26.69	3.19	20.30	33.07
09/29/09	22.46	26.17	2.97	20.22	32.11
11/03/09	23.12	26.08	3.04	20.00	32.15
12/1/09	31.91	26.03	2.94	20.16	31.91
1/5/10	25.00	25.91	2.92	20.06	31.75
2/2/10	26.18	25.77	2.84	20.09	31.46
2/9/10	41.45	26.68	4.46	17.76	35.59
3/3/10	28.31	26.78	4.47	17.84	35.72
4/6/10	24.49	26.66	4.50	17.66	35.65
5/4/10	27.02	26.91	4.36	18.20	35.63
6/8/10	30.17	27.15	4.40	18.34	35.95
6/29/10	20.00	26.78	4.68	17.42	36.15
8/3/10	24.49	26.45	4.59	17.27	35.62

CV = 17.35

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

EPA reference 75th quartile CV = 26%



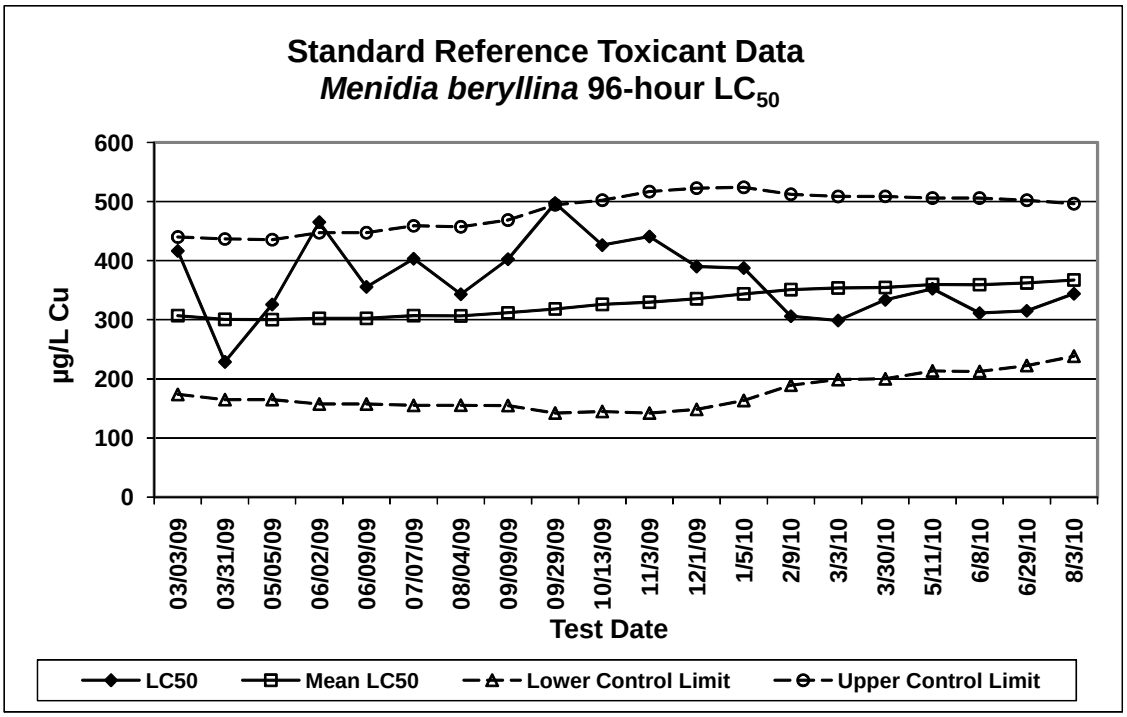
Appendix C. (continued)

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Menidia beryllina (inland silverside) - Copper Chloride ($CuCl_2$) as Cu

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
03/03/09	416.64	307.01	66.63	173.74	440.27
03/31/09	228.94	300.89	67.96	164.97	436.80
05/05/09	326.07	300.24	67.64	164.97	435.52
06/02/09	465.39	302.54	72.50	157.54	447.53
06/09/09	355.67	302.52	72.48	157.55	447.48
07/07/09	403.35	307.19	75.91	155.37	459.02
08/04/09	343.29	306.49	75.48	155.52	457.45
09/09/09	402.57	311.84	78.40	155.03	468.65
09/29/09	497.5	318.42	88.10	142.21	494.62
10/13/09	426.5	326.12	90.57	144.97	502.27
11/3/09	441.06	329.60	93.69	142.22	516.99
12/1/09	390.28	335.59	93.54	148.51	522.68
1/5/10	387.66	343.92	90.17	163.57	524.26
2/9/10	306.1	350.85	80.73	189.39	512.30
3/3/10	298.9	353.79	77.48	198.82	508.76
3/30/10	333.83	354.48	77.23	200.03	508.94
5/11/10	352.66	359.63	73.21	213.21	506.05
6/8/10	311.45	359.36	73.38	212.59	506.13
6/29/10	315.29	362.43	69.94	222.56	502.31
8/3/10	344.21	367.37	64.53	238.31	496.42

CV = 17.56
EPA reference 75th quartile CV = 21%



Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

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

Test Organism: (check one) [X] *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 [X] renewal

Test Page 1 of 2

Diluent/ Batch #: ASW / 8.2.10

Toxicant/ Batch#: $CdCl_2$ / 8.2.10

Organism Batch: 8,3,10 Age: 5 days

Test Beginning: Date: 8,3,10 Time: 1305

Test Ending: Date: 8.7.10 Time: 11:05

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	20.03	TA06_22	JD
Alkalinity (mg/L as $CaCO_3$):	124	TA06_08	BB
Hardness (mg.L as $CaCO_3$):	—	TA06_09	—
Total Ammonia (mg/L as N):	—	TA06_17	—
Conductivity: µmhos (mmhos)	32.3	TA06_25	Kms
Salinity (ppth):	20.0	TA06_25	Kms

Food:	Batch
[ ] YCT	
[ ] *P. subcapitata*	
[X] Artemia Lot #	23613

Artemia Batch:

0 hr: 10/2 - 10

24 hr: 10/3 - 10

48 hr: 10/4 - 10

72 hr: 10/5 - 10

Chamber size: 400 mL

Test volume: 300 mL per replicate

Concentrations prepared by: JD

Temperature Range °C: (if used)

Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 24.4 max 26.6 mean —

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

Photoperiod: 16 hours Light / 8 hours dark Room B246 min 24.8 max 25.4 mean —

Feeding: √as needed
[✓] Before test
[✓] 0 hr
[✓] 24 hr
[✓] 48 hr
[✓] 72 hr

all species 2 hrs prior to test

mysids daily

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

H. azteca 0 hr and 48 hr

Concentration ppt mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	Tox 1	5	5	5	5	5	5
	B	Tox 2	5	5	5	5	5	5
	C	Tox 3	5	5	5	5	5	5
	D	Tox 4	5	5	5	5	4 1D	4
20	A	Tox 5	5	5	5	5	5	5
	B	Tox 6	5	5	4 1D	4	3 1D	3
	C	Tox 7	5	5	4 1D	4	4	3 1D
	D	Tox 8	5	~~5~~ 5	4 1D	4	4	3 1D
30	A	Tox 9	5	5	4 1D	4	3 1D	3
	B	Tox 10	5	5	1 4D	1	1	1
	C	Tox 11	5	5	1 4D	1	0 1D	—
	D	Tox 12	5	5	4 1D	4	2 2D	1 1D
45	A	Tox 13	5	5	0 5D	—	—	—
	B	Tox 14	5	5	0 5D	—	—	—
	C	Tox 15	5	4 1D	0 4D	—	—	—
	D	Tox 16	5	5	0 5D	—	—	—
67	A	Tox 17	5	5	0 5D	—	—	—
	B	Tox 18	5	5	0 5D	—	—	—
	C	Tox 19	5	5	0 5D	—	—	—
	D	Tox 20	5	4 1D	0 4D	—	—	—
100	A	Tox 21	5	5	0 5D	—	—	—
	B	Tox 22	5	5	0 5D	—	—	—
	C	Tox 23	5	3 2D	0 3D	—	—	—
	D	Tox 24	5	4 1D	0 4D	—	—	—
Organisms loaded by: JD		Checked by:	JD	JD	JD	JD	JD	JD

Loading Verified by: VMM AR = after renewal

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

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

Comments:

Investigators' Signatures

Jana Daniels

Kim M Spencer

Bruce Alexander

Marshall Faircloth

Reviewer: Leigh Miller

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 29.10	25.50	33.21
96 hour: 24.49	21.74	27.60

00 51

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)
- [X] *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: 8/3/10 Time: 1305
Test Ending: Date: 8/7/10 Time: 1105

Test Type: [ ] non-renewal [X] renewal

hr = hour AR = after renewal BR = before renewal

Concentration (%) mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity [ ] µmhos [X] mmhos	Salinity (ppth)
Control	A	0 hr	8.3	24.0	7.0	32.3	20.0
	B	24 hr	8.3	25.2	6.3	32.7	20.3
	C	48 hr BR	8.1	25.2	6.2	33.6	20.9
	C	48 hr AR	8.3	24.0	6.2	32.3	20.0
	D	72 hr	8.2	24.5	6.5	33.3	20.7
	A	96 hr	7.9	25.4	5.6	34.2	21.1
20	A	0 hr	8.3	24.1	6.9	32.9	20.5
	B	24 hr	8.3	25.0	6.5	33.2	20.7
	C	48 hr BR	8.1	24.9	6.0	33.8	21.1
	C	48 hr AR	8.3	24.0	6.2	33.0	20.6
	D	72 hr	8.2	24.7	6.4	33.6	20.9
	A	96 hr	8.1	25.2	5.5	34.0	21.3
30	A	0 hr	8.3	24.1	6.9	33.0	20.6
	B	24 hr	8.3	24.9	6.6	33.5	20.8
	C	48 hr BR	8.1	24.9	5.8	33.5	20.8
	C	48 hr AR	8.3	24.0	6.1	33.0	20.6
	D	72 hr	8.2	24.6	6.4	33.1	20.7
	A	96 hr	8.1	25.2	5.4	33.9	21.3
~~40~~ 45	A	0 hr	8.3	24.1	6.9	33.1	20.7
	B	24 hr	8.3	24.5	6.6	33.3	20.9
	C	48 hr BR	8.2	25.0	5.8	34.1	21.2
	-	48 hr AR	-	-	-	-	-
	-	72 hr	-	-	-	-	-
	-	96 hr	-	-	-	-	-
67	A	0 hr	8.3	~~25.0~~ 24.0	6.8	32.7	20.4
	B	24 hr	8.3	24.7	6.6	32.8	20.5
	C	48 hr BR	8.2	25.0	5.9	34.1	21.2
	-	48 hr AR	-	-	-	-	-
	-	72 hr	-	-	-	-	-
	-	96 hr	-	-	-	-	-
100	A	0 hr	8.3	24.0	6.7	33.4	20.8
	B	24 hr	8.3	24.8	6.6	33.7	21.1
	C	48 hr BR	8.2	25.0	6.0	33.9	21.0
	-	48 hr AR	-	-	-	-	-
	-	72 hr	-	-	-	-	-
	-	96 hr	-	-	-	-	-

Investigators Signatures
James Daniels
Kim Mspencer
Bree Alexander
Marshall Faircloth

Reviewed By: Liz Miller

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

Measure/record salinity for marine tests

Comments:
8 HR: READ DO & SALINITY KMS
- Results still within range BA

PAGE 00 52

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 #: ASW - 1 8.2.10

Toxicant/ Batch#: $CoCl_2$ 1 8.2.10

Organism Batch: 8.3.10 Age: 13 days

Test Beginning: Date: 8.3.10 Time: 1304

Test Ending: Date: 8.7.10 Time: 1100

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	JD
Alkalinity (mg/L as $CaCO_3$):	224	TA06_08	BH
Hardness (mg/L as $CaCO_3$):	-	TA06_09	-
Total Ammonia (mg/L as N):	-	TA06_17	-
Conductivity: µmhos (mmhos)	32.5	TA06_25	FWS
Salinity (ppth):	20.1	TA06_25	FWS

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

Artemia Batch:

0 hr: 10-7-10

24 hr:

48 hr: 10-8-10

72 hr:

Chamber size: 1000 mL

Test volume: 400 mL per replicate

Concentrations prepared by: JD

Temperature Range °C: (if used)

Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 24.9 max 26.6 mean —

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

Photoperiod: 16 hours Light / 8 hours dark Room B246 min 24.8 max 25.4 mean —

Feeding: √as needed

- ✓ Before test
- ☐ 0 hr
- ☐ 24 hr
- ✓ 48 hr
- ☐ 72 hr

all species 2 hrs prior to test

mysids daily

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

H. azteca 0 hr and 48 hr

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	E1	10	10	10	10	10	10
	B	E2	10	10	10	10	10	10
100	A	E3	10	10	10	10	10	10
	B	E4	10	10	10	10	10	10
200	A	E5	10	10	10	10	10	10
	B	E6	10	10	10	10	10	10
300	A	E7	10	5 5D	5	5	5	5
	B	E8	10	8 8D	8	8	8	8
400	A	E9	10	5 5D	3 3D	3	2 2D	2
	B	C10	10	7 7D	7	7	7	7
500	A	E11	10	0 0D	-	-	-	-
	B	E12	10	0 0D	-	-	-	-
Organisms loaded by: JD	Checked by: KWW			JD	JD	JD	JD	JD

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

Loading Verified by: KWW AR = after renewal

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

Investigators' Signatures

James Daniel

Kim M Spencer

Bruce Alexander

Marshall Faircloth

Reviewer: Leigh Mullen

Comments:

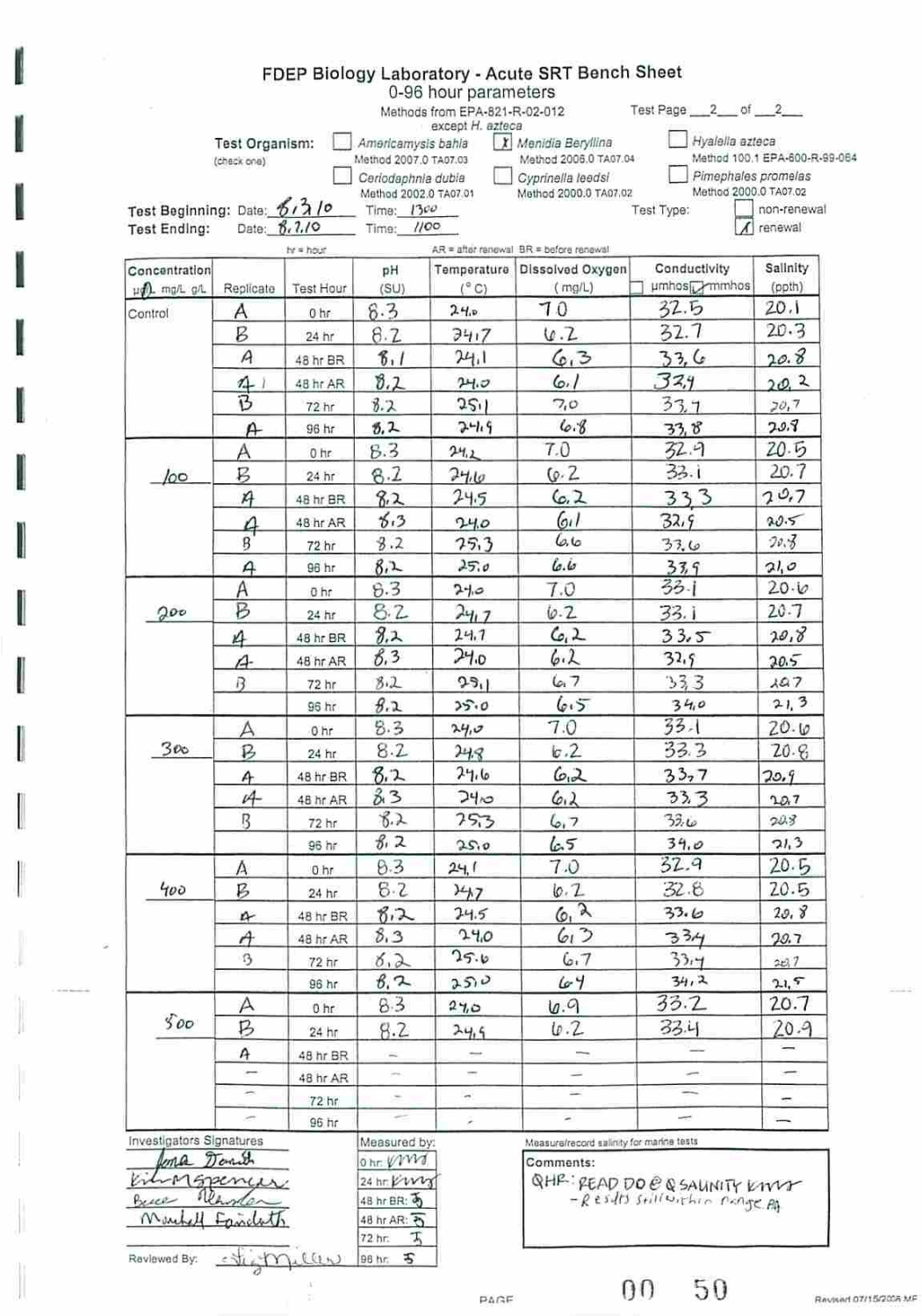
Method: TSK

95% confidence intervals

Statistics: LC50	Lower	Upper
48 hour: 346.64	317.54	382.77
96 hour: 344.21	313.57	377.85

00 49

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
- [x] *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: 8/3/10 Time: 1300
Test Ending: Date: 8.7.10 Time: 1100
Test Type: [ ] non-renewal [x] renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity [ ] µmhos [x] mmhos	Salinity (ppth)
Control	A	0 hr	8.3	24.0	7.0	32.5	20.1
	B	24 hr	8.2	24.7	6.2	32.7	20.3
	A	48 hr BR	8.1	24.1	6.3	33.6	20.8
	A	48 hr AR	8.2	24.0	6.1	32.4	20.2
	B	72 hr	8.2	25.1	7.0	33.7	20.7
	A	96 hr	8.2	24.9	6.8	33.8	20.8
100	A	0 hr	8.3	24.2	7.0	32.9	20.5
	B	24 hr	8.2	24.6	6.2	33.1	20.7
	A	48 hr BR	8.2	24.5	6.2	33.3	20.7
	A	48 hr AR	8.3	24.0	6.1	32.9	20.5
	B	72 hr	8.2	25.3	6.6	33.6	20.8
	A	96 hr	8.2	25.0	6.6	33.9	21.0
200	A	0 hr	8.3	24.0	7.0	33.1	20.6
	B	24 hr	8.2	24.7	6.2	33.1	20.7
	A	48 hr BR	8.2	24.7	6.2	33.5	20.8
	A	48 hr AR	8.3	24.0	6.2	32.9	20.5
	B	72 hr	8.2	25.1	6.7	33.3	20.7
		96 hr	8.2	25.0	6.5	34.0	21.3
300	A	0 hr	8.3	24.0	7.0	33.1	20.6
	B	24 hr	8.2	24.8	6.2	33.3	20.8
	A	48 hr BR	8.2	24.6	6.2	33.7	20.9
	A	48 hr AR	8.3	24.0	6.2	33.3	20.7
	B	72 hr	8.2	25.3	6.7	33.6	20.8
		96 hr	8.2	25.0	6.5	34.0	21.3
400	A	0 hr	8.3	24.1	7.0	32.9	20.5
	B	24 hr	8.2	24.7	6.2	32.8	20.5
	A	48 hr BR	8.2	24.5	6.2	33.6	20.8
	A	48 hr AR	8.3	24.0	6.3	33.4	20.7
	B	72 hr	8.2	25.6	6.7	33.4	20.7
		96 hr	8.2	25.0	6.4	34.2	21.5
500	A	0 hr	8.3	24.0	6.9	33.2	20.7
	B	24 hr	8.2	24.9	6.2	33.4	20.9
	A	48 hr BR	–	–	–	–	–
	–	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–

Investigators Signatures
Jma Smith
Kim Spencer
Bruce Alexander
Mitchell Faircloth

Reviewed By: Stig Miller

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

Measure/record salinity for marine tests

Comments:
QHP: READ DO @ & SALINITY KMS
- Results Still Within Range AA

PAGE 00 50

Revised 07/15/2008 MF

Appendix C. (continued)

Americamysis bahia **Acute Standard Reference Toxicant Test**

DATE: 8-3-10 DURATION: 96 h TOXICANT : CdCl2
SPECIES: ***Americamysis bahia***

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	1
20.00	20	6
30.00	20	15
45.00	20	20
67.00	20	20
100.00	20	20

SPEARMAN-KARBER TRIM: 26.32%

SPEARMAN-KARBER ESTIMATES: LC50: **24.49**
95% LOWER CONFIDENCE: 21.74
95% UPPER CONFIDENCE: 27.60

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

Menidia beryllina **Acute Standard Reference Toxicant Test**

DATE: 8-3-10 DURATION: 96 h TOXICANT : CuCl2
SPECIES: ***Menidia beryllina***

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	0
100.00	20	0
200.00	20	0
300.00	20	7
400.00	20	11
500.00	20	20

SPEARMAN-KARBER TRIM: 0.00%

SPEARMAN-KARBER ESTIMATES: LC50: **344.21**
95% LOWER CONFIDENCE: 313.57
95% UPPER CONFIDENCE: 377.85

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 8/2/10

Ship to: FDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	200	4 DAYS	MS100729	25	8.0	20
Menidia beryllina	150	12 DAYS	SS100721	25	8.0	20
						Hardness mg/L
Cyprinella leedsi	150	11 DAYS	CL100722	25	7.8	80
Pimephales promelas	150	8 DAYS	FM100725	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: FedEx

Notes:

Thank you for your order.

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

Appendix D. (continued)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 8/16/10

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150 ac	4 DAYS	MS100812	25	8.0	20
Menidia beryllina	150 ac	12 DAYS	MS100807	25	8.0	20
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas						
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: _____

Shipped Via: FedEx

Notes: _____

Thank you for your order.

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

Appendix E. Chemical Analyses performed on the effluent from the Reliant Energy Indian River Power Plant Outfall D-001, sampled on August 16, 2010.

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/16/2010 9:34	RELI BLANK	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
8/16/2010 9:34	RELI BLANK	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
8/16/2010 9:34	RELI BLANK	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
8/16/2010 9:34	RELI BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
8/16/2010 9:34	RELI BLANK	Metals	Iron	30	U	ug/L	30	120
8/16/2010 9:34	RELI BLANK	Metals	Vanadium	2	U	ug/L	2	8
8/16/2010 9:34	RELI BLANK	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
8/16/2010 9:34	RELI BLANK	Metals	Aluminum	5	U	ug/L	5	20
8/16/2010 9:34	RELI BLANK	Metals	Selenium	0.2	U	ug/L	0.2	0.8
8/16/2010 9:34	RELI BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
8/16/2010 9:34	RELI BLANK	Metals	Lead	0.2	U	ug/L	0.2	0.8
8/16/2010 9:34	RELI BLANK	Metals	Nickel	0.62	I	ug/L	0.25	1
8/16/2010 9:34	RELI BLANK	Metals	Chromium	0.3	U	ug/L	0.3	1.2
8/16/2010 9:34	RELI BLANK	Metals	Sodium	0.5	U	mg/L	0.5	2
8/16/2010 9:34	RELI BLANK	Metals	Zinc	5	U	ug/L	5	20
8/16/2010 9:34	RELI BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/16/2010 9:34	RELI BLANK	Metals	Copper	0.54	I	ug/L	0.5	1
8/16/2010 9:34	RELI BLANK	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
8/16/2010 9:34	RELI BLANK	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
8/16/2010 9:34	RELI BLANK	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
8/16/2010 9:34	RELI BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
8/16/2010 9:34	RELI BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
8/16/2010 9:34	RELI BLANK	Overflow	Oil and Grease	1.4	U	mg/L	1.4	5
8/16/2010 9:34	RELI BLANK	Pesticides	Metribuzin	0.095	U	ug/L	0.095	0.38
8/16/2010 9:34	RELI BLANK	Pesticides	Beta-BHC	0.0095	U	ug/L	0.0095	0.038
8/16/2010 9:34	RELI BLANK	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
8/16/2010 9:34	RELI BLANK	Pesticides	Hexazinone	0.095	U	ug/L	0.095	0.38
8/16/2010 9:34	RELI BLANK	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
8/16/2010 9:34	RELI BLANK	Pesticides	Parathion Methyl	0.095	U	ug/L	0.095	0.38
8/16/2010 9:34	RELI BLANK	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/16/2010 9:34	RELI BLANK	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
8/16/2010 9:34	RELI BLANK	Pesticides	Fonofos	0.095	U	ug/L	0.095	0.38
8/16/2010 9:34	RELI BLANK	Pesticides	Aldrin	0.0095	U	ug/L	0.0095	0.038
8/16/2010 9:34	RELI BLANK	Pesticides	Delta-BHC	0.0095	U	ug/L	0.0095	0.038
8/16/2010 9:34	RELI BLANK	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
8/16/2010 9:34	RELI BLANK	Pesticides	Gamma-BHC	0.0095	U	ug/L	0.0095	0.038
8/16/2010 9:34	RELI BLANK	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
8/16/2010 9:34	RELI BLANK	Pesticides	Methoxychlor	0.048	U	ug/L	0.048	0.19
8/16/2010 9:34	RELI BLANK	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
8/16/2010 9:34	RELI BLANK	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
8/16/2010 9:34	RELI BLANK	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
8/16/2010 9:34	RELI BLANK	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
8/16/2010 9:34	RELI BLANK	Pesticides	Naled	0.76	U	ug/L	0.76	3
8/16/2010 9:34	RELI BLANK	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
8/16/2010 9:34	RELI BLANK	Pesticides	Alpha-BHC	0.0095	U	ug/L	0.0095	0.038
8/16/2010 9:34	RELI BLANK	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
8/16/2010 9:34	RELI BLANK	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076
8/16/2010 9:34	RELI BLANK	Pesticides	Toxaphene	0.71	U	ug/L	0.71	2.8
8/16/2010 9:34	RELI BLANK	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
8/16/2010 9:34	RELI BLANK	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
8/16/2010 9:34	RELI BLANK	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
8/16/2010 9:34	RELI BLANK	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
8/16/2010 9:34	RELI BLANK	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
8/16/2010 9:34	RELI BLANK	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
8/16/2010 9:34	RELI BLANK	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
8/16/2010 9:34	RELI BLANK	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
8/16/2010 9:34	RELI BLANK	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
8/16/2010 9:34	RELI BLANK	Pesticides	Ethoprop	0.095	U	ug/L	0.095	0.38
8/16/2010 9:34	RELI BLANK	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
8/16/2010 9:34	RELI BLANK	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
8/16/2010 9:34	RELI BLANK	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
8/16/2010 9:34	RELI BLANK	Pesticides	Endrin	0.048	U	ug/L	0.048	0.19
8/16/2010 9:34	RELI BLANK	Pesticides	Heptachlor	0.0095	U	ug/L	0.0095	0.038
8/16/2010 9:34	RELI BLANK	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/16/2010 9:34	RELI BLANK	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076
8/16/2010 9:34	RELI BLANK	Pesticides	Chlorpyrifos Methyl	0.095	U	ug/L	0.095	0.38
8/16/2010 9:34	RELI BLANK	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
8/16/2010 9:34	RELI BLANK	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Diethyl phthalate	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8	U	ug/L	2.8	11
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	4.7	U	ug/L	4.7	19
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8	U	ug/L	2.8	11
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	4.7	U	ug/L	4.7	19
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.8	U	ug/L	2.8	11
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.5
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8	U	ug/L	2.8	11
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2-Nitrophenol	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.5
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	14	UJ	ug/L	14	57
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2-Chlorophenol	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	UJ	ug/L	38	150
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.5
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Benzidine	94	U	ug/L	94	380
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.94	U	ug/L	0.94	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.5
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Dimethyl phthalate	9.4	U	ug/L	9.4	38
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Hexachloroethane	2.8	U	ug/L	2.8	11
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Pentachlorophenol	2.8	U	ug/L	2.8	11
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Phenol	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.4	U	ug/L	9.4	38
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8	U	ug/L	2.8	11
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94	U	ug/L	0.94	3.8
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.75
8/16/2010 9:34	RELI BLANK	Priority Organic Pollutants	Isophorone	0.94	U	ug/L	0.94	3.8
8/16/2010 8:57	RELI BIOASSAY	Toxicology	BSY-AD-SW-Mysid, LC50	100	L	LC50		
8/16/2010 8:57	RELI BIOASSAY	Toxicology	BSY-AD-SW-Fish, LC50	100	L	LC50		
8/16/2010 8:57	RELI BIOASSAY	Field Parameter	pH	7.98				
8/16/2010 8:57	RELI BIOASSAY	Field Parameter	Temperature	31.1		C		
8/16/2010 8:57	RELI BIOASSAY	Field Parameter	Specific Conductance	43,125		umhos/cm		
8/16/2010 8:57	RELI BIOASSAY	Field Parameter	Dissolved Oxygen	3.46		mg/L		
8/16/2010 9:06	RELI 09:06	AGP/LN	Algal Growth Potential	11.2	AJ	mg DryWt/L	3	3
8/16/2010 9:06	RELI 09:06	Chlorophyll/Grain Size/BOD	BOD-5 Day,N-Inhib	2.7	J	mg/L	0.2	2
8/16/2010 9:06	RELI 09:06	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	21		ug/L	0.71	2.2
8/16/2010 9:06	RELI 09:06	Chlorophyll/Grain Size/BOD	Phaeophytin-a	6.1		ug/L	0.52	1.6
8/16/2010 9:06	RELI 09:06	Microbiology	Fecal Coliforms-Membrane Filter	5	BQ	#/100 mL	2	2

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/16/2010 9:06	RELI 09:06	Metals	Arsenic	2.3	I	ug/L	0.75	3
8/16/2010 9:06	RELI 09:06	Metals	Silver	0.075	U	ug/L	0.075	0.3
8/16/2010 9:06	RELI 09:06	Metals	Iron	330	I	ug/L	90	360
8/16/2010 9:06	RELI 09:06	Metals	Aluminum	346		ug/L	15	60
8/16/2010 9:06	RELI 09:06	Metals	Sodium	8330		mg/L	25	100
8/16/2010 9:06	RELI 09:06	Metals	Cadmium	0.09	U	ug/L	0.09	0.36
8/16/2010 9:06	RELI 09:06	Metals	Zinc	15	U	ug/L	15	60
8/16/2010 9:06	RELI 09:06	Metals	Copper	5.9		ug/L	1.5	3
8/16/2010 9:06	RELI 09:06	Metals	Nickel	2.1	I	ug/L	0.75	3
8/16/2010 9:06	RELI 09:06	Metals	Magnesium	997		mg/L	2	8
8/16/2010 9:06	RELI 09:06	Metals	Vanadium	8.5	I	ug/L	6	24
8/16/2010 9:06	RELI 09:06	Metals	Chromium	1.3	I	ug/L	0.9	3.6
8/16/2010 9:06	RELI 09:06	Metals	Calcium	321		mg/L	0.22	0.9
8/16/2010 9:06	RELI 09:06	Metals	Lead	0.99	I	ug/L	0.6	2.4
8/16/2010 9:06	RELI 09:06	Metals	Selenium	0.6	U	ug/L	0.6	2.4
8/16/2010 9:06	RELI 09:06	Nutrients	Kjeldahl Nitrogen	1.7		mg N/L	0.08	0.2
8/16/2010 9:06	RELI 09:06	Nutrients	NO2NO3-N	0.023		mg N/L	0.004	0.01
8/16/2010 9:06	RELI 09:06	Nutrients	Ammonia-N	0.049		mg N/L	0.01	0.02
8/16/2010 9:06	RELI 09:06	Nutrients	O-Phosphate-P	0.004	I	mg P/L	0.004	0.01
8/16/2010 9:06	RELI 09:06	Nutrients	TSS	48		mg/L	4	16
8/16/2010 9:06	RELI 09:06	Nutrients	Total-P	0.076	A	mg P/L	0.02	0.05
8/16/2010 9:06	RELI 09:06	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
8/16/2010 9:06	RELI 09:06	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
8/16/2010 9:06	RELI 09:06	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
8/16/2010 9:06	RELI 09:06	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
8/16/2010 9:06	RELI 09:06	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
8/16/2010 9:06	RELI 09:06	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
8/16/2010 9:06	RELI 09:06	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
8/16/2010 9:06	RELI 09:06	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
8/16/2010 9:06	RELI 09:06	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
8/16/2010 9:06	RELI 09:06	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
8/16/2010 9:06	RELI 09:06	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/16/2010 9:06	RELI 09:06	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
8/16/2010 9:06	RELI 09:06	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
8/16/2010 9:06	RELI 09:06	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
8/16/2010 9:06	RELI 09:06	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
8/16/2010 9:06	RELI 09:06	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
8/16/2010 9:06	RELI 09:06	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
8/16/2010 9:06	RELI 09:06	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
8/16/2010 9:06	RELI 09:06	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
8/16/2010 9:06	RELI 09:06	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
8/16/2010 9:06	RELI 09:06	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
8/16/2010 9:06	RELI 09:06	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
8/16/2010 9:06	RELI 09:06	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
8/16/2010 9:06	RELI 09:06	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
8/16/2010 9:06	RELI 09:06	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
8/16/2010 9:06	RELI 09:06	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
8/16/2010 9:06	RELI 09:06	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
8/16/2010 9:06	RELI 09:06	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
8/16/2010 9:06	RELI 09:06	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
8/16/2010 9:06	RELI 09:06	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
8/16/2010 9:06	RELI 09:06	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
8/16/2010 9:06	RELI 09:06	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
8/16/2010 9:06	RELI 09:06	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
8/16/2010 9:06	RELI 09:06	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
8/16/2010 9:06	RELI 09:06	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
8/16/2010 9:06	RELI 09:06	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
8/16/2010 9:06	RELI 09:06	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2-Nitrophenol	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Benzo(a)pyrene	0.27	U	ug/L	0.27	1.1

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	20	U	ug/L	20	80
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Di-n-octyl phthalate	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Diethyl phthalate	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Fluoranthene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Hexachloroethane	4	U	ug/L	4	16
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2,4-Dinitrotoluene	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2-Chloronaphthalene	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Benzidine	130	U	ug/L	130	530
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Benzo(k)fluoranthene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	4	U	ug/L	4	16
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Butyl benzyl phthalate	6.7	U	ug/L	6.7	27
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Phenanthrene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Dimethyl phthalate	13	U	ug/L	13	53
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Nitrobenzene	2.7	U	ug/L	2.7	11
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Fluorene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2,4-Dichlorophenol	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2,6-Dinitrotoluene	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Benzo(b)fluoranthene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Di-n-butyl phthalate	6.7	U	ug/L	6.7	27
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Isophorone	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	4	U	ug/L	4	16
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2,4-Dinitrophenol	20	UJ	ug/L	20	80
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	3,3'-Dichlorobenzidine	53	UJ	ug/L	53	210
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.7	U	ug/L	2.7	11
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	4-Nitrophenol	20	U	ug/L	20	80
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Acenaphthene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Acenaphthylene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.7	U	ug/L	2.7	11

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Phenol	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Pyrene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2,4-Dimethylphenol	13	U	ug/L	13	53
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	4	U	ug/L	4	16
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Benzo(a)anthracene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Chrysene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Hexachlorobenzene	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Hexachlorobutadiene	4	U	ug/L	4	16
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Hexachlorocyclopentadiene	4	U	ug/L	4	16
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Pentachlorophenol	4	U	ug/L	4	16
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	2-Chlorophenol	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Anthracene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.3	U	ug/L	1.3	5.3
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	N-Nitrosodimethylamine	2.7	U	ug/L	2.7	11
8/16/2010 9:06	RELI 09:06	Priority Organic Pollutants	Naphthalene	0.27	U	ug/L	0.27	1.1
8/16/2010 9:06	RELI 09:06	Field Parameter	Dissolved Oxygen	3.46		mg/L		
8/16/2010 9:06	RELI 09:06	Field Parameter	pH	7.98				
8/16/2010 9:06	RELI 09:06	Field Parameter	Temperature	31.1		C		
8/16/2010 9:06	RELI 09:06	Field Parameter	Specific Conductance	43,125		umhos/cm		
8/16/2010 10:12	RELI 10:12	Nutrients	TSS	4	U	mg/L	4	16
8/16/2010 10:12	RELI 10:12	Overflow	Oil and Grease	1.4	U	mg/L	1.4	5

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: William Hesser	Contact Number: 407-893-3313
Facility Name (as it appears on permit): Reliant Energy Indian River Power Plant	Former Names:
NPDES Permit Number: 48-FL0000680	Permit Expiration Date: July 24, 2008 (Administratively Continued)
Physical Address: 7800 US Highway 1, Titusville, Brevard County, Florida	
District: Central District	County: Brevard
Function of Facility: Generation of Electricity	
Facility Type: Power Plant	Permitted Capacity (MGD): 820 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): D-001 534.58 MGD (February, 2009 – January, 2010) D-016 0.050 MGD (February, 2009 – January, 2010)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): G-001 0.066 MGD (February, 2009 – January, 2010) G-002 0.163 MGD (February, 2009 – January, 2010)	
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	

Page 1 of 11 v3.0 07/07/08

Appendix F. (continued)

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

An existing discharge to Indian River Lagoon (Class III Marine waters), D-001 (OTCW)
An existing discharge to Indian River Lagoon (Class III Marine waters), D-016 (Boiler blowdown)

The compliance sampling location EFF-1 is the end of the discharge canal.
The compliance sampling point EFF-2 is boiler blowdown discharge prior to mixing with other wastestreams.

Description of Permitted Outfall(s):

The plant has a once-through condense cooling water system that uses water from the Indian River Lagoon. The cooling water is routed through plant condensers and then discharge back to the Indian River Lagoon via the discharge canal. The only other surface water discharges from the plant are boiler blowdown and non-industrial stormwater (roof runoff) which are also discharged to the discharge canal.

Appendix F. (continued)

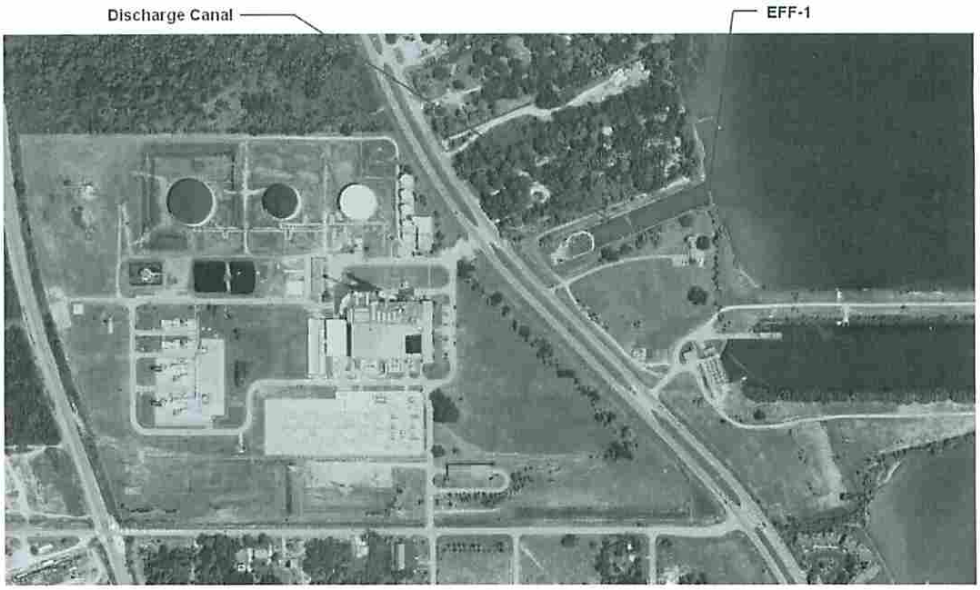
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

The plant consists of three steam electric power generating units with a total nameplate rating of 640 megawatts. Plant fuel is natural gas and oil.

1) Water from the plant intake canal passes through bar racks and intake screen before being pumped to the plant's three steam condensing units. After cooling the steam condensers, the once-through cooling water (OTCW) is returned to surface water, i.e., the Indian River, via a 600 foot discharge canal, Outfall D-001.

2) Discharges from plant floor drains, car wash, combustion turbine stormwater, stack washes, and air heater washes are routed through the oil/water separator prior to discharge to the on-site percolation ponds (Outfall G-002). However, stack washes and air heater washes are first routed to neutralization/sedimentation tanks for additional treatment prior to discharge the oil/water separator. Demineralizer regeneration wastewater is routed to the neutralization basin for pH adjustment prior to discharge to the percolation ponds (Outfall G-001).

2) Boiler blowdown (Outfall D-016) and stormwater runoff (Outfall D-01S) are discharged without treatment through the same pipe to the discharge canal and then to Indian River.



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

Surface Water Discharges

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge once-through non-contact cooling water, boiler blowdown, and non-industrial stormwater runoff from Outfall D-001. Such discharge shall be limited and monitored by the permittee as specified below:

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	**Monthly Average**	**Maximum Daily Average**	**Daily Minimum**	**Monitoring Frequency**	**Sample Type**	**Sample Point**
Flow (MGD)	Report	820	--	Continuous	Pump logs	FLW-1
Temperature (F), Water (DEG.F)	Report	Report	--	Continuous	Recorder	EFF-1
Temp. Diff. Between Intake and Discharge (DEG.F)	Report	Report	--	Daily	Calculated	INT-1

2. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.1 and as described below:

Sample Point	Description of Monitoring Location
FLW-1	OTCW intake pumps
EFF-1	End of discharge canal.
INT-1	OTCW intake water boxes

3. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge boiler blowdown from Outfall D-016. Such discharge shall be limited and monitored by the permittee as specified below:

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	**Maximum Monthly Average**	**Maximum Daily Average**	**Daily Minimum**	**Monitoring Frequency**	**Sample Type**	**Sample Point**
Flow (MGD)	0.297	Report	--	Daily	Meter	FLW-2
Oil and Grease (MG/L)	15.0	20.0	--	Monthly	Grab	EFF-2
Solids, Total Suspended (MG/L)	30.0	100.0	--	Monthly	Grab	EFF-2
Phosphorus, Total (as P) (MG/L)	Report	Report	--	Monthly	Grab	EFF-1
PH (SU)		8.5	6.5	Daily	Grab	EFF-1

4. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.4 and as described below:

Sample Point	Description of Monitoring Location
FLW-2	Boiler blowdown discharge to the discharge canal prior to mixing with any other wastestreams (flow measurement).
EFF-2	The point of boiler blowdown discharge prior to mixing with any other wastestreams including non-industrial stormwater runoff.
EFF-1	End of discharge canal.

Land Application Systems

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge demineralizer regeneration wastewater to Land Application System G-001, a percolation pond. Such discharge shall be limited and monitored by the permittee as specified below:

Appendix F. (continued)

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Maximum Monthly Average	Maximum Daily Average	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	0.04	0.085	--	Daily	Calculated	FLW-3
Surfactants (MBAS) (MG/L)	Report	--	--	Monthly	Grab	EFF-3
Sodium, Dissolved (MG/L)	Report	--	--	Monthly	Grab	EFF-3
pH (SU)	--	9.5	6.0	Monthly	Grab	EFF-3
Solids, Total Suspended (MG/L)	Report	--	--	Monthly	Grab	EFF-3
Chloride (as Cl) (MG/L)	Report	--	--	Monthly	Grab	EFF-3
Sulfate, Total (MG/L)	Report	--	--	Monthly	Grab	EFF-3
Chemical Oxygen Demand (COD) (MG/L)	Report	--	--	Monthly	Grab	EFF-3
Solids, Total Dissolved (TDS) (MG/L)	Report	--	--	Monthly	Grab	EFF-3

2. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.C.1 and as described below:

Sample Point	Description of Monitoring Location
FLW-3	The point of discharge to the percolation/evaporation pond from Outfall G001 (flow measurement).
EFF-3	The point of discharge to the percolation/evaporation pond from Outfall G-001

Appendix F. (continued)

3. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge stack washes, air heater washes, plant floor drains, car wash, and combustion turbine stormwater to Land Application System G-002, a percolation pond. Such discharge shall be limited and monitored by the permittee as specified below:

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	Maximum Monthly Average	Maximum Daily Average	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	0.047	0.673	--	Daily	Calculated	EFF-4
Chemical Oxygen Demand (COD) (MG/L)	Report	NA	--	Monthly	Grab	EFF-4
Solids, Total Dissolved (TDS) (MG/L)	Report	NA	--	Monthly	Grab	EFF-4
Solids, Total Suspended (MG/L)	Report	NA	--	Monthly	Grab	EFF-4
Nitrogen, Nitrate, Total (as N) (MG/L)	Report	NA	--	Monthly	Grab	EFF-4
Surfactants (MBAS) (MG/L)	Report	NA	--	Monthly	Grab	EFF-4
Arsenic, Total Recoverable (UG/L)	Report	NA	--	Semiannually	Grab	EFF-4
Cadmium, Total Recoverable (UG/L)	Report	NA	--	Semiannually	Grab	EFF-4
Copper, Total Recoverable (UG/L)	Report	NA	--	Semiannually	Grab	EFF-4
Iron, Total Recoverable (MG/L)	Report	NA	--	Semiannually	Grab	EFF-4
Lead, Total Recoverable (UG/L)	Report	NA	--	Semiannually	Grab	EFF-4
Manganese, Total Recoverable (MG/L)	Report	NA	--	Semiannually	Grab	EFF-4
Sodium, Total Recoverable (MG/L)	Report	NA	--	Semiannually	Grab	EFF-4
Vanadium, Total Recoverable (PPM)	Report	NA	--	Semiannually	Grab	EFF-4
Zinc, Total Recoverable (UG/L)	Report	NA	--	Semiannually	Grab	EFF-4

Appendix F. (continued)

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Maximum Monthly Average	Maximum Daily Average	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Petrol Hydrocarbons, Total Recoverable (PPB)	Report	NA	--	Monthly	Grab	EFF-4
pH (SU)	--	9.5	6.0	Monthly	Grab	EFF-4

4. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.C.3 and as described below:

Sample Point	Description of Monitoring Location
EFF-4	The point of discharge to the percolation/evaporation pond from Outfall G-002

Appendix F. (continued)

PART I: Continued	
Receiving Waters: **Indian River Lagoon D-001, D-016**	**Classification (indicate whether fresh or marine):** **Class III Marine waters**

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

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

The facility has no Administrative Orders (AO) or Consent Orders (CO). The facility has historical and continuing noncompliance issues with vanadium and sodium contamination in the ground water.

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

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

Date	Parameter and Units	Limit	Result
None			

Describe previous FYI and WQBEL study:

None

Describe previous or current Enforcement Actions (including WLs):

None

Appendix F. (continued)

Describe any violations or problems noted in previous inspection:

The following statements were included as part of the Compliance Evaluation Inspection (CEI) conducted on December 23, 2008 by William Hesser:

The following ground water deficiencies were noted:

1. The Department has not received the ground water monitoring report for the third quarter of 2008 which was due by the end of October 2008. Please submit this report as soon as possible.
2. The Department did not receive any data or form for compliance well MW-12 with the ground water monitoring report for the first quarter of 2008. Please submit the completed form for this well for the first quarter of 2008 as soon as possible.
3. During the Department site visit by Anil Desai, facility personnel stated that sludge or materials had been removed from the ponds as previously scheduled by the facility in early 2008. Please provide information or manifests on the disposal of these materials.
4. Based on the discussion held with the facility & Tallahassee staff in a teleconference on January 27, 2009, it has been decided to include a permit condition for the facility to submit a plan of study to further evaluate the Vanadium and Sodium concerns in both effluent and ground water. This plan shall be submitted to the Department within 60 days of issuance of the permit for Department's approval.

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

N/A

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

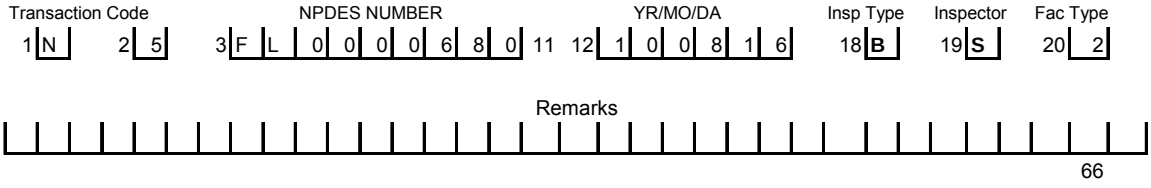
Appendix F. (continued)

Method of Chlorination:	Method of De-chlorination:
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☐ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix G. EPA End Sheet

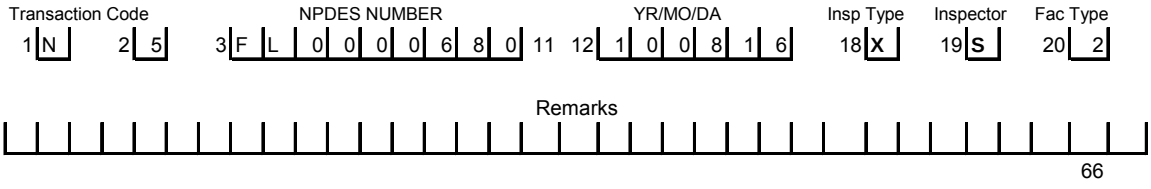
The Bioassay of Reliant Energy Indian River Power Plant effluent sampled on August 16, 2010. NPDES #FL0000680.

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



The Priority Pollutants Analysis of Reliant Energy Indian River Power Plant effluent sampled on August 16, 2010. NPDES #FL0000680.

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



Biological Analyses of Reliant Energy Indian River Power Plant effluent sampled on August 16, 2010. NPDES #FL0000680.

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

