

Effluent Quality Assessment

IRCUD West Regional WWTF

Indian River County

NPDES #FL0041637

Sampled December 7, 2009

January 2010

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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IRCUD West Regional WWTF, 8405 8th Street, Vero Beach, Indian River County, Florida, 32960. NPDES #FL0041637. Effluent grab samples for algal growth potential, bioassay, chemical and microbiological analyses for this facility were collected on December 7, 2009.

Introduction

IRCUD (Indian River County Utilities Department) West Regional WWTF (wastewater treatment facility) is an advanced domestic wastewater treatment plant. The facility has no Administrative Orders, Consent Orders nor Mixing zones. A review of Discharge Monitoring Report (DMR) data for the past two years revealed permit violations for Total Nitrogen, Total Phosphorus, Chlorine, Mercury and Silver. (See Appendix F for detailed facility information provided by Blake Vahlsing of FDEP Central District).

Methods

Samples were collected from the WEP-1 NPDES sampling point for Outfall D-001, by Phil Kane, Blake Vahlsing and Mala Choksi (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/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 96-hour acute definitive toxicity tests and the 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.

Results and Discussion

Toxicity Test Results

Tests were performed December 8 - 12, 2009.

Ceriodaphnia dubia 96-hour acute definitive bioassay – LC_{50} > 100%, 0% mortality in 100% sample at 96 hours

Cyprinella leedsi 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.

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. See Appendix G for bioassay instruments. See Appendix H for EPA End Sheet.

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 8.21 A (A – Value reported is the mean of two or more determinations) 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 nitrogen-limited. The predicted AGPs based on inorganic nitrogen and total nitrogen concentrations were, respectively, 2.1 (±20%) mg dry wt/L and 42.4 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine (TRC), 0.04 A (A – Value reported is the mean of two or more determinations) mg/L, was detected in the bioassay sample in the bioassay laboratory. This TRC concentration exceeded the facility's permitted limit of ≤ 0.01 mg/L but did not exceed the water quality standard (no numeric limit (62-302.530, F.A.C.)) for Class IV receiving waters. Total ammonia was not detected in the bioassay sample in the bioassay laboratory. The total ammonia concentration in the effluent sample collected and preserved for chemical analysis was 0.038 JF (J – Estimated value; F – Analyte was detected in both sample and field blank) mg N/L. [Blank value 0.01 I (I – The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit) mg N/L). Based on the pH, salinity and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg N/L.

Nickel, chloride and sulfate were detected in the effluent at levels that comply with Class IV freshwater quality criteria (62-302.530(18), F.A.C.). Arsenic, chromium and zinc were detected between the laboratory MDL and PQL. Total Phosphorus (0.77 mg/L) exceeded the permitted limit of ≤ 0.2 mg/L. Fecal coliforms (144 B (B – Results based on colony counts outside the acceptable range) #/100 mL) and chlorophyll *a* (3.4 µg/L) were also detected in the effluent. Nitrate+nitrite were detected in the field blank.

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

Conclusion

The effluent sample collected from the WEP-1 NPDES sampling point for Outfall D-001 for this facility on December 7, 2009, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The AGP result was greater than the "problem" threshold for freshwater receiving waters. Effluent water quality samples collected on December 7, 2009, did not violate any applicable Class IV receiving water quality standards. The effluent's total residual chlorine (as measured in the bioassay sample) and total phosphorus exceeded their facility NPDES permit limits of ≤ 0.01 mg/L and ≤ 0.2 mg P/L at the WEP-1 monitoring site.

Literature Cited

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

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the IRCUD West Regional WWTF facility on December 7, 2009.

IRCUD West Regional WWTF					
Sample	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	8.2 A	2.1 ± 0.4	42.4 ± 8.5	0.1	1.4

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

Table 2. Effluent limits, Class IV Freshwater Criteria and chemical and microbiological data for samples collected from the ICRUD West Regional WWTF on December 7, 2009.

IRCUD West Regional WWTF NPDES# FL0041637	Class IV Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
None Detected	-	-	-	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	60	U
Arsenic	≤ 50	-	0.97	I
Cadmium	≤ 0.33 b	≤ 1.40	0.03	U
Calcium (mg/L)	-	-	30.3	
Chromium-III	≤ 107.40 b	-	0.67	I
Copper	≤ 11.74 b	≤ 11.74 b	0.5	U
Iron	≤ 1,000	≤ 1,000 p	30	U
Lead	≤ 50	≤ 4.478	0.2	U
Magnesium (mg/L)	-	-	13.4	
Mercury	≤ 0.2	≤ 0.12 s	0.12	U
Nickel	≤ 100	≤ 197.9	2.24	
Selenium	-	-	0.2	U
Silver	≤ 0.07	≤ 0.07 p	0.025	U
Zinc	≤ 1,000	≤ 133.1	7.3	I
Nutrients (mg/L)				
Ortho-phosphate	-	Report	0.6	
Total Phosphorus	-	≤ 0.2 p	0.77	A
Total Ammonia	-	Report	0.038	JF
Un-ionized Ammonia	≤ 0.02 s	≤ 0.02 p	≤ 0.02	c
Nitrate and Nitrite	-	Report	0.016	F
Total Kjeldahl Nitrogen	-	Report	1.1	
Organic Nitrogen	-	-	1.062	c
Total Nitrogen	-	≤ 2.0 p	1.116	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0	Report	9.2	
pH (SU)	6.0 - 8.5	6.0 - 8.5	7.5	
Conductivity (µmhos/cm)	≤ 1,275	≤ 1,890	1073	
Temperature (°C)	-	Report	20.5	
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	≤ 0.03	AQ£
Chlorophyll *a* (µg/L) - Corrected	-	Report	3.4	
Phaeophytin (µg/L)	-	-	1.5	
Total Suspended Solids (mg/L)	-	≤ 6.0 p	4	I
CBOD, 5 day (mg/L), N - inhibited	-	≤ 6.0 p	1.4	I
Chloride (mg/L)	-	Report	190	A
Sulfate (mg/L)	-	Report	89	A
Flow (MGD)	-	≤ 2.0 a	1.1641	a
Hardness (mg $CaCO_3$)	-	-	130.84	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms @	≤ 400s #	Report	144	B

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
p - 24-hour flow proportioned composite sample
s - Single sample
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. [Blank values
Ammonia (0.01 I mg N/L) - Nitrate-Nitrite (0.005 I mg N/L)]
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
U - Material analyzed for but not detected; value reported is the method detection limit
@ - Fecal coliform analysis performed by Test America Laboratory, Orlando
# - If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
£ - Analyses performed in Bioassay Laboratory

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2009-12-07-19
IRCUD/West Regional

Event ID *

Requester: Jennifer Paris
Field Report Prepared By: KANE
Collected By: KANE, VAHLING, CHOKSI
Send Final Report To ~~Gary Miller~~ P. KANE
Sampling Agency: FDEP CENTRAL DISTRICT

Customer: CEN-DIST
Project ID: FYI3
PMAS: 1143

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	8405 8TH STREET VERO BEACH, FL. 32960 IRCUD WEST REGIONAL WWTF	☐ Comp ☑ Grab	12/07/09 9:38 PK	~~PK~~	
	Field ID: IRWR	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L): 9.22	Storet Station Number:	
	Matrix (Include type e.g. Salt, Fresh, etc): EFFLUENT	Temp (C): 20.52	pH: 7.48	Sample Depth ☐ m ☐ ft: SURFACE	☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm): 1073
	Latitude o ' " .	Longitude o ' " .	Comments:	NPDES Number: FL0041637	

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	8405 8TH STREET VERO BEACH, FL. 32960 IRCUD WEST REGIONAL WWTF	☐ Comp ☑ Grab	12/07/09 9:07 PK	~~PK~~	
	Field ID: IRWR	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L): 9.22	Storet Station Number:	
	Matrix (Include type e.g. Salt, Fresh, etc): BIOASSAY EFFLUENT	Temp (C): 20.52	pH: 7.48	Sample Depth ☐ m ☐ ft: SURFACE	☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm): 1073
	Latitude o ' " .	Longitude o ' " .	Comments: BIOASSAY	NPDES Number: FL0041637	

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	8405 8TH STREET VERO BEACH, FL. 32960 IRCUD WEST REGIONAL WWTF	☐ Comp ☑ Grab	12/07/09 9:55 PK	~~PK~~	
	Field ID: IRWR	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:	
	Matrix (Include type e.g. Salt, Fresh, etc): BLANK	Temp (C):	pH:	Sample Depth ☐ m ☐ ft: N/A	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm):
	Latitude o ' " .	Longitude o ' " .	Comments: BLANK	NPDES Number: FL0041637	

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	Field ID	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:	
	Matrix (Include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth ☐ m ☐ ft:	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm): NPDES Number:
	Latitude o ' " .	Longitude o ' " .	Comments: 3 Bioassay Rec'd in fax by J.D. 10:26 12.8.09		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
KANE	12/7/09	FEDEX	PKD	12/8/09 925A				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Definitive Bioassay Bench Sheets

Facility: IRCUD / West Regional WWTP

Address : 8405 8th St.,

City: Vero Beach **County:** Indian River

Contact/District: Phil Kane / Central

NPDES Permit #: FL 0041637

LIMS Job # TIH-2009-12-08-85

LIMS Sample #: 1234845 SD.

Lims Data Entry: 12-15-09 MF

Data Entry Verification: 12.15.09 SD.

Sample Collection: Date: 12-7-09 Time: 9:38

Hold Time Start: Date: 12-7-09 Time: 9:38

Comments:

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

Test Type: (Definitive)
Static / (Static Renewal) / Flow-through
Test Duration: 48 (96) Hours.
Light Intensity : 50 - 100 ft. candles.
Photoperiod : 16 hours light 8 hours dark.

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

Initial sample handling:

PH adjustment : yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____
Aeration : yes (no) Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ~____bubbles/min
Salinity adjusted (Test 1): yes (no) Initial Salinity: ____ 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:

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

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min 26.3 max 27.6 mean 27.0
Incubator # ____ min ____ max ____ mean ____
Room B246 min 23.6 max 25.8 mean 24.7

Investigators' Signatures
Marshall Faircloth
Tom Davis
Bruce Alexander
Kim M. Spencer
Loretta C. Wolfe
REVIEWER

Water Quality Parameters	20% DMW	Moderately Hard Water/ (Well Water)	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A		NA		——	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03				0.04	HACH	JS	BA
Alkalinity (mg/L as $CaCO_3$):	90	153				140	HACH	BA	JS
Hardness (mg/L as $CaCO_3$):	81	139				134	HACH	BA	JS
Total Ammonia (mg/L as N):	<0.017	<0.017				<0.017	DENVER	MF	JS
Salinity (ppth):	—	-				0.5	YSI / (Mettler)	JS	BA

V 1.4 9/12/05

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 123489~~5~~ 45 TD. Test #: 1/2 Test Started: Date 12.8.09 Time: 13.00

Organism: C. dubia SOP #: TA 07_ 01 Test Ended: Date 12-12-09 Time: 1115

Organism Batch: 42-09 Diluent/ Batch: Dmw/ 12.1.09

Organism Age: <24 hr Food: YCT *P. subcapitata* *Artemia*

Chamber Size: 30 mL Batch: 10.30.09 7.23.09

Test Volume: 20 mL Feeding: (Prior to test) - (Prior to renewal) - Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl %	A	A	5	5	5	5	~~B~~ 5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
6.25 %	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
12.5 %	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
25 %	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
50 %	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
100 %	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5

Organisms loaded by: BA Checked by: BA BA BA ~~BA~~ BA BF

Loading Verified by: ~~BA~~

m = missing d = dead BR = before renewal AR = after renewal

Comments:

Test Results:

% mortality in 100% sample: 0

LC_{50}: >100% If Calculated: 95% CI_____ Method:_____

Screening Tests:

Report LC50 as >100%, =100%, or <100%.

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 #: 1234895 45 J.D. Test #: 2/2 Test Started: Date 12.8.09 Time: 1300
Organism: C. tleeds. SOP #: TA 07_02 Test Ended: Date 12-12-09 Time: 1125
Organism Batch: 12.8.09 Diluent/ Batch: Well / 12.8.09
Organism Age: 13 days Food: YCT P. subcapitata Lot Artemia Batch 23613 / 157-09 / 158-09
Chamber Size: 1000 mL Batch: _____ _____
Test Volume: 500 mL Feeding: Prior to test Prior to renewal Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	B1	10	10	10	10	10	10
	B	B2	10	10	10	10	10	10
	C JD							
	D							
6.25%	A	B3	10	10	10	10	10	10
	B	B4	10	10	10	10	10	10
	C							
	D							
12.5%	A	B5	10	10	10	10	10	10
	B	B6	10	10	10	10	10	10
	C							
	D							
25%	A	B7	10	10	10	10	10	10
	B	B8	10	10	10	10	10	10
	C							
	D							
50%	A	B9	10	10	10	10	10	10
	B	B10	10	10	10	10	10	10
	C							
	D							
100%	A	B11	10	10	10	10	10	10
	B	B12	10	10	10	10	10	10
	C							
	D							

Organisms loaded by: JD Checked by: JD JD JD BA SD BA MF
Loading Verified by: BA

m = missing d = dead BR = before renewal AR = after renewal

Comments:

Test Results:
% mortality in 100% sample: Ø
LC_{50}: >100% If Calculated: 95% CI_____ Method:_____

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

LIMS Sample # : 1234885 MF Test #: 1 of 2

TEST SOP #: TA07_01 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:

Concentration 6.25%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A	M		A
pH (S.U.)	7.9		7.8	7.8		8.1
Temperature °C	24.0		24.0	24.0		24.4
Dissolved Oxygen mg/L	7.8		7.4	7.2		7.7
Conductivity µmhos mmhos	242		293	233		248
(initials) Measured by:	BA		BA	BA		MF
(initials) Recorded by:	BA		BA	BA		MF

Comments:

Concentration 12.5%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A	M		A
pH (S.U.)	7.9		7.9	7.9		8.1
Temperature °C	24.0		24.0	24.0		24.4
Dissolved Oxygen mg/L	7.9		7.3	7.3		7.7
Conductivity µmhos mmhos	304		378	290		323
(initials) Measured by:	BA		BA	BA		MF
(initials) Recorded by:	BA		BA	BA		MF

Comments:

Concentration 25%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A	M		A
pH (S.U.)	7.9		7.9	8.0		8.1
Temperature °C	24.0		24.0	24.0		24.6
Dissolved Oxygen mg/L	7.9		7.3	7.3		7.7
Conductivity µmhos mmhos	411		511	420		450
(initials) Measured by:	BA		BA	BA		MF
(initials) Recorded by:	BA		BA	BA		MF

Comments:

V 2.0 2/24/04

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

45 mf

IMS Sample #: 123485 Test #: 1 of 2

EST SOP #: TA07_01 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:

Concentration 50%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A	M		A
pH (S.U.)	7.9		8.0	7.9		8.2
Temperature °C	24.1		24.0	24.0		24.5
Dissolved Oxygen mg/L	8.0		7.3	7.3		7.7
Conductivity µmhos mmhos	636		777	645		693
(initials) Measured by:	BA		BA	BA		MF
(initials) Recorded by:	BA		BA	BA		MF

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A	M		A
pH (S.U.)	7.8		8.0	7.9		8.2
Temperature °C	24.4		24.0	24.0		24.2
Dissolved Oxygen mg/L	8.0		7.4	7.4		7.7
Conductivity µmhos mmhos	1100		1184	1073		1153
(initials) Measured by:	BA		BA	BA		MF
(initials) Recorded by:	BA		BA	BA		MF

Comments:

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

Comments:

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

Comments:

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 1234895 Test #: 2 of 2

TEST SOP #: TA07_02 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas*
Americamysis bahia *Menidia beryllina* Other:

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A	A	B	A
pH (S.U.)	7.7	7.8	7.9	7.9	7.8	8.2
Temperature °C	240	25.9	25.9	23.9	24.9	25.1
Dissolved Oxygen mg/L	8.3	6.9	6.5	7.8	6.5	6.8
Conductivity µmhos mmhos	278	284	293	359	292	305
(initials) Measured by:	KS	KS	KS	VMM	KS	MF
(initials) Recorded by:	KS	KS	KS	VMM	KS	MF

Comments:

Concentration 6.25%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A	A	B	A
pH (S.U.)	7.7	7.9	8.1	24.1	7.4	8.1
Temperature °C	240	25.3	25.4	7.9	24.9	25.1
Dissolved Oxygen mg/L	8.4	6.9	6.5	7.7	6.7	6.8
Conductivity µmhos mmhos	336	341	340	338	342	347
(initials) Measured by:	KS	KS	KS	VMM	SA	MF
(initials) Recorded by:	KS	KS	KS	VMM	KS	MF

Comments:
VMM: SWITCHED COLUMNS

Concentration 12.5%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A	A	B	A
pH (S.U.)	7.8	7.9	8.1	7.9	7.9	8.1
Temperature °C	240	25.2	25.7	24.0	24.8	24.9
Dissolved Oxygen mg/L	8.5	6.8	6.6	7.7	6.5	6.7
Conductivity µmhos mmhos	387	396	396	381	389	395
(initials) Measured by:	KS	KS	KS	VMM	KS	MF
(initials) Recorded by:	KS	KS	KS	VMM	KS	MF

Comments:

Concentration 25%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A	A	B	A
pH (S.U.)	7.8	7.9	8.1	8.0	7.9	8.1
Temperature °C	240	25.2	25.5	24.4	24.4	24.9
Dissolved Oxygen mg/L	8.6	6.8	6.7	7.7	6.7	6.7
Conductivity µmhos mmhos	499	495	499	493	511	516
(initials) Measured by:	KS	KS	KS	VMM	SA	MF
(initials) Recorded by:	KS	KS	KS	VMM	KS	MF

Comments:

V2.0 2/24/04

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FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 1234895 **Test #:** 2 of 2

TEST SOP #: TA07_02 **Test Species:** *Ceriodaphnia dubia* (*Cyprinella leedsi*) *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:_____

Concentration 50%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A	A	B	A
pH (S.U.)	7.9	7.9	8.1	7.9	8.0	8.1
Temperature °C	24.7	25.1	25.7	24.4	24.8	24.9
Dissolved Oxygen mg/L	8.6	6.8	6.7	7.7	6.6	6.7
Conductivity ~~µmhos~~ mmhos	701	697	692	738	765	776
(initials) Measured by:	JD	JD	JD	VMM	BA	MF
(initials) Recorded by:	JD	JD	JD	VMM	BA	MF

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A	A	B	A
pH (S.U.)	7.8	7.9	8.1	7.9	8.0	8.1
Temperature °C	25.5	25.0	25.9	24.8	24.8	25.2
Dissolved Oxygen mg/L	8.4	6.6	6.7	7.7	6.5	6.8
Conductivity ~~µmhos~~ mmhos	1118	1103	1101	1086	1126	1149
(initials) Measured by:	JD	JD	JD	VMM	BA	MF
(initials) Recorded by:	JD	JD	JD	VMM	BA	MF

Comments:

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

Comments:

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

Comments:

V 2.0 2/24/04

Appendix C. SRT Bench Sheets and Statistical Analysis

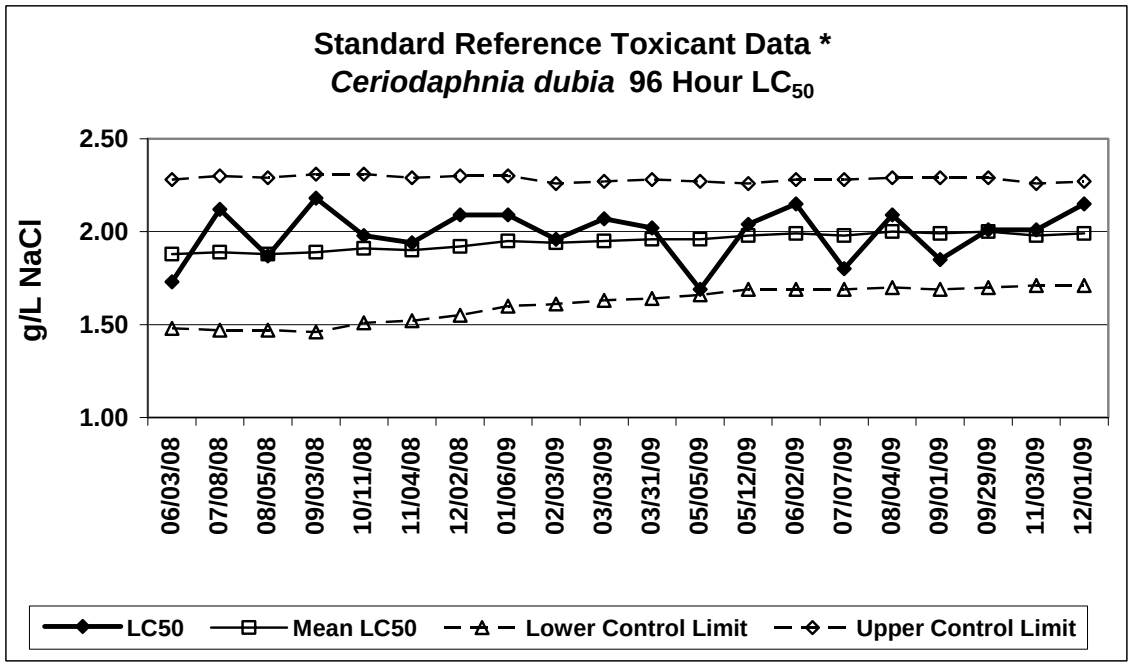
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
06/03/08	1.73	1.88	0.20	1.48	2.28
07/08/08	2.12	1.89	0.21	1.47	2.30
08/05/08	1.87	1.88	0.20	1.47	2.29
09/03/08	2.18	1.89	0.21	1.46	2.31
10/11/08	1.98	1.91	0.20	1.51	2.31
11/04/08	1.94	1.90	0.19	1.52	2.29
12/02/08	2.09	1.92	0.19	1.55	2.30
01/06/09	2.09	1.95	0.17	1.60	2.30
02/03/09	1.96	1.94	0.16	1.61	2.26
03/03/09	2.07	1.95	0.16	1.63	2.27
03/31/09	2.02	1.96	0.16	1.64	2.28
05/05/09	1.69	1.96	0.15	1.66	2.27
05/12/09	2.04	1.98	0.14	1.69	2.26
06/02/09	2.15	1.99	0.15	1.69	2.28
07/07/09	1.80	1.98	0.15	1.69	2.28
08/04/09	2.09	2.00	0.15	1.70	2.29
09/01/09	1.85	1.99	0.15	1.69	2.29
09/29/09	2.01	2.00	0.15	1.70	2.29
11/03/09	2.01	1.98	0.14	1.71	2.26
12/01/09	2.15	1.99	0.14	1.71	2.27

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

CV = 7.06
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

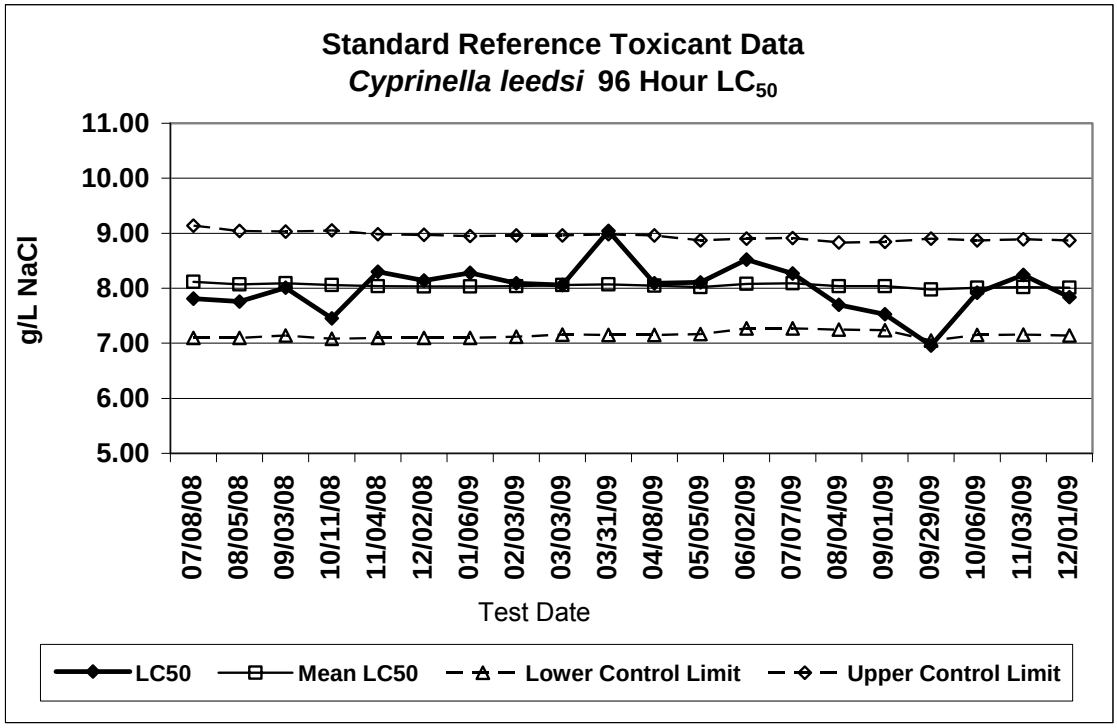
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Cyprinella leedsi (bannerfin shiner) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
07/08/08	7.81	8.12	0.51	7.10	9.14
08/05/08	7.76	8.07	0.48	7.10	9.04
09/03/08	8.01	8.09	0.47	7.14	9.03
10/11/08	7.45	8.06	0.49	7.08	9.05
11/04/08	8.30	8.04	0.47	7.10	8.98
12/02/08	8.14	8.03	0.47	7.10	8.97
01/06/09	8.28	8.03	0.46	7.10	8.95
02/03/09	8.09	8.04	0.46	7.12	8.96
03/03/09	8.06	8.06	0.45	7.16	8.96
03/31/09	9.04	8.07	0.46	7.15	8.98
04/08/09	8.09	8.05	0.45	7.15	8.96
05/05/09	8.11	8.02	0.43	7.17	8.87
06/02/09	8.52	8.08	0.41	7.27	8.90
07/07/09	8.27	8.09	0.41	7.27	8.91
08/04/09	7.70	8.04	0.40	7.25	8.83
09/01/09	7.53	8.04	0.40	7.24	8.84
09/29/09	6.96	7.98	0.46	7.05	8.90
10/06/09	7.92	8.01	0.43	7.15	8.87
11/03/09	8.24	8.02	0.43	7.16	8.89
12/01/09	7.84	8.01	0.43	7.14	8.87

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

CV = 5.38
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 11.16.09 **Organism** Batch: 41.09 **Test Beginning:** Date: 12.1.09 Time: 10:50
Toxicant/ Batch#: N.Cl 112.1.09 Age: <24hr **Test Ending:** Date: 12.5.09 Time: 1230

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AER
Alkalinity (mg/L as $CaCO_3$):	90	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	89	TA06_09	BA
Total Ammonia (mg/L as N):	<0.017	TA06_17	ME
Conductivity: µmhos mmhos	0.178	TA06_25	JD
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	7.15.09
☑ *P. subcapitata*	7-23-09
☐ Artemia Lot #	

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

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

Concentrations prepared by: BA
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 26.1 max 27.6 mean 26.9
Light Intensity: 50-100 Ft. candles Waterbath # ___ min ____ max ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min 22.4 max 25.9 mean 24.2

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 (circle)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
2.0	A	A	5	5	5	5	4 1D	4
	B	B	5	5	5	5	5	4 1D
	C	C	5	5	5	5	4 1D	4
	D	D	5	5	5	5	5	5
2.5	A	A	5	4 1D	1 3D	1	0 1D	
	B	B	5	4 1D	0 4D	—	—	
	C	C	5	5	2 3D	2	0 2D	
	D	D	5	3 2D	3	3	0 3D	
3.0	A	A	5	4 1D	0 4D	—		
	B	B	5	4 1D	0 4D	—		
	C	C	5	2 3D	0 3D	—		
	D	D	5	4 1D	0 4D	—		
4.0	A	A	5	~~0 1D 0 5D~~	—	—		
	B	B	5	1 4D	0 1D	—		
	C	C	5	~~1 4D 0 5D~~ A	0 1D	—		
	D	D	5	0 5D	—	—		
Organisms loaded by: BA		Checked by:	BA	BA	BA	BA	BA	5
Loading Verified by: 5								

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

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

Comments: (A) 4.0 A and C swapped BA 12-2-09

Investigators' Signatures
Bruce Alexander
Hans Smit
Amelia Parker
Marshall Faircloth
Reviewer: Loretta Wolfe

Method: TSK 95% confidence intervals

Statistics: LC50	Lower	Upper
48 hour:	2.38	2.28 2.48
96 hour:	2.15	2.07 2.21

PAGE |

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: 12.1.09 Time: 1050
Test Ending: Date: 12.5.09 Time: 1230

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (circle)	Replicate	Test Hour	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☐ mmhos	Salinity (ppth)
Control	M	0 hr	7.8	24.0	7.4	0.178	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.7	24.0	7.2	0.202	–
	M	48 hr AR	7.9	24.0	7.7	0.178	–
	–	72 hr	–	–	–	–	–
	M	96 hr		24.0	8.0	0.251	
1.5	M	0 hr	7.8	24.0	7.3	2.83	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.7	24.0	7.1	3.10	–
	M	48 hr AR	7.8	24.0	7.7	2.85	–
	–	72 hr	–	–	–	–	–
	M	96 hr		24.0	7.9	3.25	
2.0	M	0 hr	7.8	24.0	7.3	3.72	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.7	24.0	7.3	4.09	–
	M	48 hr AR	7.9	24.0	7.7	3.74	–
	–	72 hr	–	–	–	–	–
	M	96 hr		24.0	7.9	4.27	
2.5	M	0 hr	7.9	24.0	7.4	4.67	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.8	24.0	7.3	5.16	–
	M	48 hr AR	7.9	24.0	7.7	4.54	–
	A	72 hr	7.8	24.0	7.5	4.69	
		96 hr					
3.0	M	0 hr	7.9	24.0	7.5	5.55	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.8	24.0	7.3	6.04	–
		48 hr AR					
		72 hr					
		96 hr					
4.0	M	0 hr	7.9	24.0	7.5	7.26	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.8	24.0	7.4	7.93	–
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Bruce Alexander
Amelia Parker
Jana Smith
Marshall Faircloth

Reviewed By: Loretta Wolfe

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

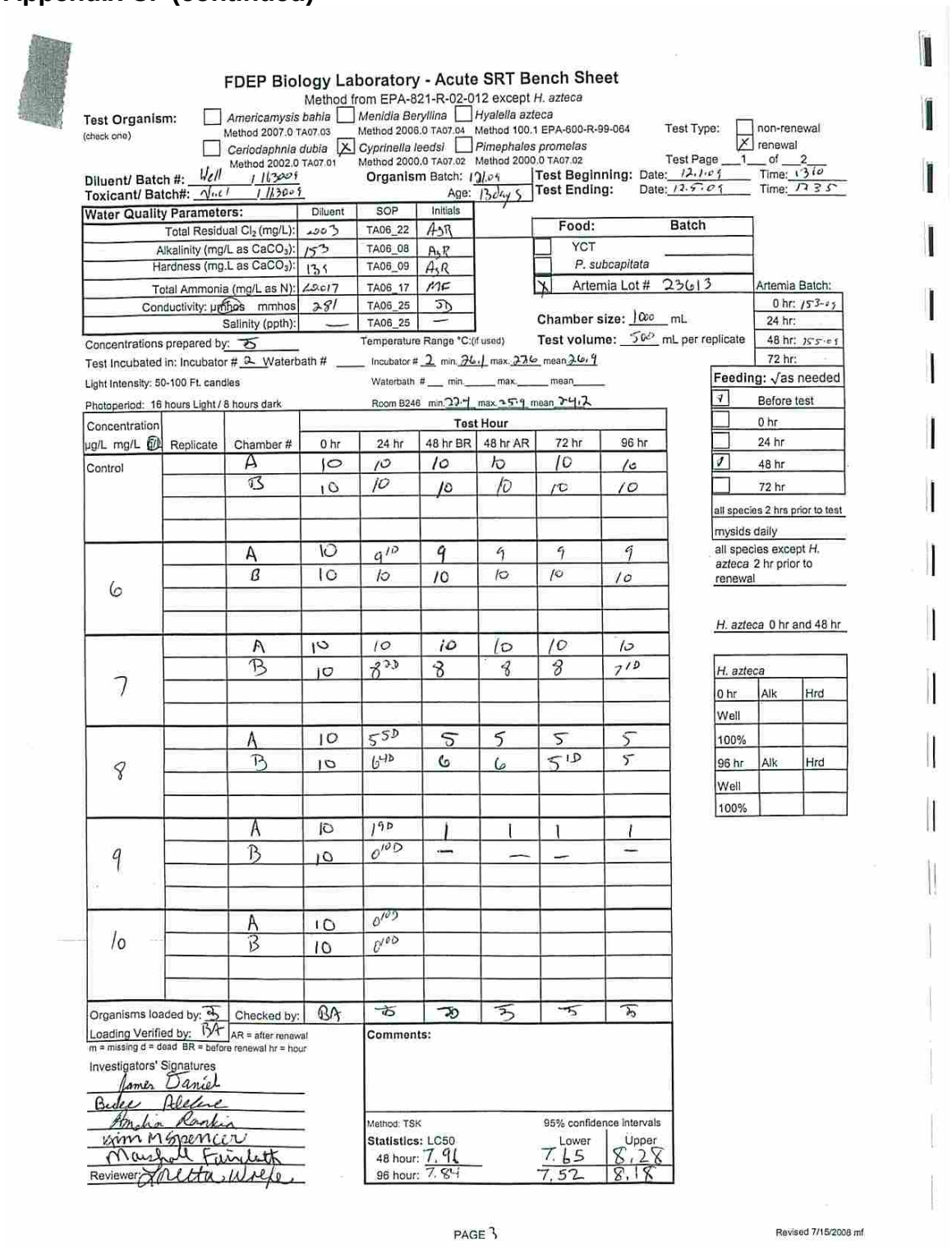
Measure/record salinity for marine tests

Comments:

PAGE 2

Revised 07/15/2008 MF

Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☒ renewal

Test Page 1 of 2

Diluent/ Batch #: Well / 113009
Toxicant/ Batch#: NaCl / 113009
Organism Batch: 12.09 Age: 13dy 5
Test Beginning: Date: 12.1.09 Time: 1310
Test Ending: Date: 12.5.09 Time: 1235

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	2003	TA06_22	AJR
Alkalinity (mg/L as $CaCO_3$):	153	TA06_08	AJR
Hardness (mg.L as $CaCO_3$):	131	TA06_09	AJR
Total Ammonia (mg/L as N):	2.017	TA06_17	ME
Conductivity: µmhos mmhos	281	TA06_25	SD
Salinity (ppth):	—	TA06_25	—

Concentrations prepared by: JS
Test Incubated in: Incubator # 2 Waterbath # ____
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:(if used)
Incubator # 2 min. 26.1 max. 27.6 mean 26.9
Waterbath # ___ min. ____ max. ____ mean ____
Room B246 min. 22.4 max. 25.9 mean 24.2

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

Chamber size: 100 mL
Test volume: 500 mL per replicate

Artemia Batch:
- 0 hr: 153-05
- 24 hr:
- 48 hr: 155-05
- 72 hr:

Feeding: √as needed

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

all species 2 hrs prior to test

mysids daily

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

H. azteca 0 hr and 48 hr

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

Concentration µg/L mg/L (circle)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control		A	10	10	10	10	10	10
		B	10	10	10	10	10	10
6		A	10	9 10	9	9	9	9
		B	10	10	10	10	10	10
7		A	10	10	10	10	10	10
		B	10	8 7D	8	8	8	7 1D
8		A	10	5 5D	5	5	5	5
		B	10	6 4D	6	6	5 1D	5
9		A	10	1 9D	1	1	1	1
		B	10	0 10D	—	—	—	—
10		A	10	0 10D				
		B	10	0 10D				
Organisms loaded by: JS		Checked by: BA	JS	JS	JS	JS	JS	

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

Investigators' Signatures
James Daniel
Bridget Abelene
Amelia Rankin
Kim M Spencer
Marshall Fairbanks
Reviewer: Loretta Wolfe

Comments:

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 7.96	7.65	8.28
96 hour: 7.84	7.52	8.18

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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: 12.1.09 Time: 1310
Test Ending: Date: 12.5.09 Time: 1230
Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control	A	0 hr	8.0	24.1	7.6	0.281	0.06
	B	24 hr	8.0	24.5	7.0	~~11.476~~ 0.314	0.08
	A	48 hr BR	8.1	24.6	6.8	~~13.25~~ 0.291	0.06
	A	48 hr AR	8.0	24.0	7.3	0.289	0.07
	B	72 hr	8.0	25.7	5.9	0.328	0.09
	A	96 hr	7.1	25.3	7.6	0.316	0.09
6	A	0 hr	8.0	24.1	7.3	11.5 mmhos	6.39
	B	24 hr	7.9	24.0	6.5	~~18.0~~ 11.0 mmhos	6.13
	A	48 hr BR	8.1	24.6	6.6	11.0	5.96
	A	48 hr AR	8.1	24.0	7.3	11.3	6.22
	B	72 hr	8.0	25.9	6.2	11.4	6.46
	A	96 hr	7.1	25.4	7.1	11.9	6.46
7	A	0 hr	8.0	24.1	7.3	13.3	7.59
	B	24 hr	7.9	24.0	6.6	12.5	7.09
	A	48 hr BR	8.1	24.4	6.5	12.7	7.26
	A	48 hr AR	8.0	24.1	7.3	13.3	7.61
	B	72 hr	8.0	25.8	6.0	13.4	7.62
	A	96 hr	7.1	25.0	7.1	14.0	7.73
8	A	0 hr	8.0	24.1	7.3	15.4	8.90
	B	24 hr	7.9	24.0	6.7	14.5	8.29
	A	48 hr BR	8.1	24.3	6.6	14.9	8.63
	A	48 hr AR	8.0	24.1	7.3	14.8	8.56
	B	72 hr	8.0	25.7	6.4	14.9	8.58
	A	96 hr	7.1	24.8	7.0	15.5	8.60
9	A	0 hr	8.0	24.0	7.3	16.8	9.79
	B	24 hr	8.0	24.0	6.6	16.2	9.39
	A	48 hr BR	8.1	24.3	6.7	16.3	9.46
	A	48 hr AR	8.0	24.1	7.3	16.1	9.35
	A	72 hr	8.1	25.8	6.5	16.1	9.32
	A	96 hr	7.1	25.3	7.1	16.9	9.85
10	A	0 hr	7.9	24.0	7.1	18.5	10.9
	B	24 hr	7.9	24.0	6.6	17.7	10.4
—	—	48 hr BR	—	—	—	—	—
—	—	48 hr AR	—	—	—	—	—
—	—	72 hr	—	—	—	—	—
—	—	96 hr	—	—	—	—	—

Investigators Signatures
James Daniel
Alyssa Alexander
Amelia Rankin
Kim M. Spencer
Marshall Faircloth
Reviewed By: Latitia Wolfe

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

Measure/record salinity for marine tests

Comments: (A) put data in wrong box 1st 12/10/09

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Revised 07/15/2008 MF

Appendix C. (continued)

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

DATE: 12-01-09 DURATION: 96 h TOXICANT : NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	0
2.00	20	3
2.50	20	20
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.15
95% LOWER CONFIDENCE: 2.07
95% UPPER CONFIDENCE: 2.24

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

DATE: 12-01-09 DURATION: 96 h TOXICANT : NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
6.00	20	1
7.00	20	3
8.00	20	10
9.00	20	19
10.00	20	20

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: LC50: 7.84
95% LOWER CONFIDENCE: 7.52
95% UPPER CONFIDENCE: 8.18

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 11/30/09

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.) 11/30/09	Salinity (‰)
Mysidopsis bahia	150	4 D.O.	MS091126	25	~~7.8~~ 8.0	20
Menidia beryllina	150	12 DO	SS091118	25	8.0	20
						Hardness (mg/L)
Cyprinella leedsi	150	12 D.O.	CL091118	25	7.8	80
Pimephales promelas	150	7 D.O	FM091123	25	7.8	80
Ceriodaphnia dubia						
YCT						
P. subcapitata						

Packed by: JC

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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

Appendix D. (continued)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 12/7/09

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness (mg/L)
Cyprinella leedsi	150	12 days	CL091125	25°C	7.8 su	80mg/L
Pimephales promelas	150	8 days	FM091129	25°C	7.8 su	80mg/L
Ceriodaphnia dubia						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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

Appendix E. Chemical Analyses performed on the effluent from the IRCUD West Regional WWTF sampled on December 7, 2009.

Date	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
12/7/2009 9:38	Effluent	AGP/LN	Algal Growth Potential	8.21	A	mg DryWt/L	0.3	0.9
12/7/2009 9:38	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	3.4		ug/L	0.55	1.7
12/7/2009 9:38	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.4	I	mg/L	0.2	2
12/7/2009 9:38	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.5		ug/L	0.4	1.2
12/7/2009 9:38	Effluent	Overflow	Fecal Coliforms-Membrane Filter	144	B	#/100 mL	1	1
12/7/2009 9:07	Effluent	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		
12/7/2009 9:07	Effluent	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100	L	LC50		
12/7/2009 9:38	Effluent	Metals	Arsenic	0.97	I	ug/L	0.25	1
12/7/2009 9:38	Effluent	Metals	Chromium	0.67	I	ug/L	0.3	1.2
12/7/2009 9:38	Effluent	Metals	Mercury	0.12	U	ug/L	0.12	0.5
12/7/2009 9:38	Effluent	Metals	Zinc	7.3	I	ug/L	5	20
12/7/2009 9:38	Effluent	Metals	Nickel	2.24		ug/L	0.25	1
12/7/2009 9:38	Effluent	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
12/7/2009 9:38	Effluent	Metals	Lead	0.2	U	ug/L	0.2	0.8
12/7/2009 9:38	Effluent	Metals	Magnesium	13.4		mg/L	0.04	0.16
12/7/2009 9:38	Effluent	Metals	Copper	0.5	U	ug/L	0.5	0.5
12/7/2009 9:38	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
12/7/2009 9:38	Effluent	Metals	Selenium	0.2	U	ug/L	0.2	0.8
12/7/2009 9:38	Effluent	Metals	Aluminum	60	U	ug/L	60	240
12/7/2009 9:38	Effluent	Metals	Calcium	30.3		mg/L	0.075	0.3
12/7/2009 9:38	Effluent	Metals	Iron	30	U	ug/L	30	120
12/7/2009 9:38	Effluent	Nutrients	Kjeldahl Nitrogen	1.1		mg N/L	0.08	0.2
12/7/2009 9:38	Effluent	Nutrients	NO2NO3-N	0.016		mg N/L	0.004	0.01
12/7/2009 9:38	Effluent	Nutrients	Chloride	190	A	mg Cl/L	4	10
12/7/2009 9:38	Effluent	Nutrients	Ammonia-N	0.038	J	mg N/L	0.01	0.02
12/7/2009 9:38	Effluent	Nutrients	Total-P	0.77	A	mg P/L	0.02	0.05
12/7/2009 9:38	Effluent	Nutrients	O-Phosphate-P	0.6		mg P/L	0.02	0.05
12/7/2009 9:38	Effluent	Nutrients	TSS	4	I	mg/L	4	16
12/7/2009 9:38	Effluent	Nutrients	Sulfate	89	A	mg SO4/L	4	10
12/7/2009 9:38	Effluent	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
12/7/2009 9:38	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
12/7/2009 9:38	Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
12/7/2009 9:38	Effluent	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1

Appendix E. (continued)

Date	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
12/7/2009 9:38	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
12/7/2009 9:38	Effluent	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
12/7/2009 9:38	Effluent	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
12/7/2009 9:38	Effluent	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
12/7/2009 9:38	Effluent	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
12/7/2009 9:38	Effluent	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
12/7/2009 9:38	Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
12/7/2009 9:38	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
12/7/2009 9:38	Effluent	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
12/7/2009 9:38	Effluent	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
12/7/2009 9:38	Effluent	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
12/7/2009 9:38	Effluent	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
12/7/2009 9:38	Effluent	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
12/7/2009 9:38	Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
12/7/2009 9:38	Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
12/7/2009 9:38	Effluent	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
12/7/2009 9:38	Effluent	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
12/7/2009 9:38	Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
12/7/2009 9:38	Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
12/7/2009 9:38	Effluent	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
12/7/2009 9:38	Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
12/7/2009 9:38	Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
12/7/2009 9:38	Effluent	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
12/7/2009 9:38	Effluent	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
12/7/2009 9:38	Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
12/7/2009 9:38	Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
12/7/2009 9:38	Effluent	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
12/7/2009 9:38	Effluent	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
12/7/2009 9:38	Effluent	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
12/7/2009 9:38	Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
12/7/2009 9:38	Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
12/7/2009 9:38	Effluent	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
12/7/2009 9:38	Effluent	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
12/7/2009 9:38	Effluent	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2

Appendix E. (continued)

Date	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
12/7/2009 9:38	Effluent	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
12/7/2009 9:38	Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
12/7/2009 9:38	Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
12/7/2009 9:38	Effluent	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
12/7/2009 9:38	Effluent	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
12/7/2009 9:38	Effluent	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
12/7/2009 9:38	Effluent	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Fluorene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2-Chlorophenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.5
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8	U	ug/L	2.8	11
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	4.7	U	ug/L	4.7	19
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Pyrene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
12/7/2009 9:38	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Diethyl phthalate	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.5
12/7/2009 9:38	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8	U	ug/L	2.8	11
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	4.7	U	ug/L	4.7	19
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Dimethyl phthalate	9.4	U	ug/L	9.4	38
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Isophorone	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.5

Appendix E. (continued)

Date	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Phenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Acenaphthylene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Chrysene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Phenanthrene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Naphthalene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Nitrobenzene	1.9	UJ	ug/L	1.9	7.5
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	9.4	UJ	ug/L	9.4	38
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Acenaphthene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	2.8	U	ug/L	2.8	11
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Hexachloroethane	2.8	U	ug/L	2.8	11
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Pentachlorophenol	2.8	U	ug/L	2.8	11
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8	UJ	ug/L	2.8	11
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2-Nitrophenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Anthracene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Benzidine	94	U	ug/L	94	380
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8	U	ug/L	2.8	11
12/7/2009 9:38	Effluent	Priority Organic Pollutants	Fluoranthene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:38	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:07	Effluent	Field Parameter	Specific Conductance	1073		umhos/cm		
12/7/2009 9:38	Effluent	Field Parameter	Dissolved Oxygen	9.22		mg/L		
12/7/2009 9:07	Effluent	Field Parameter	pH	7.48				
12/7/2009 9:07	Effluent	Field Parameter	Temperature	20.52		C		
12/7/2009 9:55	Blank	Metals	Zinc	5	U	ug/L	5	20
12/7/2009 9:55	Blank	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
12/7/2009 9:55	Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
12/7/2009 9:55	Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1

Appendix E. (continued)

Date	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
12/7/2009 9:55	Blank	Metals	Mercury	0.12	U	ug/L	0.12	0.5
12/7/2009 9:55	Blank	Metals	Iron	30	U	ug/L	30	120
12/7/2009 9:55	Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
12/7/2009 9:55	Blank	Metals	Aluminum	60	U	ug/L	60	240
12/7/2009 9:55	Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
12/7/2009 9:55	Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
12/7/2009 9:55	Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
12/7/2009 9:55	Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
12/7/2009 9:55	Blank	Metals	Copper	0.5	U	ug/L	0.5	0.5
12/7/2009 9:55	Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
12/7/2009 9:55	Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
12/7/2009 9:55	Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
12/7/2009 9:55	Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
12/7/2009 9:55	Blank	Nutrients	NO2NO3-N	0.005	I	mg N/L	0.004	0.01
12/7/2009 9:55	Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
12/7/2009 9:55	Blank	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
12/7/2009 9:55	Blank	Nutrients	Ammonia-N	0.01	I	mg N/L	0.01	0.02
12/7/2009 9:55	Blank	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
12/7/2009 9:55	Blank	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
12/7/2009 9:55	Blank	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
12/7/2009 9:55	Blank	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
12/7/2009 9:55	Blank	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
12/7/2009 9:55	Blank	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
12/7/2009 9:55	Blank	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
12/7/2009 9:55	Blank	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
12/7/2009 9:55	Blank	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
12/7/2009 9:55	Blank	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
12/7/2009 9:55	Blank	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
12/7/2009 9:55	Blank	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
12/7/2009 9:55	Blank	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
12/7/2009 9:55	Blank	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4

Appendix E. (continued)

Date	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
12/7/2009 9:55	Blank	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
12/7/2009 9:55	Blank	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
12/7/2009 9:55	Blank	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
12/7/2009 9:55	Blank	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
12/7/2009 9:55	Blank	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
12/7/2009 9:55	Blank	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
12/7/2009 9:55	Blank	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
12/7/2009 9:55	Blank	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
12/7/2009 9:55	Blank	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
12/7/2009 9:55	Blank	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
12/7/2009 9:55	Blank	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
12/7/2009 9:55	Blank	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
12/7/2009 9:55	Blank	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
12/7/2009 9:55	Blank	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
12/7/2009 9:55	Blank	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
12/7/2009 9:55	Blank	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
12/7/2009 9:55	Blank	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
12/7/2009 9:55	Blank	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
12/7/2009 9:55	Blank	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
12/7/2009 9:55	Blank	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
12/7/2009 9:55	Blank	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
12/7/2009 9:55	Blank	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
12/7/2009 9:55	Blank	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
12/7/2009 9:55	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8	U	ug/L	2.8	11
12/7/2009 9:55	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
12/7/2009 9:55	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	4.7	U	ug/L	4.7	19
12/7/2009 9:55	Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.8	U	ug/L	2.8	11

Appendix E. (continued)

Date	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
12/7/2009 9:55	Blank	Priority Organic Pollutants	Naphthalene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Pentachlorophenol	2.8	U	ug/L	2.8	11
12/7/2009 9:55	Blank	Priority Organic Pollutants	Phenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Pyrene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
12/7/2009 9:55	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
12/7/2009 9:55	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8	U	ug/L	2.8	11
12/7/2009 9:55	Blank	Priority Organic Pollutants	Isophorone	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.5
12/7/2009 9:55	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8	UJ	ug/L	2.8	11
12/7/2009 9:55	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.5
12/7/2009 9:55	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Acenaphthene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Benzidine	94	U	ug/L	94	380
12/7/2009 9:55	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	4.7	U	ug/L	4.7	19
12/7/2009 9:55	Blank	Priority Organic Pollutants	Dimethyl phthalate	9.4	U	ug/L	9.4	38
12/7/2009 9:55	Blank	Priority Organic Pollutants	Fluoranthene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8	U	ug/L	2.8	11
12/7/2009 9:55	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.5
12/7/2009 9:55	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Chrysene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Diethyl phthalate	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Anthracene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Fluorene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Nitrobenzene	1.9	UJ	ug/L	1.9	7.5

Appendix E. (continued)

Date	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
12/7/2009 9:55	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.4	UJ	ug/L	9.4	38
12/7/2009 9:55	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	2-Nitrophenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Hexachloroethane	2.8	U	ug/L	2.8	11
12/7/2009 9:55	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	2-Chlorophenol	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
12/7/2009 9:55	Blank	Priority Organic Pollutants	Acenaphthylene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.94	U	ug/L	0.94	3.8
12/7/2009 9:55	Blank	Priority Organic Pollutants	Phenanthrene	0.94	U	ug/L	0.94	3.8

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

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Blake Vahlsing	**Contact Number:** (407) 893-3313
Facility Name (as it appears on permit): IRCUD/West Regional WWTF	**Former Names:**
NPDES Permit Number: FL0041637	**Permit Expiration Date:** March 27, 2010
Physical Address: 8405 8th Street, Vero Beach, FL 32960	
District: Central	**County:** Indian River
Function of Facility: Domestic Wastewater Treatment Plant	
Facility Type: Domestic Wastewater	**Permitted Capacity (MGD):** 2.0
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): D-001 outfall flow: 1.299 million gallons per day (MGD) annual average daily flow (aadf), as reported on the November 2008 DMR (October 2007 through November 2008 reporting period).	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): R-001 created wetland treatment/reuse system: 1.157 MGD aadf; R-002 public access irrigation: 0.084 MGD aadf, as reported on the November 2008 DMR (October 2007 through November 2008 reporting period).	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

Appendix F. (continued)

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): The sampling location of D-001 is WEP-1, located at the wetland outfall structure.
Description of Permitted Outfall(s): The D-001 outfall is the discharge to the Lateral "D" Canal (Class IV fresh waters), thence approximately two miles to Main Canal (Class III fresh waters), thence approximately 7.5 miles to the Indian River Lagoon at Vero Beach (Class II marine waters).
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): IRCUD/West Regional WWTF is an Advanced Domestic Wastewater Treatment Plant consisting of flow equalization, influent manual and mechanical bar screen, grit removal, biological nutrient removal, anaerobic/anoxic tanks, aeration (an oxidation ditch), secondary clarification, filtration, and high level disinfection, with rotary drum sludge thickening of residuals.

Appendix F. (continued)

PART I: Continued										
List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)										
			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow (Total from wetland system)	MGD	Maximum	4.0	-	-	-	Continuous	Recording flow meters and totalizers	FLW-5	See Cond. I.A.8.
BOD, Carbonaceous 5 day, 20C	mg/L	Maximum	3.0	3.75	4.5	6.0	Weekly	24-hour flow proportioned composite	WEP-1	
Solids, Total Suspended	mg/L	Maximum	3.0	3.75	4.5	6.0	Weekly	24-hour flow proportioned composite	WEP-1	
pH	SU	Range	-	-	-	6.0 to 8.5	Daily	Grab	WEP-1	
Coliform, Fecal	#/100 ML	Maximum		Report			Weekly	Grab	WEP-1	
Total Residual Chlorine (For Dechlorination)	mg/L	Maximum	-	-	-	0.01	Daily	Grab	WEP-1	
Nitrogen, Total (as N)	mg/L	Maximum	1.0	1.25	1.50	2.0	Weekly	24-hour flow proportioned composite	WEP-1	
Nitrogen, Kjeldahl, Total (as N)	mg/L	Maximum	-	Report	-	-	Weekly	24-hour flow proportioned composite	WEP-1	
Nitrite plus Nitrate, Total 1 det. (as N)	mg/L	Maximum	-	Report	-	-	Weekly	24-hour flow proportioned composite	WEP-1	
Nitrogen, Ammonia, Total (as N)	mg/L	Maximum	-	-	-	Report	Weekly	24-hour flow proportioned composite	WEP-1	
Nitrogen, Ammonia, Total unionized (as N)	mg/L	Maximum	-	-	-	0.02	Weekly	24-hour flow proportioned composite	WEP-1	

Appendix F. (continued)

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Phosphorus, Total (as P)	mg/L	Maximum	0.10	0.125	0.15	0.2	Weekly	24-hour flow proportioned composite	WEP-1	See Cond. I.A.15
Phosphate, Ortho (as P)	mg/L	Maximum	-	Report	-	-	Weekly	24-hour flow proportioned composite	WEP-1	
Sulfate, Total	mg/L	Maximum	-	Report	-	-	Quarterly	24-hour flow proportioned composite	WEP-1	
Chloride (as Cl)	mg/L	Maximum	-	Report	-	-	Weekly	24-hour flow proportioned composite	WEP-1	
Alkalinity, Total (as CaCO3)	mg/L	Maximum	-	Report	-	-	Weekly	24-hour flow proportioned composite	WEP-1	
Temperature (C), Water	DEG.C	Maximum	-	Report	-	-	Monthly	48-hour	WEP-1	See Cond. I.A.10.
Oxygen, Dissolved (DO)	mg/L	Minimum	-	Report	-	-	Monthly	48-hour	WEP-1	See Cond. I.A.10.
Specific Conductance	UMHO/CM	Maximum	-	-	-	1890	Monthly	Grab	WEP-1	See Cond. I.A.11.
Chlorophyll a	mg/L	Maximum	-	-	-	Report	Quarterly	24-hour flow proportioned composite	WEP-1	
Cadmium, Total Recoverable	ug/L	Maximum	-	-	-	* See Cond. I.A.4	Semiannually	24-hour flow proportioned composite	WEP-1	
Iron, Total Recoverable	mg/L	Maximum	-	-	-	1.0	Semiannually	24-hour flow proportioned composite	WEP-1	
Lead, Total Recoverable	ug/L	Maximum	-	-	-	* See Cond. I.A.5	Semiannually	24-hour flow proportioned composite	WEP-1	
Mercury, Total Recoverable	ug/L	Maximum	-	-	-	0.12	Monthly	Grab	WEP-1	

Appendix F. (continued)

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Nickel, Total Recoverable	ug/L	Maximum	-	-	-	* See Cond. I.A.6	Semiannually	24-hour flow proportioned composite	WEP-1	
Copper, Total Recoverable	ug/L	Maximum	-	-	-	* See Cond. I.A.3	Semiannually	24-hour flow proportioned composite	WEP-1	
Silver, Total Recoverable	ug/L	Maximum	-	-	-	0.07	Monthly	24-hour flow proportioned composite	WEP-1	
Zinc, Total Recoverable	ug/L	Maximum	-	-	-	* See Cond. I.A.7	Semiannually	24-hour flow proportioned composite	WEP-1	
Hardness, Total (as CaCO3)	mg/L	Maximum	-	-	-	Report	Semiannually	24-hour flow proportioned composite	WEP-1	
Whole Effluent Toxicity	See Permit Condition I.A.14								WEP-1	
Table Above: Total Recoverable Copper, Cadmium, Lead, Nickel, and Zinc refer to conditions specified in the permit. All specifications address calculating total hardness of the metal.										

Appendix F. (continued)

PART I: Continued	
Receiving Waters: Indian River Lagoon	**Classification (indicate whether fresh or marine):** Class III marine waters

Appendix F. (continued)

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.): The permittee shall initiate the series of tests described below beginning within 60 days of the issuance of the permit to evaluate whole effluent toxicity of the discharge from outfall D-001. All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th ed., EPA-821-R-02-013, or the most current edition. The control and dilution water will be moderately hard water as described in EPA-821-R-02-013, Table 3, or the most current edition. A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted concurrently or no greater than 30 days before the date of the "routine" test, with each species used in the toxicity tests. The results of all QA toxicity tests shall be submitted with the discharge monitoring report (DMR). Any deviation from the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

1. The permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction test and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test. These tests shall be conducted using a control (0% effluent) and one test concentration of 100% effluent.
2. For each set of tests conducted, a 24 hr. composite sample of final effluent shall be collected and used per the sampling schedule discussed in EPA-821-R-02-013, Section 8.3, or the most current edition. Two additional composite samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.
3. If control mortality exceeds 20% for either species in any test, the test for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 20% for either species. If, in any separate test, 100% mortality occurs prior to the end of the test, and control mortality is less than 20% at that time, that test (including the control) shall be terminated with the conclusion that the sample demonstrates unacceptable chronic toxicity. Additionally, each test must meet the acceptability criteria for the test species as defined in EPA-821-R-02-013 Section 13.12 and Section 11.12, respectively, or the most current edition.
4. The toxicity tests specified above shall be conducted once every year during a routine discharge event.
5. Results from "routine" tests shall be reported according to EPA-821-R-02-013, Section 9, Report Preparation (or the most current edition), and shall be submitted to:

   Florida Department of Environmental Protection
   3319 Maguire Boulevard Suite 232
   Orlando, Florida 32803-3767

   Additionally, all results shall be recorded and submitted on the Discharge Monitoring Report (DMR) in the following manner:

   If the NOEC of a test species is less than 100% effluent, "<100%" should be entered on the DMR for that species. If the NOEC of a test species is greater than or equal to 100% effluent, "≥100%" should be entered.

1. An NOEC of less than 100% effluent in any "routine" or additional definitive test will be a violation of these permit conditions and Rule *62-302.530(62), FAC*.
2. If an NOEC of less than 100% effluent is found in a "routine" test, the permittee shall conduct three additional tests on each species indicating the violation.
3. The first additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent. The dilution series may be modified in the second and third test to more accurately identify the toxicity, such that at least two dilutions above (not to exceed 100% effluent) and two dilutions below the target concentration and a control (0% effluent) are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-013, or the most current edition.
4. For each additional test, the sample collection requirements and the test acceptability criteria specified in section a. above must be met for the test to be considered valid. The first test shall begin within two weeks of the end of the "routine" tests, and shall be conducted weekly thereafter until three additional, valid tests are completed.
5. Results from additional tests, required due to a chronic toxicity violation in the "routine" tests, shall be submitted in a single report prepared according to EPA-821-R-02-013, Section 10, or the most current edition, and submitted within 45 days of completion of the third additional, valid test. Upon the completion of the third additional test, the permittee will meet with the Department within 30 days of the report submittal to identify corrective actions necessary to remedy the observed chronic toxicity.

Appendix F. (continued)

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): NA			
Facility Mixing Zone Details (if applicable): NA			
List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:			
Date	Parameter, Units, and Location	Limit	Result
February 2008	Phosphorus mg/L (D-001)	0.1	0.132
March 2008	Phosphorus mg/L (D-001)	0.1	0.120
April 2008	Total Nitrogen Max. mg/L (D-001)	2.0	2.180
	Total Phosphorus Annual Avg. mg/L (D-001)	0.10	0.120
	Total Nitrogen Monthly Avg. mg/L (R-001)	7.5	7.55
	Total Nitrogen Max. mg/L (R-001)	12.0	15.20
June 2008	Total Nitrogen Max. mg/L (R-001)	12.0	12.6
	Total Nitrogen Monthly Avg. mg/L (R-001)	7.5	9.20
	Total Nitrogen Max. mg/L (R-002)	12.0	12.6
July 2008	Total Nitrogen Annual Avg. mg/L (R-001)	6.0	6.19
	Total Nitrogen Max. mg/L (R-001)	12.0	16.90
	Total Nitrogen Monthly Avg. mg/L (R-001)	7.5	11.40
August 2008	Total Nitrogen Annual Avg. mg/L (R-001)	6.0	6.22
	Total Nitrogen Max. mg/L (R-001)	12.0	12.70
	Total Residual Chlorine mg/L (R-001)	1.0	0.96
	Total Phosphorus Max. mg/L (R-001)	1.5	1.98
	Total Phosphorus Monthly Avg. mg/L (R-001)	0.94	1.06
September 2008	Total Nitrogen Annual Avg. mg/L (R-001)	6.0	6.78
	Total Nitrogen Max. mg/L (R-001)	12.0	15.20
	Total Nitrogen Monthly Avg. mg/L (R-001)	7.5	11.73
October 2008	Total Nitrogen Annual Avg. mg/L (R-001)	6.0	7.44
	Total Nitrogen Max. mg/L (R-001)	12.0	25.40
	Total Nitrogen Monthly Avg. mg/L (R-001)	7.5	13.64
November 2008	Total Nitrogen Annual Avg. mg/L (R-001)	6.0	7.72
	Total Recoverable Mercury ug/L (D-001)	0.12	0.61700
December 2008	Total Recoverable Silver ug/L (D-001)	0.07	0.1890
	Total Nitrogen Annual Avg. mg/L (R-001)	6.0	7.67
January 2009	Total Nitrogen Annual Avg. mg/L (D-001)	1.0	1.305
	Total Nitrogen Monthly Avg. mg/L (D-001)	1.25	6.051
	Total Nitrogen Max. mg/L (D-001)	2.0	26.141
	Total Phosphorus Monthly Avg. mg/L (D-001)	0.125	0.423
	Total Phosphorus Max. mg/L (D-001)	0.2	1.150

Appendix F. (continued)

	Total Nitrogen Annual Avg. mg/L (R-001)	6.0	8.04
	Total Nitrogen Max. mg/L (R-001)	12.0	24.40
	Total Nitrogen Monthly Avg. mg/L (R-001)	7.5	8.28
February 2009	Total Nitrogen Monthly Avg. mg/L (D-001)	1.25	1.889
	Total Nitrogen Max. mg/L (D-001)	2.0	5.711
	Total Phosphorus Monthly Avg. mg/L (D-001)	0.125	0.190
	Total Phosphorus Max. mg/L (D-001)	0.2	0.345
	Total Nitrogen Annual Avg. mg/L (R-001)	6.0	8.52
	Total Nitrogen Max. mg/L (R-001)	12.0	15.20
	Total Nitrogen Monthly Avg. mg/L (R-001)	7.5	9.66

Describe previous FYI and WQBEL study:
A Biological Assessment of ICUD West Regional was conducted in September 2003. The following results were gathered during the assessment:

- Toxics Sampling Inspection (XSI): No organic constituents were detected in the effluent sample. Iron was detected in the effluent sample at a level that was greater than the minimum detection limit but below the practical quantitation limit and which complied with Class IV Water Quality Criteria.
- Compliance Biomonitoring Inspection (CBI): The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi*, or to the water flea, *Ceriodaphnia dubia*, during the 96-hour acute screening bioassays.
- Water Quality Inspection (WQI): Fecal coliforms were detected in the effluent and the receiving water at levels that did not exceed the facility's fecal coliform permit. Total Kjeldahl Nitrogen (TKN) in the effluent sample complied with the facility's permit limit but may have contributed to hight TKN concentrations at the Test Site (1.7 mg/L) compared to the Control Site (1.3 mg/L). The dissolved oxygen concentration in the effluent (2.9 mg/L) and Control Site samples (2.5 mg/L) failed to meet the Class IV Water Quality Criterion (3.0 mg/L).
- Impact Bioassessment Inspection (IBI): Qualitative macroinvertebrate data placed both the Control and Test sites in the "Poor" category of the Stream Condition Index. Low numbers of EPT and Florida Index taxa, low percentage of filterers and an over-abundance of Dipteran taxa contributed to the low scores.

Describe previous or current Enforcement Actions (including WLs):
The facility received a Warning Letter on May17, 2004. Enforcement actions were taken due to various violations of monthly and annual CBOD averages, annual Total Nitrogen average, and monthly Total Nitrogen average. The Enforcement case was closed by the Department in May 2005.

Describe any violations or problems noted in previous inspection:
In the previous inspection, the construction of the plant expansion was not complete in the time-frame specified in the permit. Comparisons between the in-line chlorine meter and bench-meter show a greater than 10% difference in expected value.

Discuss whether DMR trends within previous five years are improving or declining:
Over the past ten years, Total Suspended Solids (TSS) averages have not changed. During the past five years, Total Nitrogen and Total Phosphorus averages have decreased. Over the past five years, flow annual average has increased by 0.028 MGD.

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

Appendix F. (continued)

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

Appendix G. Bioassay Instruments

FDEP Biology Laboratory - Bioassay Instrument Identification

Test ID: IRCUD West Regional Test Dates: December 8 - 12, 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	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 electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

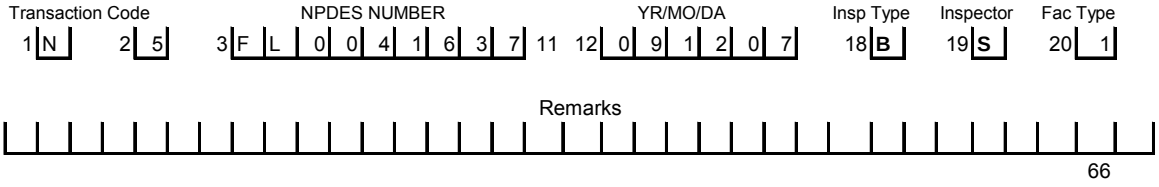
Comments: Entered by M. Faircloth 12/17/2009

V 1.4 8/21/08 BA

Appendix H. EPA End Sheet

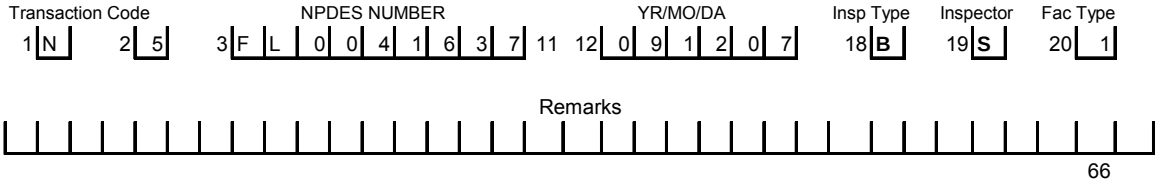
The Bioassay of IRCUD West Regional WWTF effluent sampled on December 7, 2009. NPDES #FL0041637.

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



The Priority Pollutants Analysis of IRCUD West Regional WWTF effluent sampled on December 7, 2009. NPDES #FL0041637.

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



Biological Analyses of IRCUD West Regional WWTF effluent sampled on December 7, 2009. NPDES #FL0041637.

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

